

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 40-F

REGISTRATION STATEMENT PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

OR

ANNUAL REPORT PURSUANT TO SECTION 13(a) OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended

Commission File Number:

PYROGENESIS CANADA INC.

(Exact name of Registrant as specified in its charter)

Canada

(Province or Other Jurisdiction
of Incorporation or
Organization)

33324

(Primary Standard
Industrial Classification Code)

N/A

(I.R.S. Employer Identification
No.)

**1744, William St. Suite 200
Montréal, QC, H3J1R4
CANADA**

**Attention: P. Peter Pascali
Chief Executive Officer**

Tel: 1-514-937-0002

(Address and telephone number of Registrant's principal executive offices)

**National Registered Agents, Inc.
1209 Orange St.
Wilmington, Delaware 19801**

Tel: 202-572-3133

(Name, address (including zip code) and telephone number (including area code) of agent for service in the United States)

Securities registered or to be registered pursuant to section 12(b) of the Act:

| <u>Title of Each Class</u> | <u>Trading Symbol(s)</u> | <u>Name of Each Exchange on Which Registered:</u> |
|-----------------------------|--------------------------|---|
| Common Shares, no par value | PYR | TSX |

Securities registered or to be registered pursuant to Section 12(g) of the Act: **None**

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act: **None**

For annual reports, indicate by check mark the information filed with this Form:

Annual Information Form

Audited Annual Financial Statements

Indicate the number of outstanding shares of each of the Registrant's classes of capital or common stock as of the close of the period covered by the annual report:

| <u>Title of Each Class</u> | <u>Number of outstanding shares</u> |
|-----------------------------|-------------------------------------|
| Common Shares, no par value | 154,267,292 |

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes

No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit and post such files).

Yes

No

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 12b-2 of the Exchange Act.

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

INTRODUCTORY INFORMATION

PyroGenesis Canada Inc. (the “**Company**”) is a Canadian public company whose common shares are listed on the Toronto Stock Exchange. The Company is a “foreign private issuer” as defined in Rule 3b-4 under Securities Exchange Act of 1934, as amended (the “**Exchange Act**”), and is eligible to file this registration statement on Form 40-F (the “Registration Statement”) pursuant to the Canada/United States multi-jurisdictional disclosure system (the “**MJDS**”).

References to the “Registrant” mean PyroGenesis Canada Inc. and its subsidiaries, unless the context suggests otherwise.

PRINCIPAL DOCUMENTS

Each of the documents that is filed as an exhibit to this Registration Statement, as set forth in the Exhibit Index attached hereto, is incorporated by reference herein.

The Registrant has filed the written consent of the expert named in the foregoing Exhibits as Exhibit 99.83, as set forth in the Exhibit Index attached hereto.

DESCRIPTION OF COMMON SHARES

A description of the common shares of the Registrant registered pursuant to this Registration Statement, as required by General Instruction B.(2) of Form 40-F, is set forth in the section entitled “*Description of Capital Structure*” starting on page 23 of the Revised Annual Information Form of the Registrant for the year ended December 31, 2019 filed as Exhibit 99.59, as set forth in the Exhibit Index attached hereto.

FORWARD-LOOKING STATEMENTS

This Registration Statement includes or incorporates by reference certain statements that constitute “forward-looking statements” within the meaning of the United States *Private Securities Litigation Reform Act of 1995*. All statements other than statements of historical fact contained in this Registration Statement or the documents incorporated by reference are forward-looking statements, including, without limitation, the Company’s: statements regarding its products and services; the execution of its growth strategy; relations with suppliers and customers; future financial position; business strategy; potential acquisitions; potential business partnering; litigation; and plans and objectives. In certain cases, forward-looking statements can be identified by the use of words such as “plans”, “expects” or “does not expect”, “is expected”, “budget”, “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates” or “does not anticipate”, or “believes”, or variations of such words and phrases or state that certain actions, events or results “may”, “could”, “would”, “might” or “will be taken”, “occur” or “be achieved” and similar words or the negative thereof. These forward-looking statements are based on management’s current expectations and are subject to a number of risks, uncertainties, and assumptions, including market and economic conditions, business prospects or opportunities, future plans and strategies, projections and anticipated events and trends that affect the Company and its industry. Although management of the Company believes that the expectations reflected in such forward-looking statements are reasonable and are based on reasonable assumptions and estimates as of the date hereof, there can be no assurance that these assumptions or estimates are accurate or that any of these expectations will prove accurate.

Actual results and developments are likely to differ, and may differ materially, from those anticipated by the Company and expressed or implied by the forward-looking statements contained in this Registration Statement. Such statements are based on a number of assumptions and risks which may prove to be incorrect. Important assumptions relating to the forward-looking statements contained in this Registration Statement include, among other things, assumptions concerning:

- the Company's business strategies, strategic objectives and growth strategy;
- the Company's expected production volumes, rates and costs;
- the Company's current and future capital resources and the need for additional financing;
- the Company's ability to increase sales from new and existing customers, and the results of the successful completion of the Company's current projects;
- management's expectation that the Company will achieve growth and profitability;
- the Company's overall financial performance;
- the Company continuing to maintain sufficient and effective production and research and development;
- there being no significant reduction in the availability of qualified and cost-effective human resources;
- there will be adequate liquidity available to the Company to carry out its operations;
- the Company's ability to obtain and retain key personnel; and
- the success of intellectual property applications.

By their nature, forward-looking statements require assumptions and are subject to inherent risks and uncertainties including those discussed herein. There is significant risk that predictions and other forward-looking statements will not prove to be accurate. Readers are cautioned to not place undue reliance on forward-looking statements made herein because a number of factors could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.

The future outcomes that relate to forward-looking statements may be influenced by many factors, including, but not limited to, the risk factors described under the heading "Risk Factors" in the Annual Information Statement incorporated by reference into this Registration Statement. The Company cautions that the foregoing list of factors is not exhaustive, and that, when relying on forward-looking statements to make decisions with respect to the Company, investors and others should carefully consider these factors, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements.

Some of the important risks and uncertainties that could affect forward-looking statements are described in this Registration Statement. Should one or more of these risks and uncertainties materialize, or should underlying factors or assumptions prove incorrect, actual results may vary materially from those described in forward-looking statements. See also “*Risk Factors*” in the Annual Information Form for the fiscal year ended December 31, 2019 for a discussion of the risks the Company faces.

This discussion, and the discussion of risk factors contained in the Annual Information Form for the fiscal year ended December 31, 2019, are not exhaustive of the factors that may affect any of the forward-looking statements or information concerning the Company. Further, any forward-looking statement speaks only as of the date on which such statement is made, and, except as required by applicable law, the Company does not undertake any obligation to update any forward-looking statement to reflect events or circumstances after the date on which such statement is made or to reflect the occurrence of unanticipated events. New factors emerge from time to time, and it is not possible for management of the Company to predict all such factors and to assess in advance the impact of each such factor on the business of the Company or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statement.

Our forward-looking statements are based on the reasonable beliefs, expectations and opinions of management on the date of this Registration Statement. Although we have attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. There is no assurance that such information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, readers should not place undue reliance on forward-looking information. We do not undertake to update any forward-looking information, except as, and to the extent required by, applicable securities laws, including applicable United States federal securities laws. The forward-looking statements contained in this Registration Statement (including the documents incorporated by reference herein) are expressly qualified by this cautionary statement.

**NOTE TO UNITED STATES READERS REGARDING DIFFERENCES
BETWEEN UNITED STATES AND CANADIAN REPORTING PRACTICES**

The Registrant is permitted to prepare this Registration Statement in accordance with Canadian disclosure requirements, which are different from those of the United States. The Registrant has historically prepared its consolidated financial statements in accordance with International Financial Reporting Standards, as issued by the International Accounting Standards Board, and the audit is subject to Canadian auditing and auditor independence standards, which differ in certain respects from United States generally accepted accounting principles (“**US GAAP**”) and from practices prescribed by the SEC. Therefore, the Registrant’s financial statements incorporated by reference in this Registration Statement may not be comparable to financial statements prepared in accordance with U.S. GAAP.

OFF-BALANCE SHEET ARRANGEMENTS

The Registrant has not entered into any “off-balance sheet arrangements”, as defined in General Instruction B(11) to Form 40-F, that have or are reasonably likely to have a current or future effect on the Registrant’s financial condition, changes in financial condition, revenues, expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors.

CONTRACTUAL OBLIGATIONS

Below is a tabular disclosure of the Registrant’s contractual obligations as at September 30, 2020:

| | <u>Total</u> | <u>Less than one year</u> | <u>1-3 years</u> | <u>3 to 5 years</u> | <u>More than 5 years</u> |
|-------------------|---------------------|-------------------------------|----------------------|---------------------|------------------------------|
| Lease obligations | \$ 3,395,728 | \$ 412,611 | \$ 2,982,310 | \$ 807 | - |
| Total | <u>\$ 3,395,728</u> | <u>\$ 412,611</u> | <u>\$ 2,982,310</u> | <u>\$ 807</u> | <u>-</u> |

UNDERTAKING AND CONSENT TO SERVICE OF PROCESS

Undertaking

The Registrant undertakes to make available, in person or by telephone, representatives to respond to inquiries made by the Commission staff, and to furnish promptly, when requested to do so by the Commission staff, information relating to: the securities registered pursuant to Form 40-F; the securities in relation to which the obligation to file an annual report on Form 40-F arises; or transactions in said securities.

Consent to Service of Process

Concurrently with the filing of this Registration Statement, the Registrant will file an Appointment of Agent for Service of Process and Undertaking on Form F-X signed by the Registrant and its agent for service of process with respect to the class of securities in relation to which this Registration Statement applies.

Any change to the name or address of the Registrant’s agent for service shall be communicated promptly to the Commission by amendment to Form F-X referencing the file number of the Registrant.

SIGNATURES

Pursuant to the requirements of the Exchange Act, the Registrant certifies that it meets all of the requirements for filing on Form 40-F and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: February 2, 2021

PYROGENESIS CANADA INC.

By: /s/ P. Peter Pascali
P. Peter Pascali
Chief Executive Officer

EXHIBIT INDEX

| Exhibit Number | Exhibit Description |
|-----------------------|---|
| 99.1 | News Release dated February 4, 2020 |
| 99.2 | News Release dated February 26, 2020 |
| 99.3 | News Release dated February 27, 2020 |
| 99.4 | News Release dated March 4, 2020 |
| 99.5 | News Release dated March 18, 2020 |
| 99.6 | News Release dated March 24, 2020 |
| 99.7 | Material change report dated March 25, 2020 |
| 99.8 | News Release dated March 30, 2020 |
| 99.9 | News Release dated April 1, 2020 |
| 99.10 | News Release dated April 16, 2020 |
| 99.11 | News Release dated April 21, 2020 |
| 99.12 | News Release dated April 27, 2020 |
| 99.13 | News Release dated April 30, 2020 |
| 99.14 | News Release dated May 19, 2020 |
| 99.15 | News Release dated June 2, 2020 |
| 99.16 | News Release dated June 4, 2020 |
| 99.17 | News Release dated June 11, 2020 |
| 99.18 | News Release dated June 14, 2020 |
| 99.19 | News Release dated June 15, 2020 |
| 99.20 | Annual financial statements for the years ended December 31, 2019 and 2018, together with the independent auditors' reports thereon, except that the footnote to the audit report included in such audited financial statements, and any future audited financial statements that are incorporated by reference herein, including in each case any amendment thereto, is hereby expressly excluded from incorporation by reference into this registration statement |
| 99.21 | Management Discussion and Analysis for the three and twelve month periods ended December 31, 2019 |
| 99.22 | Annual Information form for the financial year ended December 31, 2019, dated October 19, 2020 |
| 99.23 | Certification of Annual Filings Venture Issuer Basic Certificate by CEO dated June 15, 2020 |
| 99.24 | Certification of Annual Filings Venture Issuer Basic Certificate by CFO dated June 15, 2020 |
| 99.25 | News Release dated July 2, 2020 |
| 99.26 | News Release dated July 2, 2020 |
| 99.27 | News Release dated July 9, 2020 |
| 99.28 | News Release dated July 14, 2020 |
| 99.29 | Interim financial report for the three months ended March 31, 2020 and 2019 |
| 99.30 | Management's Discussion and Analysis for the three months ended March 31, 2020 and 2019 |
| 99.31 | Certification of interim filings in connection with the filing of interim financials and MD&A for the period ended March 31, 2020 by CEO, dated July 14, 2020 |
| 99.32 | Certification of interim filings in connection with the filing of interim financials and MD&A for the period ended March 31, 2020 by CFO, dated July 14, 2020 |
| 99.33 | News Release dated July 16, 2020 |
| 99.34 | News Release dated July 23, 2020 |

| | |
|-----------------------|--|
| 99.35 | Interim financial report for the three and six months ended June 30, 2020 and 2019 |
| 99.36 | Management’s Discussion and Analysis for the three and six months ended June 30, 2020 and 2019 |
| 99.37 | Certification of interim filings in connection with the filing of interim financials and MD&A for the period ended June 30, 2020 by CEO, dated July 28, 2020 |
| 99.38 | Certification of interim filings in connection with the filing of interim financials and MD&A for the period ended June 30, 2020 by CFO, dated July 28, 2020 |
| 99.39 | News Release dated July 29, 2020 |
| 99.40 | News Release dated August 13, 2020 |
| 99.41 | Management Information Circular dated August 17, 2020 |
| 99.42 | News Release dated August 18, 2020 |
| 99.43 | News Release dated August 24, 2020 |
| 99.44 | News Release dated September 1, 2020 |
| 99.45 | News Release dated September 4, 2020 |
| 99.46 | News Release dated September 11, 2020 |
| 99.47 | News Release dated September 22, 2020 |
| 99.48 | Form of proxy for annual and special meeting of shareholders to be held on September 22, 2020 |
| 99.49 | News Release dated September 30, 2020 |
| 99.50 | News Release dated October 1, 2020 |
| 99.51 | News Release dated October 5, 2020 |
| 99.52 | News Release dated October 6, 2020 |
| 99.53 | News Release dated October 15, 2020 |
| 99.54 | News Release dated October 16, 2020 |
| 99.55 | News Release dated October 26, 2020 |
| 99.56 | Material change report dated November 3, 2020 |
| 99.57 | News Release dated November 3, 2020 |
| 99.58 | Short form Prospectus dated November 3, 2020 |
| 99.59 | Revised Annual Information Form for the financial year ended December 31, 2019, dated November 3, 2020 |
| 99.60 | News Release dated November 10, 2020 |
| 99.61 | Warrant Indenture dated November 11, 2020 |
| 99.62 | News Release dated November 12, 2020 |
| 99.63 | News Release dated November 18, 2020 |
| 99.64 | News Release dated November 19, 2020 |
| 99.65 | News Release dated November 24, 2020 |
| 99.66 | News Release dated November 25, 2020 |
| 99.67 | Notice of Change of Status dated November 26, 2020 |
| 99.68 | Interim financial report for the three and nine months ended September 30, 2020 and 2019 |
| 99.69 | Management’s Discussion and Analysis for the three and nine months ended September 30, 2020 and 2019 |
| 99.70 | Certification of interim filings in connection with the filing of interim financials and MD&A for the period ended September 30, 2020 by CEO, dated November 25, 2020 |
| 99.71 | Certification of interim filings in connection with the filing of interim financials and MD&A for the period ended September 30, 2020 by CFO, dated November 25, 2020 |
| 99.72 | News Release dated December 8, 2020 |
| 99.73 | News Release dated December 8, 2020 |
| 99.74 | News Release dated December 16, 2020 |
| 99.75 | News Release dated December 22, 2020 |
| 99.76 | News Release dated January 6, 2021 |
| 99.77 | News Release dated January 11, 2021 |
| 99.78 | News Release dated January 11, 2021 |
| 99.79 | News Release dated January 11, 2021 |
| 99.80 | News Release dated January 11, 2021, filed with SEDAR on February 1, 2021 |
| 99.81 | News Release dated January 12, 2021 |
| 99.82 | Amended annual financial statements for the years ended December 31, 2019 and 2018, together with the independent auditors’ reports thereon, together with the independent auditors’ reports thereon, except that the footnote to the audit report included in such audited financial statements, and any future audited financial statements that are incorporated by reference herein, including in each case any amendment thereto, is hereby expressly excluded from incorporation by reference into this registration statement |
| 99.83 | Consent of KPMG LLP |



PyroGenesis Comments on Recent Trading Activity and Stock Price

MONTREAL, Quebec (GlobeNewswire – February 4th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, issues this press release in response to recent trading activity in its shares, and stock price decline.

The Company does not usually opine on stock price and trading activity, however, given the recent decline, and inquiries from investors, the Company confirms the following:

Everything material has been disclosed by the Company in either its press releases or quarterly reports. PyroGenesis further confirms that none of the contracts press released are at risk. Last but not least, the Company wishes to reassure PyroGenesis' shareholders that we remain on track with our current and prospective projects, and that all contracted projects are being worked on, and such activity will be reflected in Q1 2020 results.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcm Markets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development,

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Provides Update on Payment Terms
with Drosrite International LLC**

MONTREAL, QUEBEC (GlobeNewswire – February 26th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, announces today that, further to its press release dated October 9th, 2019, the payment terms noted therein have been adjusted pro rata to mirror Drosrite International LLC's ("DI" or the "Client") cash flow as outlined in their press release¹ dated January 27th, 2020.

"With this announcement, I am happy to also report that it seems all impediments to the payment process have been addressed," said Mr. P. Peter Pascali, President and CEO of PyroGenesis. "We look forward to having the DROSRITE™ technology installed in one of the premier facilities in the world."

DI is a US based private company duly constituted and existing under the laws of the State of Delaware, providing state-of-the-art waste management technologies to the aluminum industry. DI is duly licensed by PyroGenesis to manufacture, market, sell and distribute DROSRITE™ systems and technology to the Kingdom of Saudi Arabia, and certain other countries in the Middle East, on an exclusive basis. All DROSRITE™ systems supplied by DI are manufactured in the USA.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com

¹ <https://www.globenewswire.com/news-release/2020/01/27/1975440/0/en/Drosrite-International-LLC-Provides-Update-on-Backlog.html>

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcm Markets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development
Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



PyroGenesis Announces New Website Launch

MONTREAL, QUEBEC (GlobeNewswire – February 27th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is proud to announce the launch of its redesigned website taking effect this March. The website has been revamped to include new features and improved functionality that provide instant access to essential information and features geared towards PyroGenesis' interested parties.

PyroGenesis' new website will be continuously updated with business developments, events, company presentations, media mentions and press releases. Once launched, visitors are encouraged to explore the website and sign up for direct emails from the Company.

"We are happy to unveil our redesigned website which offers a clean and modern design providing a more comprehensive understanding of PyroGenesis' technologies," said Mr. P Peter Pascali, CEO and President of PyroGenesis. "We believe that this website will allow our visitors to have a very informative experience as we continue to grow and increase our market presence. I trust the timing of this news release is not lost on our readers."

Of note, it is possible that, during this transition, PyroGenesis' website may be under maintenance for a period up to 24 hours. It is also important to note that, during the weeks following the launch date, the redesigned website may be experiencing some minor technical adjustments. PyroGenesis' team will work diligently to ensure all issues are resolved in a timely manner. The company looks forward to hearing your comments and feedback.

About PyroGenesis Canada Inc.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development
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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Successfully Completes all Torch Tests for
RISE Energy Technology Center AB**

MONTREAL, QUEBEC (GlobeNewswire – March 4th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, announced today that, further to its previous press release dated November 4th, 2019, the Company has completed all torch tests successfully, and has received final payment from RISE Energy Technology Center AB (the "Client")

This contract, originally announced in January of last year, is for a 900-kW plasma torch system which was won in a competitive bid process.

PyroGenesis' 900-kW plasma torch is used to replace fossil fuel burners in the iron ore induration (pelletization) process. Pelletization is the process in which iron ore is concentrated before shipment, thus significantly reducing the cost of transportation. In conventional technology, the process heat is provided by fuel oil or natural gas burners. The combustion, in the burners, of fossil fuels results in the production of greenhouse gases, mainly CO₂. Plasma torches, by the fact that they can convert renewable electricity to heat offer an environmentally attractive alternative to fossil fuel burners

Following the success of the SAT (Site Acceptance Test) of the high-power plasma torch at the Client's facility in Sweden, a series of additional torch tests were performed at the client's site. As announced, these tests have concluded successfully, and discussions are now taking place for follow on work and additional torch orders.

According to management, a typical pellet plant producing 10 million metric tonnes of pellets annually emits approximately one million metric tonnes of CO₂¹. The total world pellet production of 400 million metric tonnes of pellets represents a potential market for torch sales in excess of \$10B worldwide. The world pellet industry generates about 40 million metric tonnes of CO₂ every year. The use of plasma torches running off a clean electrical grid would reduce these emissions significantly. For reference, 40 million tonnes of CO₂ represent the combined yearly emissions of 8.7 million US passenger vehicles².

As a result of this success, PyroGenesis has received numerous requests for proposals from potential clients in the field, and recently signed a small order from a multi-billion-dollar international producer of iron pellets. This order is to model and evaluate the performance of PyroGenesis' torch in an existing industrial furnace. If successful, this would potentially lead to a multi-torch order aimed at replacing burners in their industrial pelletizing plant. An iron pelletizing furnace typically uses dozens of high-power burners (typically between 1-5 MW).

¹ M. Huerta, J. Bolen, M. Okrutny, I. Cameron and K. O'Leary, "Guidelines for Selecting Pellet Plant Technology", Iron Ore Conference 2015 Proceedings, Perth, WA, July 13-15, 2015

² <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>

“Our success with RISE has demonstrated to the industrial manufacturing sector that our Plasma Torches represent an opportunity to significantly cut GHG emissions through a simple bolt-on replacement of their current fossil fuel burners,” said Mr. P. Peter Pascali, President and CEO of PyroGenesis. “Given how compelling our torch offering is, particularly in light of the environmental pressure the industry is under (only recently a new trend has emerged where financial institutions are tying credit facilities and debt issuances to carbon reduction targets for multi-national industrial and mining conglomerates) we expect the demand for our torches to grow exponentially.”

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Announces Closing of a \$903K Loan and
Provides Situation Update**

MONTREAL, Quebec (GlobeNewswire – March 18, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today that it has closed a \$903,000 non-brokered secured convertible loan at 12% per annum (the "Loan"), with a related party.

The Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis in arrears and matures September 17th, 2021. The Loan is convertible into common shares of the Company (each, a "Common Share") at a conversion price of \$0.28 per Common Share (the "Conversion Price"). The Common Shares issuable on conversion of the Loan will be subject to a statutory hold period of four months and one day from the closing date.

The Loan is secured by a subordinated Hypothec on the Universality of Movable Property over all of the present and after acquired moveable property and assets of the Company.

PyroGenesis intends to use the net proceeds from the Offering for general corporate purposes. The Offering is subject to the final approval of the TSXV.

P. Peter Pascali, CEO and President of PyroGenesis, provides the following situation update:

“As a global Covid-19 pandemic sweeps across the globe, it would be an understatement to suggest that these are trying times. The world finds itself in uncharted and precarious territory, a show that has no script. What is certain is that the future is not as certain as we thought it was mere weeks ago. At PyroGenesis, the health, safety and wellbeing of our people, and community, is our number one priority. As such, we immediately implemented an emergency work-from-home policy and, as such, work continues without material interruption. We have also secured our supply lines which, to date, seem to be in order. As a cautionary second step, we managed to secure this loan which we announced today, from a related party, to shore up any unforeseen events that may arise from the current situation. We thought this to be prudent under the circumstances.

Current events are presenting a unique set of challenges to businesses. The economic and social impact is already on a scale not seen in the post war era. This uncertain future is leading companies to have to make difficult decisions. At PyroGenesis, we will do our part to ensure all our employees are employed, safe, and healthy. We are also doing our part to source limited supplies from our international contacts to augment the needs of our community health care system.

Times like these require us as entrepreneurs and businesses leaders to come together to help our communities assist each other. After all, we are skilled leaders and decision makers having operated in this type of arena all our lives; making decisions on limited information, ascertaining risk, executing and adjusting as the case may be.

It is not business as usual, that is for sure. However, a measure of a team is how they manage crisis. At Pyrogenesis, we have a seasoned team of business veterans when it comes to innovation and crisis management. I am proud of my team in how they handle challenges, and never more than I am these days.

Be safe and we will keep you up to date with any material developments.”

The Corporation did not file a material change report more than 21 days before the excepted closing of the Offering as the details of the participation therein by related parties of the Corporation were not settled until shortly prior to the closing of the Offering.

The securities have not been, and will not be, registered under the United States Securities Act of 1933, as amended (the "1933 Act"), or any state securities laws and may not be offered or sold in the United States or to, or for the account or benefit of, U.S. persons (as defined in Regulation S under the 1933 Act), except pursuant to an exemption from the registration requirements of those laws. This press release shall not constitute an offer to sell or the solicitation of an offer to buy securities in the United States, or for the account or benefit of U.S. persons (as such term is defined in Regulation S under the 1933 Act).

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Announces Receipt of First Payment
Towards \$25M+ DROSRITE™ Contract**

MONTREAL, QUEBEC (GlobeNewswire – March 24, 2020) - PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that, further to its press release dated February 26th, 2020, the Company has received the first payment of approx. \$1.44M under the exclusivity contract with Drosrite International LLC ("DI" or the "Client").

In addition to the payment received today, PyroGenesis expects to receive further payments, the timing of which has been scheduled to match DI's cash flow.

Please refer to DI press release¹ dated March 23rd, 2020.

<https://www.globenewswire.com/news-release/2020/03/23/2005020/0/en/Drosrite-International-LLC-Receives-First-Payment-under-US-17M-Contract-with-Radian-Oil-Gas-Services-Company.html>

"The receipt of this first payment marks an important milestone for PyroGenesis as it triggers the official beginning of the project between DI and their client, in terms of benchmarks and deadlines," said Mr. P. Peter Pascali, President and CEO of PyroGenesis. "We are also happy to confirm that the supply chain is intact despite this pandemic. Once again, we are proud to see the DROSRITE™ technology being adopted by one of the premier aluminum smelters in the world. It indeed validates PyroGenesis' DROSRITE™ technology, as it has become the dross processing solution of choice to a very credible end-user."

As previously disclosed, and as part of this exclusive arrangement between DI and PyroGenesis, DI will pay PyroGenesis approximately, based on current exchange rates, \$25M over the next 12 months as well as approx. \$3M per year (fixed) for the next two (2) years, together with a variable amount for the subsequent 18 years based on certain international benchmarks.

DI is a US based private company duly constituted and existing under the laws of the State of Delaware, providing state-of-the-art waste management technologies to the aluminum industry. DI is duly licensed by PyroGenesis to manufacture, market, sell and distribute DROSRITE™ systems and technology to the Kingdom of Saudi Arabia, and certain other countries in the Middle East, on an exclusive basis. All DROSRITE™ systems supplied by DI are manufactured in the USA.

¹ <https://www.globenewswire.com/news-release/2020/03/23/2005020/0/en/Drosrite-International-LLC-Receives-First-Payment-under-US-17M-Contract-with-Radian-Oil-Gas-Services-Company.html>

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Form 51-102F3
Material Change Report

Item 1. Name and Address of Corporation
PyroGenesis Canada Inc. (the "Corporation")
1744 William Street, Suite 200
Montreal, Quebec, H3J 1R4

Item 2. Date of Material Change
March 18th, 2020

Item 3. News Release
A news release in respect of the material change was issued on March 18th, 2020 through Globe Newswire.

Item 4. Summary of Material Change
On March 18th, 2020, the Corporation completed a \$903,000 non-brokered secured convertible loan (the "Loan") with Fiducie de crédit Mellon Trust. The Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis in arrears and matures on September 17th, 2021.

Item 5. Full Description of Material Change
On March 18th, 2020, the Corporation completed a \$903,000 non-brokered secured convertible loan (the "Loan") with Fiducie de crédit Mellon Trust (the "Lender") a party related to Mr. P. Peter Pascali, President and Chief Executive Officer of the Corporation.
The Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis in arrears and matures on September 17th, 2021 (the "Maturity Date").
During the term of the Loan, the Lender shall have the right to convert, in whole or in part, the Loan amount into common shares of the Corporation (each, a "Common Share" or "Common Shares" as applicable) at a conversion price of \$0.28 per share.
If the conversion right is exercised by the Lender in full for the Loan amount of \$903,000, the Corporation will issue 3,225,000 Common Shares of the Corporation to the Lender.
The Common Shares issuable on the conversion of the Loan will be subject to a statutory hold period of four months and one day from the date of issuance.
The Loan is secured by a subordinated Hypothec on the Universality of Movable Property over all of the present and after acquired moveable property and assets of the Corporation.

Assuming full conversion of the Loan into Common Shares by Fiducie de crédit Mellon Trust.

Assuming full conversion of all options and warrants of the Corporation held by Fiducie de crédit Mellon Trust and Mr. P. Peter Pascali.

Taking into consideration the number of Common Shares held, as of the date of this *Material Change Report*, by Fiducie de crédit Mellon Trust, 8339856 Canada Inc. and Mr. P. Peter Pascali.

Therefore Mr. P. Peter Pascali, Fiducie de crédit Mellon Trust, and 8339856 Canada Inc. would beneficially own and exercise control or direction over, directly or indirectly, 90,022,713 Common Shares of the Corporation representing approximately 56.62% of the issued and outstanding Common Shares of the Corporation.

The participation of Mr. P. Peter Pascali in the Private Placement, through Fiducie de credit Mellon Trust, constitutes a “related party transaction” as defined in Multilateral Instrument 61-101 (“**MI 61-101**”) and Policy 5.9 of the TSX venture Exchange (“**TSXV**”). This transaction is exempt from the formal valuation and minority approval requirements of MI 61-101 pursuant to sections 5.5 (a), 5.7 (1)(a) and 5.7 (1)(b) of MI 61-101.

The Corporate intends to use the proceeds of the Loan for general corporate purposes.

The Loan is subject to the final approval of the TSXV.

Item 6. Reliance on subsection 7.1(2) or (3) of National Instrument 51-102
Not applicable.

Item 7. Omitted Information
None

Item 8. Executive Officer

For further information, please contact Mr. P. Peter Pascali, President and Chief Executive Officer of the Corporation, at (514) 937-0002 ext. 230 or at ppascali@pyrogenesis.com.

Item 9. Date of Report

March 24th, 2020



**PyroGenesis Announces Extension of Maturity Date of \$3M
Convertible Debenture to June 30, 2020**

MONTREAL, Quebec (GlobeNewswire – March 30, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, announces today that it has reached an agreement to extend the maturity date of its \$3M convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020.

“Given the pandemic, and unpredictable, times we are living in, the Company thought it best to be prudent, conserve cash, and be prepared as best as we can for any unexpected eventuality,” said Mr. P. Peter Pascali, CEO of PyroGenesis. “This just makes good business sense. As such, we requested our debenture holders to extend the maturity date to June 30, 2020 which they agreed to do on certain terms and conditions. We wish to thank the AST Trust Company, and the brokers involved, for their input and execution of this request during this pandemic.”

Under the terms of the agreement, the Company will (i) paydown the amount outstanding by \$300,000 (representing 10% of the principal amount), (ii) pay a onetime accommodation fee of \$54,000, and (iii) will not be subject to any prepayment penalties going forward. Of note, the interest rate and conversion feature have not changed.

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SOURCE PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Receives \$550K Under an Exclusive Agreement
with a US Tunneling Company**

MONTREAL, Quebec (GlobeNewswire – April 1, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today that it has received US\$400K (approx. CA \$550K) under an exclusive agreement (the "Agreement") with a US based tunneling company (the "Client"). The Client's name will remain anonymous for confidentiality and competitive reasons.

"Yes, this is a new agreement. Yes, it has nothing to do with the pandemic. Yes, it can be executed under the current travel and work-from-home restrictions, and yes it has all the makings of a long-term relationship," said Mr. Peter Pascali, CEO of PyroGenesis Canada Inc. "We are proud to be able to announce this relationship, particularly given the current environment where investors are more focused on multiple secure revenue streams. It is important to underscore the fact that this relationship was not born out of the current crisis and, as such, is expected to continue well after the pandemic is behind us."

In the scope of work, currently being defined under this Agreement, PyroGenesis will not only develop and supply high-powered plasma torches, specifically designed for tunneling applications, but will also be intimately involved in all aspects of design and development for the entire project. Upon success, the Client is committed to purchase exclusively, and PyroGenesis is committed to exclusively supplying, plasma torches and auxiliary equipment for these applications. The scope of work will be comprised of several phases, each defined by the results from the former. The Company has received an initial down payment of US\$400K (approx. CA \$550K) under this Agreement.

PyroGenesis' high-powered plasma torch will be used to replace traditional tunneling methods. An important benefit in using plasma-based tools versus traditional methods, is its potential to drill through all geologies with greater flexibility in size diameter, while at the same time being more economical, efficient and environmentally friendly.

"This Agreement, once again, underscores our plasma torch expertise, and we are pleased to be applying it to a very unique and significant opportunity," said Mr. Alex Pascali, Business Development Manager of PyroGenesis. "This highlights the fact that we not only sell plasma torches, but also provide the expertise required to develop cutting edge plasma-based applications. The Company continues to increase revenues and reduce risk by diversifying its customer base with a standard product offering. This is just one of many exciting developments at PyroGenesis these days."

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**PyroGenesis Confirms Additional Payment of \$1.4M
Towards \$25M+ DROSRITE™ Contract**

MONTREAL, QUEBEC (GlobeNewswire – April 16th, 2020) - PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, in response to an extraordinary volume of inquiries with respect to the subject matter, is pleased to announce that, further to its press release dated March 24th, 2020, the second payment of approx. \$1.4M has already been received under the exclusive contract with Drosrite International LLC ("DI").

"Due to an unprecedented number of inquiries received from investors, we decided to confirm receipt of the second payment of \$1.4M noted in this press release," said Mr. P. Peter Pascali, President and CEO of PyroGenesis. "We would also like to confirm that additional payments are being processed as anticipated and that, as per DI's press release dated January 27th, 2020, work has already begun. I would also like to take this opportunity to further emphasize to readers that in general, notwithstanding receipt of payments, revenues and expenses are based on percent completion and not receipt of payments."

As previously disclosed, and as part of this exclusive arrangement between DI and PyroGenesis, DI will pay PyroGenesis approximately \$25M, based on current exchange rates, over the first 12 months as well as approx. \$3M per year (fixed) for the next two (2) years, together with a variable amount for the subsequent 18 years based on certain international benchmarks.

About Drosrite International LLC

DI is a US based private company duly constituted and existing under the laws of the State of Delaware, providing state-of-the-art waste management technologies to the aluminum industry. DI is duly licensed by PyroGenesis to manufacture, market, sell and distribute DROSRITE™ systems and technology to the Kingdom of Saudi Arabia, and certain other countries in the Middle East, on an exclusive basis. All DROSRITE™ systems supplied by DI are manufactured in the USA.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcm Markets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Receives Additional \$457K Under Exclusive Agreement
with US Tunneling Company**

MONTREAL, Quebec (GlobeNewswire – April 21, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today that, further to its press release dated April 1st, 2020, it has received an additional US\$325K (approx. CA \$457K) under the exclusive agreement (the "Agreement") with a US based tunneling company (the "Client"). To date, the Company has received US \$725K (over CA \$1M) in total. The Client's name will remain anonymous for confidentiality and competitive reasons.

"This is an ideal contract, given the current situation, where all the engineering work can be done remotely," said Mr. Peter Pascali, CEO of PyroGenesis Canada Inc. "This relationship is timely, given the current environment where investors are more focused on multiple secure revenue streams. It is important to note that this relationship was not born out of the current crisis and, as such, is expected to continue well after the pandemic is behind us."

Under this Agreement, PyroGenesis will not only develop and supply high-powered plasma torches, specifically designed for tunneling applications, but will also be intimately involved in all aspects of design and development for the entire project. Upon success, the Client is committed to purchase exclusively, and PyroGenesis is committed to exclusively supplying, plasma torches and auxiliary equipment for these applications. The scope of work is now comprised of several phases, each being defined by the results from the former.

PyroGenesis' high-powered plasma torch will be used to replace traditional tunneling methods. An important benefit in using plasma-based tools versus traditional methods, is its potential to drill through all geologies with greater flexibility in size diameter, while at the same time being more economical, efficient and environmentally friendly.

"Once again, this Agreement underscores our plasma torch expertise, and we are pleased to be applying it to a very unique and significant opportunity," said Mr. Alex Pascali, Business Development Manager of PyroGenesis. "This highlights the fact that we not only sell plasma torches, but also provide the expertise required to develop cutting edge plasma-based applications. The Company continues to increase revenues and reduce risk by diversifying its customer base with a standard product offering. This is just one of many exciting developments at PyroGenesis these days."

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m2 manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Anticipates Relying on
Temporary Blanket Relief for Required Filings**

MONTREAL, Quebec (GlobeNewswire – April 27, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, announces today that it anticipates relying on temporary blanket relief provided by the Canadian Securities Regulatory Authorities for the filing of their Financial Statements and Management's Discussion and Analysis ("MD&A"), for the year ended December 31, 2019 ("Annual Filings") as well as for the period ended March 31, 2020 ("Q1 2020 Filings"). This has been driven by delays encountered in the audit process and is consistent with the wider audit environment currently facing companies and audit firms throughout the world.

On March 23, the TMX Group exchanges Toronto Stock Exchange ("TSX") and TSX Venture Exchange ("TSXV") announced temporary blanket relief measures for listed issuers during the Coronavirus (COVID-19) pandemic. These included the allowance to delay the filing of certain continuous disclosure documents by up to 45 days, given the administrative burden on public companies and accounting firms during the current crisis, and to provide greater flexibility in dealing with market volatility.

As a result, PyroGenesis expects to file its Annual Filings on or before June 15, 2020 and its Q1 2020 Filings on or before July 16, 2020.

An update on material business developments since the filing of the Company's interim financial reports has been provided in prior press releases.

During the period that the required filings remain outstanding, PyroGenesis' management and other insiders are subject to a trading black-out policy that reflects the principles in section 9 of National Policy 11-207 – Failure to File Cease Trade Orders and Revocations in Multiple Jurisdictions.

About PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>



PyroGenesis Successfully Completes First Phase of Torch Modelling Geared to Reducing Greenhouse Gases for Major Iron Ore Pelletization Client

MONTREAL, Quebec (GlobeNewswire – April 30, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today that, further to its press release dated March 4th, 2020, it has successfully completed the first phase (the "First Phase") of a multi-phase modeling contract aimed at evaluating the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing all existing fossil fuel burners with PyroGenesis' plasma torches. All phases will be completed by the end of Q2 2020. The client is a multi-billion-dollar international producer of iron ore pellets (the "Client"), one of the largest in the industry, whose name will remain confidential for competitive reasons. The Client has over 10 plants each requiring approx. 50 plasma torches.

This all important First Phase demonstrated that replacing fossil fuel burners with PyroGenesis' proprietary plasma torch (i) has absolutely no ancillary detrimental effects anywhere in the process or with the furnaces, (ii) results in significant greenhouse gas reduction while at the same time, (iii) projecting significant cost savings.

This contract consists of evaluating the performance of PyroGenesis' proprietary torches in the Client's industrial furnace. The First Phase results confirm that replacing fossil fuel burners with PyroGenesis' proprietary plasma torches will not have any detrimental effects on the Client's process or their furnaces and, more importantly, will result in a CO₂ reduction in excess of 350,000 tons per year per plant (which is equivalent to removing 76,000 cars¹ from the road), while at the same time projecting significant cost savings. The Client has over 10 plants, each requiring approx. 50 torches. Each torch will generate up to \$3M of revenue to PyroGenesis. The subsequent modelling phases will further quantify the benefits of transitioning to plasma. All phases will be completed by the end of Q2, 2020.

¹ *The USEPA estimates that the average passenger vehicle emits 4.6 tons per year of CO₂.*

“This is a very significant development with a very significant player in the industry,” said Mr. P. Peter Pascali, President and CEO of PyroGenesis. “We have effectively demonstrated that by using our proprietary plasma torch to replace the environmental damaging fossil fuel burners, not only will there be a significant reduction in greenhouse gases but there will also be significant cost savings (avoiding future carbon taxes alone is noteworthy), and all without any detrimental effect anywhere in the process. How many process changes can boast of that trifecta?”

Pelletization is the process in which iron ore is concentrated before shipment, thus significantly reducing the cost of transportation. In conventional technologies, the process heat is provided by fuel oil or natural gas burners (both environmentally damaging). The combustion, in the burners, of fossil fuels results in the production of greenhouse gases, mainly CO₂. Plasma torches, by contrast, utilize renewable electricity and as such offer an environmentally attractive alternative to fossil fuel burners.

“Since our success with RISE, noted in our press release dated March 4th, 2020, most major iron ore pelletization producers have reached out to us, as have several producers from the metallurgical industry,” said Mr. Pascali. “This has resulted in several modelling proposal requests, however, what I find most exciting is that in recent weeks the interest in our torch capabilities has also come to include significant steel producers, and these discussions have been moving forward at a rapid pace as well. All this interest is from producers that use natural gas and heavy fuel oil burners and want alternatives to help them meet greenhouse gas reduction targets/policies. We find that the proposition to reduce greenhouse gases emissions, and avoid carbon taxes, with a simple bolt-on replacement of their current environmentally damaging fossil fuel burners, is too compelling to resist. That, combined with the environmental pressure these industries are currently under (only recently a new trend has emerged where financial institutions are tying credit facilities and debt issuances to carbon reduction targets for multi-national industrial and mining conglomerates), has generated a wave of interest and proposals.”

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PyroGenesis Enters Negotiations for Supply of Equipment with Iron Ore Pelletization Modeling Client

MONTREAL, Quebec (GlobeNewswire – May 19, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today that, further to its press releases dated March 4th and April 30th, 2020, it has now entered into the final stages of negotiation for equipment supply with the major iron ore pelletization client (the "Client") previously disclosed. The Client is a multi-billion-dollar international producer of iron ore pellets, one of the largest in the industry, whose name will remain confidential for competitive reasons. The Client has over 10 plants each requiring approx. 50 plasma torches.

"This is indeed a very significant development as the Client has accepted the successful completion of the first phase ("First Phase") in the modeling contract as a basis to move forward for equipment supply," said Mr. Peter Pascali, CEO and President of PyroGenesis. "This was not entirely unexpected as (i) the balance of the modeling contract was geared to further quantify the benefits of transitioning to plasma, and (ii) the initial stage of negotiations had already begun prior to the First Phase getting underway, and as such it served just to confirm expectations. In management's opinion, this is moving quickly, particularly in light of the Client's size, the current pandemic, and how busy they are. This is just one of many discussions taking place with other producers in this, and other industries."

As previously disclosed, the purpose of this multi-phase modeling contract was to evaluate the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing all existing fossil fuel burners with PyroGenesis' plasma torches. The all-important First Phase was successfully completed as previously disclosed. All modeling phases were to be completed by the end of Q2 2020, and such remains to be the case. The balance of the contract is solely geared to further quantify the benefits of transitioning to plasma.

"There is no guarantee of successful conclusion, nor of the timeframe in which this might occur," noted Mr. Pascali. "However, things seem to be moving in the right direction, and at a very rapid pace. Since our success with RISE, we have seen a significant increase in interest in using our proprietary torches to reduce greenhouse gases. We continue to find that the proposition to reduce greenhouse gases emissions, and avoid carbon taxes, with a simple bolt-on replacement of current environmentally damaging fossil fuel burners, is too compelling to resist. That, combined with the environmental pressure these industries are currently under (only recently a new trend has emerged where financial institutions are tying credit facilities and debt issuances to carbon reduction targets for multi-national industrial and mining conglomerates), has contributed significantly to this wave of interest and proposals."

Pelletization is the process in which iron ore is concentrated before shipment, thus significantly reducing the cost of transportation. In conventional technologies, the process heat is provided by fuel oil or natural gas burners (both environmentally damaging). The combustion, in the burners, of fossil fuels results in the production of greenhouse gases, mainly CO₂. Plasma torches, by contrast, utilize renewable electricity and as such offer an environmentally attractive alternative to fossil fuel burners.

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RELATED LINK: <http://www.pyrogenesis.com/>



PyroGenesis Provides Update on Extension of Filings Due to Delays Caused by COVID-19

MONTREAL, Quebec (GlobeNewswire – June 2, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems announces today that, further to its press release dated April 27, 2020, it is required by the Autorité des marchés financiers to provide the following update before June 3rd, 2020.

On March 23, 2020 the TMX Group exchanges, the Toronto Stock Exchange ("TSX") and the TSX Venture Exchange ("TSXV"), announced temporary blanket relief measures for listed issuers during the Coronavirus (COVID-19) pandemic. These included the allowance to delay the filing of certain continuous disclosure documents by up to 45 days, given the administrative burden on public companies and accounting firms during the current crisis, and to provide greater flexibility in dealing with market volatility.

The Company will continue to rely on a temporary blanket relief provided by the Canadian Securities Regulatory Authorities for the filing of their Financial Statements and Management's Discussion and Analysis ("MD&A"), for the year ended December 31, 2019 ("Annual Filings") as well as for the period ended March 31, 2020 ("Q1 2020 Filings"). As a result, PyroGenesis expects to file its Annual Filings on or before June 15, 2020 and its Q1 2020 Filings on or before July 16, 2020.

During the period that the required filings remain outstanding, PyroGenesis' management and other insiders are subject to a trading black-out policy that reflects the principles in section 9 of National Policy 11-207 – Failure to File Cease Trade Orders and Revocations in Multiple Jurisdictions. The Company further confirms that since the press release dated April 27, 2020, there have been no material events that have not been publicly disclosed.

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Classified as Highly Confidential

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**PyroGenesis' Additive Manufacturing Quality Management System is Approved
by Major Aerospace Company; Complements NexGen Technology**

MONTREAL, Quebec (GlobeNewswire – June 4, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today that PyroGenesis' quality management system for the production of metal powders for the Additive Manufacturing (3D Printing) industry ("AM Industry"), has been approved by one of the premier non-European aerospace companies. The aerospace company's name will be withheld for confidentiality and competitive reasons.

"Although this does not guarantee any future orders and, on the face of it, may seem to be a minor and expected development, it is in reality very significant as it complements the cutting-edge improvements we have made with our NexGen™ technology which we have announced in previous press releases, and is a key and fundamental step forward," said Mr. Peter Pascali, CEO and President of PyroGenesis.

PyroGenesis' game-changing NexGen™ Plasma Atomization System, which produces metal powder at over 25 kg/h, shattering any published plasma-atomized production rates for titanium known to management, was unveiled in 2019¹ after having fulfilled a specialty metal powder order for a non-aerospace client, while maintaining all the characteristics demanded by the AM Industry (ie. oxygen content, flowability, density, etc.). Of note, this increased production rate was achieved at lower OPEX per hour, which translated into significant cost per kilogram savings.

At the time, Mr. Massimo Dattilo, Vice President of PyroGenesis Additive noted that, "...a limiting factor in titanium adoption in the marketplace has been its cost. By lowering the cost of a typically expensive product, NexGen™ has opened the door to other opportunities (both markets and applications) which, until now, found titanium to be too expensive to adopt. We expect that price reductions now permitted by the NexGen™ technology will drive an increased adoption of PyroGenesis' powders by new markets and applications where the higher cost of plasma atomized powders was typically prohibitive."

"This relationship outside of Europe expands, builds upon and complements that which we have developed with Aubert & Duval in Europe," added Mr. Pascali. "It has taken a bit more time than expected, but we now have in place one of the best quality systems which, combined with our game-changing NexGen™ technology, positions us well to service the AM Industry. PyroGenesis can now boast of at least two significant relationships with internationally recognized entities, one of them being a premier tier aerospace company, and both of which are spending considerable time, energy, and money to develop a business relationship with PyroGenesis."

¹ <https://www.pyrogenesis.com/wp-content/uploads/2019/05/Titanium-Powder-Produced-with-the-NexGen%E2%84%A2-Plasma-Atomization-System-Significant-CAPEX-and-OPEX-Reductions.pdf>

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m2 manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcm Markets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Signs Second Modelling Contract with
New Iron Ore Pelletization Client**

MONTREAL, Quebec (GlobeNewswire – June 11, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today that, further to its press releases dated March 4th, April 30th and May 19th, 2020, it has signed a second multi-phase torch modelling contract (the "Contract"), aimed at evaluating the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing existing fossil fuel burners with PyroGenesis' plasma torches. The first phase is expected to be completed in approx. 8 to 10 weeks. This Contract is with another multi-billion-dollar producer of iron ore pellets ("ClientB"), whose name will remain confidential for competitive reasons. ClientB has over 100 burners in its existing facilities.

"This is the second press release announcing that a significant player in the iron ore pelletization industry has entered into a modeling contract with us, in the past few months," said Mr. Peter Pascali, CEO and President of PyroGenesis. "This just underscores the tremendous impact our proprietary torch is having on the industry and, as we said in the past, this interest is spilling over into other industries as well (such as mining, metallurgy and cement industries). We continue to find that the proposition of reducing greenhouse gases emissions, and avoiding carbon taxes, with a simple bolt-on replacement of their current environmentally damaging fossil fuel burners, is too compelling to resist. That, combined with the environmental pressure these industries are currently under (only recently a new trend has emerged where financial institutions are tying credit facilities and debt issuances to carbon reduction targets for multi-national industrial and mining conglomerates), has contributed significantly to this wave of interest and proposals."

"In fact, it goes beyond avoiding carbon taxes," said Mr. Pierre Carabin, CTO of PyroGenesis. "We see a global trend towards a zero-carbon economy, with the push coming not only from regulators but also from shareholders, investment funds and the general population. As such, all the industry players we are talking to have aggressive internally set carbon reduction targets and are actively seeking commercially ready technical solutions that will have a minimal impact on their operations. As such, we believe that PyroGenesis' proprietary torches offer a relatively easy upgrade to existing industrial processes, such as with pelletizing furnaces, while offering major greenhouse gas reductions. This is in addition to (i) the reduction in pollution from sulfur compounds and heavy metals resulting from heavy fuel oil burners, and (ii) a cost advantage to those companies that have access to affordable hydro power as a replacement to expensive bunker fuel."

This modelling contract, once again, is geared to demonstrating that replacing fossil fuel burners with PyroGenesis' proprietary plasma torches will not have any detrimental effects on ClientB's process or their furnaces. Both ClientB and the Company do not anticipate any detrimental effects. As previously disclosed, for a separate iron ore pelletization Client ("ClientA"), replacing fossil fuel burners with PyroGenesis' proprietary plasma torches could theoretically result in a CO₂ reduction in excess of 350,000 tons per year per plant (which is equivalent to removing 76,000 cars¹ from the road), while at the same time projecting significant cost savings. In the case of ClientB, the switch to plasma torches will also result in the additional benefit of significantly reducing the emission of another pollutant; sulfur dioxide (SO₂).

"Although, there is no guarantee of successful conclusion, nor of the timeframe in which this might occur, given our significant plasma expertise, our specific knowledge of the application, and the challenges in these industries, we are highly confident that there will be a positive outcome as a result of these modeling contracts in the very near future," noted Mr. Pascali. "If and when this outcome is eventualized, PyroGenesis will execute it in a very conservative, strategic and determined manner, with the primary goal being to maximize customer satisfaction and shareholder value. Everything will be geared to securing success, market penetration, and ensuring PyroGenesis' long-term viability as the preeminent supplier of torches to the industry. Our proprietary position, built upon a strong process patent, provides us with a significant advantage in pursuing this goal."

Although there is no guarantee of future contracts, PyroGenesis has already not only contacted its existing suppliers in anticipation of any orders of size, but is also actively expanding their supplier base to mitigate any supply chain risk of significant orders. PyroGenesis' management is confident that the Company is now well positioned to address any anticipated demand.

Pelletization is the process in which iron ore is concentrated before shipment, thus significantly reducing the cost of transportation. In conventional technologies, the process heat is provided by fuel oil or natural gas burners (both environmentally damaging). The combustion, in the burners, of fossil fuels results in the production of greenhouse gases, mainly CO₂. Plasma torches, by contrast, utilize renewable electricity and as such offer an environmentally attractive alternative to fossil fuel burners.

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¹ *The USEPA estimates that the average passenger vehicle emits 4.6 tons per year of CO₂.*

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¹ <https://www.pyroqgenesis.com/wp-content/uploads/2019/05/Titanium-Powder-Produced-with-the-NexGen%E2%84%A2-Plasma-Atomization-System-Significant-CAPEX-and-OPEX-Reductions.pdf>



**PyroGenesis Announces 2019 Results:
Revenues of \$4.8MM; Gross Margin of 27%;
Current Backlog \$30.27MM**

MONTREAL, QUEBEC (GlobeNewswire – June 15th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today its financial and operational results for the fourth quarter and the fiscal year ended December 31, 2019.

“The irony of issuing these 2019 financials knowing full well what has transpired since December 31st, 2019 has not been lost on the writer, as I hope it will not be lost on the reader as well. These statements definitely do not represent the current state of affairs at the Company, specifics of which can be gleaned from press releases issued by the Company in 2020.” said P. Peter Pascali, CEO of PyroGenesis Canada Inc. “To date, in 2020 we have not only received significant payments under existing contracts, but have retired the \$3MM convertible debenture in full, bought back approximately 1.2 million shares, increased our investment in HPQ, and further benefited from early conversions of warrants maturing in 2021 of over \$2MM. Of note, as of December 31st, 2019 we have approximately \$10MM of in-the-money warrants and options expiring in 2020 and 2021 alone. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial tax regimes) which is not reflected as an asset on the balance sheet. Given recent events, and the structuring that took place in 2019, the Company is undeniably well positioned to execute on, and build upon, the backlog of signed contracts which currently stands in excess of \$30MM. With the eagerly anticipated US Navy contract in hand backlog of signed contracts will be in excess of \$40MM. 2020 has the potential to be a barn burner by almost any yardstick.”

2019 was a year in which PyroGenesis posted:

- Backlog of signed contracts as of the date of this writing is \$30.27MM;
 - Revenues of \$4,813,978, a decrease of 4% from \$5,030,116 year over year;
 - Gross margin of 27% an increase of 5% from 22.1% year over year;
 - Increase of \$197,157 in capitalized patents;
 - An Adjusted EBITDA loss of \$4.5MM compared to an adjusted EBITDA loss of \$6.2MM year over year;
 - Cash on hand on December 31, 2019 was \$34K (December 31, 2018: \$645K);
-

Financial Summary

Revenues

PyroGenesis recorded revenues of \$4,813,978 for the year ended December 31, 2019, representing a decrease of 4% compared to \$5,030,116 recorded in 2018.

Revenues recorded in fiscal 2019 were generated primarily from:

- (i) PUREVAP™ related sales of \$525,556 (2018 - \$1,781,009)
- (ii) DROSRITE™ related sales of \$560,916 (2018 - \$1,237,740)
- (iii) support services related to systems supplied to the US Military \$637,841 (2018 - \$1,451,998)
- (iv) torch related sales of \$2,323,351 (2018 - \$Nil)
- (v) other sales and services \$766,314 (2018 - \$559,369)

Cost of Sales and Services and Gross Margins

Cost of sales and services before amortization of intangible assets was \$3,459,753 in 2019, representing a decrease of 9% compared to \$3,860,493 in 2018, primarily due to a decrease in employee compensation, a decrease in subcontracting expenses and a decrease in manufacturing overhead and other.

In 2019, employee compensation, subcontracting, manufacturing overhead and other decreased to \$2,397,743 (2018 - \$2,829,198) while direct materials increased to \$1,303,844 (2018- \$1,125,645). The gross margin for 2019 was \$1,298,092 or 27% of revenue compared to a gross margin of \$1,109,297 or 22.1% of revenue for 2018. As a result of the type of contracts being executed, the nature of the project activity had a significant impact on the gross margin and the overall level of cost of sales and services reported in a period, as well as the composition of the cost of sales and services, as the mix between labor, materials and subcontracts may be significantly different. The cost of sales and services for 2019 and 2018 are in line with management's expectations

Investment tax credits recorded against cost of sales are related to projects that qualify for tax credits from the provincial government of Quebec. Qualifying tax credits increased to \$179,670 in 2019, compared to \$158,948 in 2018. This represents an increase of 13% year-over-year. The Company continues to make investments in research and development projects involving strategic partners and government bodies. In total, the Company earned investment tax credits of \$354,241 in 2019.

The amortization of intangible assets of \$20,133 in 2019 and \$60,326 for 2018 relates to patents and deferred development costs. Of note, these expenses are non-cash items and will be amortized over the duration of the patent lives.

Selling, General and Administrative Expenses

Included within Selling, General and Administrative expenses ("SG&A") are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for 2019 excluding the costs associated with share-based compensation (a non-cash item in which options vest principally over a four-year period), were \$6,017,091, representing an increase of 3% compared to \$5,864,528 reported for 2018.

The increase in SG&A expenses in 2019 over the same period in 2018 is mainly attributable to the net effect of:

- (i) a decrease of 0.1% in employee compensation due to changes in staffing,
- (ii) a decrease of 10% for professional fees, primarily due to a decrease in consulting fees, legal fees and investor relation expenses,
- (iii) a decrease of 42% in office and general expenses, is primarily due to the adoption of IFRS 16 using the modified retrospective method on January 1, 2019. In 2019 rent included in office and general expenses was \$Nil compared to \$278,458 in 2018,
- (iv) travel costs increased by 12%, due to an increase in travel abroad,
- (v) depreciation on property and equipment decreased by 21% due to lower amounts of property and equipment being depreciated. In 2019, depreciation was not taken on the Plasma atomization system (previously asset under development) as it was written off,
- (vi) investment tax credits decreased by 3%, due to a decrease in qualifying projects,
- (vii) government grants increased by 23%, due to a non-refundable government grant contribution for a maximum amount of \$350,000 for the period 2018-2020,
- (viii) other expenses decreased by 25%, primarily due to a decrease in subcontracting and advertising expenses,
- (ix) tax assessment represents the amount due from a taxation audit for the period of 2008 to 2011. The Company paid royalties for the use of intangible property prior to the purchase of the asset. The royalties were subject to a 25% withholding tax that was not deducted or withheld by the Company at that time.

Separately, share based payments decreased by 74% in 2019 over the same period in 2018 as a result of the vesting structure of the stock option plan including the stock options granted in 2019.

Research and Development (“R&D”) Costs

The Company incurred \$851,512 of R&D costs, net of government grants, on internal projects in 2019, a decrease of 5% compared to \$892,045 in 2018. The decrease in 2019 is primarily related to an increase in investment tax credits and government grants recognized.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and Experimental Development (“SR&ED”) tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see “Cost of Sales” above).

Net Finance Costs

Finance costs for 2019 totaled \$1,061,267 as compared with \$1,525,275 for 2018, representing a decrease of 30% year-over-year. The decrease in finance costs in 2019, is primarily attributable to the adjustment in fair value of investments resulting in a gain of \$176,237 compared to a loss in the amount of \$919,463 in 2018, offset by an amount of \$275,183 in 2019 for the interest and penalty amount due related to the tax assessment from a taxation audit for the period of 2008 to 2011 and further to the adoption of IFRS 16, as mentioned above, the finance costs increased by \$258,288 related to the interest calculated on the lease liabilities during the year 2019.

Impairment and Write Offs

In 2019 the Company commenced construction on a new and improved Plasma Powder Production equipment with advanced technological improvements with regards to production output and operating costs. As a result, the existing powder production, Plasma atomization system, was no longer deemed to have any future benefit and was written down by \$1,981,410, to the net recoverable amount of nil. The powders and raw materials inventory related to the old Plasma atomization system were no longer deemed to have any future value and were written down by \$386,121 to their net recoverable amounts of nil.

Net Comprehensive Loss

The net comprehensive loss for 2019 of \$9,171,116 compared to a loss of \$7,845,800, in 2018, represents an increase of 17% year-over-year. The increase of \$1,325,316 in the comprehensive loss in 2019 is primarily attributable to the factors described above, which have been summarized as follows:

- (i) a decrease in product and service-related revenue of \$216,138 arising in 2019,
 - (ii) a decrease in cost of sales and services totaling \$18,811, primarily due to lower subcontract costs, and lower manufacturing overhead as a result of lower revenues in 2019,
 - (iii) a decrease in SG&A expenses of \$348,879 arising in 2019 primarily due a decrease in share-based payments over the same period in 2018 as a result of the vesting structure of the stock option plan including the stock options granted in 2019,
 - (iv) a decrease in R&D expenses of \$40,533 primarily related to an increase in investment tax credits and government grants recognized,
 - (v) a decrease in net finance costs of \$464,008 in 2019 primarily attributable to the adjustment in fair value of investments,
 - (vi) an increase of \$1,981,410 in 2019 due to impairment of a Plasma Atomization 2019. The Company commenced construction on a new and improved Plasma Powder Production equipment,
 - (vii) an increase of \$386,121 in 2019 due to the write off, of powders and raw materials inventory.
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EBITDA

The adoption of IFRS 16 had a favorable impact of \$618,071 on the calculation of EBITDA, Adjusted EBITDA and Modified in EBITDA in 2019 compared 2018. The reconciliation above includes add-backs for depreciation of the right-of-use asset of \$359,783 and finance charges of interest on lease liabilities of \$258,288 in 2019, compared to nil for 2018 as a result of the use of the modified retrospective method used at date of transition.

The EBITDA loss in 2019 was \$7,384,862 compared to an EBITDA loss of \$6,864,461 for 2018, representing an increase of 8% year-over-year. The increase in the EBITDA loss in 2019 compared to 2018 is due to the increase in comprehensive loss of \$1,325,316, offset by a decrease in depreciation on property and equipment of \$43,787, an increase in depreciation on right-of-use assets of \$359,783, a decrease in amortization of intangible assets of \$40,193, and an increase in finance charges of \$529,112.

Adjusted EBITDA loss in 2019 was \$4,567,724 compared to an Adjusted EBITDA loss of \$6,191,212 for 2018. The decrease of \$1,623,488 in the Adjusted EBITDA loss in 2019 is attributable to an increase in EBITDA loss of \$520,401, a decrease of \$501,442 in share-based payments, an increase in tax assessment of \$277,800, an increase in inventory write-off of \$386,121, and an increase in equipment write-off of \$1,981,410.

The Modified EBITDA loss in 2019 was \$4,743,961 compared to a Modified EBITDA loss of \$5,271,749 for 2018, representing a decrease of 10%. The decrease in the Modified EBITDA loss in 2019 is attributable to the decrease as mentioned above in the Adjusted EBITDA of \$1,623,490 and a decrease in change of fair value of investments of \$1,095,700.

Liquidity

The Company has incurred, in the last several years, operating losses and negative cash flows from operations, resulting in an accumulated deficit of \$60,237,656 and a negative working capital of \$10,492,102 as at December 31, 2019 (December 31, 2018 - \$51,066,540 and \$4,101,428 respectively). Furthermore, as at December 31, 2019, the Company's current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$34,431 (December 31, 2018 - \$644,981). The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.

OUTLOOK

Any discussion regarding the OUTLOOK of the company would be remiss if it did not address the recent increase in the Company's market capitalization and the implications that has for the future.

Without a doubt the Company's market capitalization suffered, as did many other companies, in the general Covid-19 market meltdown at the end of March 2020. However, PyroGenesis soon broke from the pack with the issuance of a material press release on March 24th, 2020.

Management believes that its breaking from the ranks caught the attention of investors, fund managers, and money managers who all now had the time during the Covid-19 lockdown to fully analyze the complicated story that is PyroGenesis. Management does not see any reason why this interest would abate anytime soon. To the contrary, Management has reason to believe that interest in the Company will only increase over the foreseeable future. As such, Management has decided that several strategies that have been articulated in the past (up listings, spinoffs) can now be accelerated as some of the impediments to moving quickly have been removed or may be very shortly.

Having a larger market capitalization has also helped in discussions with potential customers who take comfort from the possibility that a higher market capitalization may translate into easier access to capital. For the record, there is no intention at this time to raise capital for working capital purposes.

If 2018 was the year in which PyroGenesis successfully positioned each of its commercial business lines by strategically partnering with multi-billion-dollar entities, and 2019 was the year that saw the appropriate personnel and infrastructure being put in place while building upon the success of 2018, then 2020 is without a doubt the year that the long awaited breakout, which began in the second half of 2019, takes place; it is in fact already upon us:

To date during 2020 PyroGenesis has:

- 1) received significant payments under the multi-million dollar contract with DROSRITE™ International thereby validating announcements made during 2019,
- 2) established a relationship with a US based tunneling company (contracts and payments ongoing),
- 3) Established itself in the iron ore pelletization industry as a potential supplier of torches geared to replacing existing burners and thereby reducing GHGs. Interest is also spilling over into other industries with GHG reduction targets,
- 4) Established a relationship with an OEM in North America with the intent to eventually supply powders for their 3D printing needs. This augments our relationship with Aubert & Duval, while at the same time de-risking our dependence on them,
- 5) retired the \$3MM convertible debenture in full,
- 6) bought back approximately 1.2 Million shares under the existing Normal Course Issuer Bid,
- 7) increased Company's investment in HPQ, who has subsequently also experienced a significant increase in market capitalization,
- 8) further benefited from early conversions of warrants maturing in 2021 of over \$2MM.

The Company has booked a significant backlog of signed contracts (in excess of \$30MM; 2019 Revenues approx. \$5MM) which, when taking the eagerly awaited US Navy contract into account, will increase to over \$40MM. This provides a solid cornerstone upon which PyroGenesis can:

- i. continue to build on the recent successes with the Company's DROSRITE™ offering
-

- ii. leverage off of the recent successes with the Company's torch offerings to (i) the iron ore pelletization industry, and (ii) a tunneling client.
- iii. accelerate activities with Aubert & Duval in the Additive Manufacturing sector as well as HPQ in the Mining and Metallurgical sector, both of which did not progress as fast as management would have liked in 2019. Significant attention will be placed on both these activities in 2020.

Specifically, with Aubert & Duval the goal will be to complete the integration of the cutting-edge advances PyroGenesis has made to the powder production process.

With respect to HPQ, the goal would be to accelerate the game changing *PUREVAPTM* family of processes which we are developing for HPQ, namely:

- The *PUREVAPTM* "Quartz Reduction Reactors" (*QRR*), an innovative process (patent pending), which will permit the one step transformation of quartz (SiO_2) into high purity silicon (Si) at reduced costs, energy input, and carbon footprint that will propagate its considerable renewable energy potential; *and*
- The *PUREVAPTM* Nano Silicon Reactor (*NSiR*), a new proprietary process that use *PUREVAPTM* *QRR* silicon (Si) as feedstock, to make spherical silicon nano powders and nanowires;

Looking forward, the Company has, as of December 31st, 2019, approximately \$10MM of in-the-money warrants and options expiring in 2020 and 2021. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial obligations) which is not reflected as an asset on the balance sheet.

All in all, 2020 is shaping up to be the year that we have been expecting for some time.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcm Markets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>

PyroGenesis Canada Inc.
Financial Statements
December 31, 2019 and 2018

PyroGenesis Canada Inc.

December 31, 2019 and 2018

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Management's Responsibility

Management is responsible for the preparation and presentation of the accompanying financial statements, including responsibility for significant accounting judgments and estimates in accordance with International Financial Reporting Standards. This responsibility includes selecting appropriate accounting principles and methods, and making decisions affecting the measurement of transactions in which objective judgment is required.

The Board of Directors and Audit Committee are composed primarily of Directors who are neither management nor employees of the Company. The Board of Directors is responsible for overseeing management in the performance of its financial reporting responsibilities, and for approving the financial information included in the annual report. The Board fulfils these responsibilities by reviewing the financial information prepared by management and discussing relevant matters with management and the external auditor. The Audit Committee has the responsibility of meeting with management and the external auditors to discuss the internal controls over the financial reporting process, auditing matters and financial reporting issues. The Audit Committee is also responsible for recommending the appointment of the Company's external auditor.

KPMG LLP, an independent firm of Chartered Professional Accountants, is appointed by the shareholders to audit the financial statements and report directly to them; their report follows. The external auditor has full and free access to, and meets periodically and separately with, both the Audit Committee and management to discuss their audit findings.

June 15, 2020

[Signed by P. Peter Pascali]

[Signed by Michael Blank]

P. Peter Pascali, Chief Executive Officer

Michael Blank, Interim Chief Financial Officer



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INDEPENDENT AUDITORS' REPORT

To the Shareholders of PyroGenesis Canada Inc.

Opinion

We have audited the financial statements of PyroGenesis Canada Inc. (the "Entity"), which comprise:

- the statements of financial position as at December 31, 2019 and December 31, 2018
- the statements of comprehensive loss for the years then ended
- the statements of changes in shareholders' (deficiency) equity for the years then ended
- the statements of cash flows for the years then ended
- and notes to the financial statements, including a summary of significant accounting policies (Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Entity as at December 31, 2019 and December 31, 2018, and its financial performance and its cash flows for the years then ended in accordance with International Financial Reporting Standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "*Auditors' Responsibilities for the Audit of the Financial Statements*" section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Material Uncertainty Related to Going Concern

We draw attention to Note 1(b) in the financial statements, which indicates that the Entity has incurred operating losses and negative cash flows from operations, has an accumulated deficit, and that its operations are dependent on obtaining additional financing.

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. KPMG Canada provides services to KPMG LLP.



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As stated in Note 1(b) in the financial statements, these events or conditions, along with other matters as set forth in Note 1(b) in the financial statements, indicate that a material uncertainty exists that may cast significant doubt on the Entity's ability to continue as a going concern.

Our opinion is not modified in respect of this matter.

Emphasis of Matter - Prospective Change in Accounting Policy

We draw attention to Note 3(a) to the financial statements, which indicates that the Entity has changed its accounting policy for leases as of January 1, 2019, due to the adoption of IFRS 16 - *Leases* using a modified retrospective approach.

Our opinion is not modified in respect of this matter.

Other Information

Management is responsible for the other information. Other information consists of the information included in Management's Discussion and Analysis filed with the relevant Canadian Securities Commissions.

Our opinion on the financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit and remain alert for indications that the other information appears to be materially misstated.

We obtained the information included in Management's Discussion and Analysis filed with the relevant Canadian Securities Commissions as at the date of this auditors' report. If, based on the work we have performed on this other information, we conclude that there is a material misstatement of this other information, we are required to report that fact in the auditors' report.

We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.



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Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
 - Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
 - Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
 - Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
 - Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.
-



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- Provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

*KPMG LLP**

The engagement partner on the audit resulting in this auditors' report is Nathalie Labelle.

Montréal, Canada

June 15, 2020

*CPA auditor, CA, public accountancy permit No. A119245

PyroGenesis Canada Inc.

Statements of Financial Position

| | December 31, 2019 | December 31, 2018 |
|--|----------------------|----------------------|
| | \$ | \$ |
| Assets | | |
| <i>Current assets</i> | | |
| Cash | 34,431 | 644,981 |
| Accounts receivable [note 7] | 210,540 | 631,152 |
| Costs and profits in excess of billings on uncompleted contracts [note 8] | 122,980 | 307,832 |
| Investment tax credits receivable [note 16] | 709,395 | 633,348 |
| Deposits | 150,322 | 584,646 |
| Prepaid expenses | 96,886 | 66,321 |
| Total current assets | 1,324,554 | 2,868,280 |
| <i>Non-current assets</i> | | |
| Inventories [note 9] | 10,068 | 382,832 |
| Deposits and investments [note 10] | 1,787,459 | 1,745,607 |
| Property and equipment [note 11] | 1,977,481 | 3,202,882 |
| Right-of-use assets [note 12] | 3,742,769 | - |
| Intangible assets [note 13] | 736,898 | 559,874 |
| Total assets | 9,579,229 | 8,759,475 |
| Liabilities | | |
| <i>Current liabilities</i> | | |
| Accounts payable and accrued liabilities [note 14] | 4,913,155 | 2,357,607 |
| Billings in excess of costs and profits on uncompleted contracts [note 15] | 3,084,657 | 4,352,410 |
| Term loans [note 16] | 496,000 | 247,200 |
| Current portion of long-term debt [note 17] | 284,956 | 12,491 |
| Current portion of lease liabilities [note 12] | 139,529 | - |
| Convertible debentures [note 18] | 2,898,358 | - |
| Total current liabilities | 11,816,655 | 6,969,708 |
| <i>Non-current liabilities</i> | | |
| Long-term debt [note 17] | - | 268,576 |
| Lease liabilities [note 12] | 3,845,497 | - |
| Convertible debentures [note 18] | - | 2,527,241 |
| Total liabilities | 15,662,152 | 9,765,525 |
| Shareholders' deficiency [note 19] | | |
| Common shares and warrants | 47,073,243 | 42,863,456 |
| Contributed surplus | 6,679,730 | 6,795,274 |
| Equity portion of convertible debentures [note 18] | 401,760 | 401,760 |
| Deficit | (60,237,656) | (51,066,540) |
| Total shareholders' deficiency | (6,082,923) | (1,006,050) |
| Total liabilities and shareholders' deficiency | 9,579,229 | 8,759,475 |

Going concern disclosure, related party transactions, contingent liabilities, subsequent events [notes 1(b), 23, 25, and 29]. The accompanying notes form an integral part of the financial statements. *Approved on behalf of the Board:*

[Signed by P. Peter Pascali] P. Peter Pascali

[Signed by Michael Blank] Michael Blank

PyroGenesis Canada Inc.

Statements of Comprehensive Loss

Years ended December 31,

| | 2019 | 2018 |
|--|---------------------------|---------------------------|
| | \$ | \$ |
| Revenues <i>[note 6]</i> | 4,813,978 | 5,030,116 |
| Cost of sales and services <i>[note 21]</i> | <u>3,515,886</u> | <u>3,920,819</u> |
| | 1,298,092 | 1,109,297 |
| Expenses | | |
| Selling, general and administrative <i>[note 21]</i> | 6,188,898 | 6,537,777 |
| Research and development | 851,512 | 892,045 |
| Net finance costs <i>[note 22]</i> | 1,061,267 | 1,525,275 |
| Impairment of plasma atomization system <i>[note 11]</i> | 1,981,410 | - |
| Write-off of inventories <i>[note 9]</i> | <u>386,121</u> | <u>-</u> |
| | 10,469,208 | 8,955,097 |
| Net loss and comprehensive loss | <u>(9,171,116)</u> | <u>(7,845,800)</u> |
| Basic and diluted loss per share | (0.07) | (0.06) |
| Weighted average number of common shares - basic and diluted | <u>137,382,323</u> | <u>122,986,656</u> |

The accompanying notes form an integral part of the financial statements.

PyroGenesis Canada Inc.

Statements of Changes in Shareholders' (Deficiency) Equity

| | Number of Class A common shares | Class A common shares and warrants \$ | Contributed Surplus \$ | Equity portion of convertible debentures \$ | Deficit \$ | Total \$ |
|---|------------------------------------|--|------------------------------|--|---------------------|--------------------|
| Balance - December 31, 2018 | 133,501,051 | 42,863,456 | 6,795,274 | 401,760 | (51,066,540) | (1,006,050) |
| Private placements [note 19] | 6,418,400 | 3,722,472 | - | - | - | 3,722,472 |
| Share issue expenses [note 19] | - | (106,395) | - | - | - | (106,395) |
| Shares issued upon exercise of stock options [note 19] | 1,384,000 | 593,710 | (287,350) | - | - | 306,360 |
| Share-based payments | - | - | 171,806 | - | - | 171,806 |
| Net loss and comprehensive loss | - | - | - | - | (9,171,116) | (9,171,116) |
| Balance – December 31, 2019 | <u>141,303,451</u> | <u>47,073,243</u> | <u>6,679,730</u> | <u>401,760</u> | <u>(60,237,656)</u> | <u>(6,082,923)</u> |
| Balance - December 31, 2017 | 112,698,081 | 30,336,865 | 6,147,638 | 572,582 | (43,200,708) | (6,143,623) |
| Adoption of new accounting policy | | | | | (20,032) | (20,032) |
| Adjusted balance, January 1, 2018 | 112,698,081 | 30,336,865 | 6,147,638 | 572,582 | (43,220,740) | (6,163,655) |
| Private placements | 10,805,423 | 6,654,917 | - | - | - | 6,654,917 |
| Share issue expenses [note 19] | - | (290,804) | - | - | - | (290,804) |
| Shares issued in settlement of long-term debt | 5,285,714 | 3,327,571 | - | - | - | 3,327,571 |
| Shares issued in settlement of accounts payable | 1,112,000 | 644,960 | - | - | - | 644,960 |
| Shares issued in settlement of convertible debentures | 1,258,333 | 755,000 | - | - | - | 755,000 |
| Shares issued upon exercise of warrants | 1,797,500 | 629,125 | - | - | - | 629,125 |
| Shares issued upon exercise of stock options | 544,000 | 233,240 | (93,920) | - | - | 139,320 |
| Share-based payments | - | - | 673,249 | - | - | 673,249 |
| Equity of convertible debentures reimbursed | - | 572,582 | - | (572,582) | - | - |
| Issuance of convertible debentures | - | - | - | 401,760 | - | 401,760 |
| Below market element of short term and promissory notes | - | - | 68,307 | - | - | 68,307 |
| Net loss and comprehensive loss | - | - | - | - | (7,845,800) | (7,845,800) |
| Balance – December 31, 2018 | <u>133,501,051</u> | <u>42,863,456</u> | <u>6,795,274</u> | <u>401,760</u> | <u>(51,066,540)</u> | <u>(1,006,050)</u> |

The accompanying notes form an integral part of the financial statements.

PyroGenesis Canada Inc.

Statements of Cash Flows

For the years ended December 31, 2019 and 2018

| Years ended December 31, | 2019 | 2018 |
|--|---------------|----------------|
| | \$ | \$ |
| Cash flows provided by (used in) | | |
| Operating activities | | |
| Net loss | (9,171,116) | (7,845,800) |
| Adjustments for: | | |
| Share-based payments | 171,807 | 673,249 |
| Depreciation on property and equipment [note 11] | 168,835 | 212,621 |
| Depreciation of right-of-use assets [note 12] | 359,783 | - |
| Amortization of intangibles assets [note 13] | 20,133 | 60,326 |
| Finance costs | 1,237,502 | 708,391 |
| Change in fair value of investments | (176,237) | 919,463 |
| Dividend in kind | - | (102,579) |
| Impairment of property and equipment included in cost of sales and services [note 12] | 1,981,410 | - |
| Write-off of inventory | 386,121 | - |
| Other | - | (20,032) |
| | (5,021,762) | (5,394,361) |
| Net change in non-cash operating working capital items [note 20] | 1,849,567 | 2,439,731 |
| | (3,172,195) | (2,954,630) |
| Investing activities | | |
| Additions to inventories | (13,357) | (259,097) |
| Purchase of property and equipment [note 11] | (822,953) | (1,138,541) |
| Additions to intangible assets [note 13] | (165,673) | (316,345) |
| Purchase of investments [note 10] | - | (1,950,000) |
| Disposal of investments [note 10] | 261,000 | - |
| Variation of deposits | (126,615) | - |
| | (867,598) | (3,663,983) |
| Financing activities | | |
| Interest paid | (572,860) | (323,358) |
| Repayment of term loans [note 16] | - | (2,450,000) |
| Repayment of SR&ED and term loans [note 16] | (247,200) | (290,200) |
| Repayment of lease liabilities [note 12] | (131,321) | - |
| Repayment of capital lease obligations [note 17] | - | (12,550) |
| Repayment of convertible debentures [note 18] | - | (3,245,000) |
| Proceeds from issuance of shares upon exercise of warrants [note 19] | - | 629,125 |
| Proceeds from issuance of shares upon exercise of stock options [note 19] | 306,360 | 139,320 |
| Proceeds from issuance of other term loans, net of financing costs [note 16] | 458,187 | 3,145,000 |
| Proceeds from issuance of shares [note 19] | 3,722,472 | 6,654,917 |
| Share issue costs [note 19] | (106,395) | (290,804) |
| Net proceeds from issuance of convertible debentures [note 18] | - | 2,684,298 |
| | 3,429,243 | 6,640,748 |
| Net (decrease) increase in cash | (610,550) | 22,135 |
| Cash - beginning of year | 644,981 | 622,846 |
| Cash - end of year | <u>34,431</u> | <u>644,981</u> |

PyroGenesis Canada Inc.**Statements of Cash Flows**

For the years ended December 31, 2019 and 2018

Supplemental cash flow disclosure**Non-cash transactions:**

| | | |
|--|-----------|-----------|
| Purchase of property and equipment under finance lease obligations | - | 25,542 |
| Purchase of intangible assets included in accounts payable | 31,484 | - |
| Purchase of property and equipment included in accounts payable | 166,638 | 7,485 |
| Interest included in accounts payables | 259,447 | - |
| Cost reduction of property and equipment included in investment tax credits receivable | 80,146 | - |
| Issuance of common shares in settlement of convertible debentures | - | 755,000 |
| Issuance of common shares in settlement of accounts payable | - | 244,960 |
| Issuance of common shares in settlement of (IP debt) included in loans | - | 111,928 |
| Issuance of common shares in settlement of (IP debt) included in accounts payable | - | 3,215,643 |
| Issuance of common shares in settlement of short-term loans | - | 400,000 |
| Below market element of promissory notes | - | 58,607 |
| Interest accretion on short-term loans to contributed surplus | - | 9,700 |
| Other equity reclassified in contributed surplus | - | 120,865 |
| Equity component of convertible debenture | - | 401,760 |
| Equity component of convertible debenture reimbursed in contributed surplus | - | 572,582 |
| Non-derivative financial liability component of convertible loans | 12,800 | - |
| Initial recognition of lease liabilities and right-of-use assets [note 12]: | | |
| Right-of-use assets | 4,102,552 | - |
| Lease liabilities | 4,116,347 | - |
| Accounts payable and deferred leases reclassified in right-of-use assets | 11,333 | - |
| Computer equipment reclassified in right-of-use assets | 29,266 | - |
| Capital lease obligations reclassified in lease liabilities | 31,728 | - |

The accompanying notes form an integral part of the financial statements

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

1. Nature of operations and going concern disclosure

(a) Nature of operations

PyroGenesis Canada Inc. (the “Company”), incorporated under the laws of the *Canada Business Corporations Act*, was formed on July 11, 2011. The Company owns patents of advanced waste treatment systems technology and designs, develops, manufactures and commercialises advanced plasma processes and systems. The Company is domiciled at 1744 William Street, Suite 200, Montreal, Quebec. The Company is publicly traded on the TSX Venture Exchange under the Symbol “PYR” on the OTCQB in the USA under the symbol “PYRNF” and on the Frankfurt Stock Exchange (FSX) under the symbol “8PY”.

(b) Going concern

These financial statements have been prepared on the going concern basis, which presumes that the Company will be able to realize its assets and discharge its liabilities in the normal course of business for the foreseeable future.

The Company is subject to a number of risks and uncertainty associated with the successful development of its products and with the financing requirements of its operations. The achievement of profitable operations is dependent upon future events, including successful development and introduction of new products to its family of products and obtaining adequate financing.

The Company has incurred, in the last several years, operating losses and negative cash flow from operations, resulting in an accumulated deficit of \$60,237,656 as at December 31, 2019. Furthermore, as at December 31, 2019, the Company’s current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$34,431. The Company currently has no committed sources of financing available. The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.

The Company’s business plan is dependent upon the successful completion and the receipt of payments from contracts completed and to be completed within the next twelve months, the attainment of profitable operations, and upon raising additional funds to finance operations within and beyond the next twelve months. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company’s control, and as such there is no assurance that it will be able to do so in the future. If the Company is unable to obtain sufficient additional financing, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations.

These conditions indicate the existence of a material uncertainty that may cast significant doubt about the Company’s ability to continue operating as a going concern and realize its assets and settle its liabilities and commitments in the normal course of business.

The financial statements have been prepared on a going concern basis and do not include any adjustments to the amounts and classifications of the assets and liabilities that might be necessary should the Company be unable to achieve its plan and continue in business. If the going concern assumption were not appropriate for these financial statements then adjustments would be necessary to the carrying value of assets and liabilities, the reported expenses and the statements of financial position classifications used. Such adjustments could be material.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

2. Basis of preparation

(a) Statement of compliance

These financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRS”) as issued by the International Accounting Standards Board (“IASB”). These financial statements were approved and authorized for issuance by the Board of Directors on June 15, 2020.

(b) Functional and presentation currency

These financial statements are presented in Canadian dollars, which is the Company’s functional currency.

(c) Basis of measurement

These financial statements have been prepared on the historical cost basis except for the investments which are accounted for at fair value.

3. Changes in significant accounting policies

On January 1, 2019, the Company adopted the following new or amended IFRS standards and Interpretations of IFRS (“Interpretations”):

a) IFRS 16 - *Leases*

In January 2016, the IASB released IFRS 16, *Leases*, which replaced the previous leases standard, IAS 17, *Leases*, and related interpretations. IFRS 16 sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract, the customer (lessee) and the supplier (lessor). IFRS 16 eliminates the classification of leases as either operating leases or finance leases, introduces a single lessee accounting model and requires a lessee to recognize assets and liabilities for all leases with a term of more than 12 months, unless the underlying asset is of low value.

The Company has adopted IFRS 16 using the modified retrospective method of adoption, with the effect of initially applying this standard recognized at the date of initial application, i.e. January 1, 2019. Accordingly, the cumulative effect of initially applying IFRS 16, if any, has been recognized as an adjustment to the opening balance of retained earnings as at January 1, 2019 and the comparative information presented for 2018 has not been restated, i.e. it is presented, as previously reported, under IAS 17 and related interpretations.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

3. Changes in significant accounting policies (continued)

i. Transition options and practical expedients

The Company has elected to apply the following transition options and practical expedients available under IFRS 16:

- Lease definition: to grandfather the assessment of which transactions are leases on the date of initial application. Accordingly, the Company applied IFRS 16 only to contracts that were previously identified as leases under IAS 17, *Leases*, and IFRIC 4, *Determining whether an Arrangement contains a Lease*, and applied the definition of leases under IFRS 16 only to contracts entered on or after the date of initial application;
- Impairment and onerous leases: to rely on the Company's previous assessment of whether leases are onerous in accordance with IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*, immediately before the date of initial application as an alternative to performing an impairment review;
- Initial direct costs: to exclude initial direct costs from the measurement of the right-of-use asset at the date of initial application;
- Use of hindsight: to use hindsight, for example, in determining the lease term of contracts that contain options to extend or terminate the lease on the date of initial application;

In addition, the Company elected not to apply the new lease accounting model to a lease ending within 12 months of the date of initial application.

ii. Impact of adopting IFRS 16

The most significant impact of adopting IFRS 16 related to the accounting for the Company's operating leases, as the nature of expenses recognized to most of the Company's leases changed IFRS 16 replaced the straight-line operating lease expense recognized under the prior standard with a depreciation charge for right-of-use assets and interest expense on lease liabilities.

Under IAS 17, the Company classified each of its leases at the inception date as either a finance lease or an operating lease, based on the extent to which risks and rewards of ownership were transferred to the Company. Lease payments related to the Company's operating leases were recognized as rent expense in the income statements on a straight-line basis over the lease term and presented as part of cash flows from operating activities in the statements of cash flows. Any deferred rent was recognized under Accounts payable and accrued liabilities in the statements of financial position.

Upon adoption of IFRS 16, the Company recognized lease liabilities and right-of-use assets for leases that were classified as operating leases under IAS 17. Lease liabilities were measured at the present value of the remaining lease payments, discounted at the Company's incremental borrowing rate as at January 1, 2019. Right-of-use assets were measured at an amount equal to the lease liability, adjusted by the amount of any accrued lease payments.

The carrying amount of the lease assets and lease liabilities that were classified as finance leases and measured applying IAS 17 immediately before the date of initial application were reclassified to the right-of-use assets and the lease liabilities at the date of initial application.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

3. Changes in significant accounting policies (continued)

iii. Reconciliation of operating lease commitments to lease liabilities recognized

When measuring lease liabilities, the Company discounted lease payments using its incremental borrowing rate as at January 1, 2019. The weighted average incremental borrowing rate applied as at January 1, 2019 was 6.60%.

The lease liabilities as at January 1, 2019 can be reconciled to the operating lease commitments as at December 31, 2018 as follows:

| | \$ |
|---|------------------|
| Operating lease commitments as at December 31, 2018 | 1,694,410 |
| Lease payments due in periods covered by extension options that are included in the lease term and not previously included in the operating lease commitments | 1,067,012 |
| Purchase options reasonably certain to be exercised that are included in the lease term and not previously included in the operating lease commitments | 2,750,000 |
| Recognition exemption for leases with less than 12 months of lease term at transition | (7,869) |
| Variable operating expenses included in the operating lease commitment as at January 1, 2019 not included in the calculation of the lease liabilities under IFRS 16 | (424,440) |
| Additional lease liabilities as a result of the initial application of IFRS 16 as at January 1, 2019 | 5,079,113 |
| Accretion using the incremental borrowing interest rate as at January 1, 2019 | (994,494) |
| Discounted using the incremental borrowing rate as at January 1, 2019 | 4,084,619 |
| Obligation under finance leases reclassified as lease liabilities as at January 1, 2019 | 31,728 |
| Lease liabilities as at January 1, 2019 | <u>4,116,347</u> |

The Company has recognised \$4,102,552 of right-of-use assets and \$4,116,347 of lease liabilities upon transition to IFRS 16. The difference of \$11,333 represents deferred rent included in accounts payable reclassified against the right-of-use assets at the date of transition. The net book value of the computer equipment under finance lease in the amount of \$29,266 and the related liabilities of \$31,728 were reclassified in the right-of-use assets and the lease liabilities respectively.

b) Annual Improvements to IFRS Standards 2015–2017 Cycle

In December 2017, the IASB published Annual Improvements to IFRS Standards 2015–2017 Cycle, which includes amendments to the following:

- Income tax consequences under IAS 12, *Income Taxes*, of payments on financial instruments classified as equity.
- Borrowing costs eligible for capitalization under IAS 23, *Borrowing Costs*.

The Company adopted these amendments in its financial statements beginning on January 1, 2019. The adoption of these amendments did not have a material impact on the Company's financial statements.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies

Except for the changes in significant accounting policies described above in Note 3, the accounting policies set out below have been applied consistently in the preparation of the financial statements of all years presented and have been applied consistently by the Company. Certain comparative information in the statements of financial position and statements of changes in shareholders' (deficiency) equity have been reclassified to conform with the financial statement presentation adopted in the current year.

(a) Revenue recognition

Revenue from contracts is recognized for each performance obligation either over a period of time or at a point in time, depending on which method reflects the transfer of control of the goods and services underlying the particular performance obligation.

i) Long-term contracts

Long-term contracts involve made-to-order customized equipment and machines and are generally priced on a fixed fee basis. Under these contracts, the equipment or machines are made to a customer's specifications and if a contract is terminated by the customer, the Company is entitled to the greater of the amounts invoiced at the termination date and the reimbursement of the costs incurred to date of termination, including a reasonable margin.

Revenue relating to long-term contracts is recognised over time based on the measure of progress determined by the Company's efforts or inputs towards satisfying the performance obligation relative to the total expected inputs. The degree of completion is assessed based on the proportion of total costs and/or hours incurred to date, compared to total costs and/or hours anticipated to provide the service under the entire contract, excluding the effects of inputs that do not depict performance, e.g. uninstalled materials. For long-term contracts with uninstalled materials, the Company adjusts the transaction price and recognises revenue on uninstalled materials to the extent of those costs incurred, i.e. at a zero percent profit margin, when certain conditions are met.

Estimates are required to determine anticipated costs and/or hours on long-term contracts. A provision is made for the entire amount of expected loss, if any, in the period in which they are first determinable.

Contract modifications are changes in scope and/or price that are approved by the parties to the contract. Approval may be written, oral or implied by customary business practices, and are legally enforceable. The Company accounts for modifications as a separate contract if the modifications add distinct goods or services that are priced commensurate with stand-alone selling prices or if the remaining goods or services are distinct from those already transferred, otherwise modifications are accounted for as part of the original contract.

Costs and profits in excess of billings on uncompleted contracts and trade receivables are both rights to consideration in exchange for goods or services that

Costs and profits in excess of billings on uncompleted contracts and trade receivables are both rights to consideration in exchange for goods or services that the Company has transferred to a customer, however the classification depends on whether such right is only conditional on the passage of time (trade receivables) or if it is also conditional on something else (costs and profits in excess of billings on uncompleted contracts), such as the satisfaction of further performance obligations under the contract. Billing in excess of costs and profits on uncompleted contracts is the cumulative amount received and contractually receivable by the Company that exceeds the right to consideration resulting from the Company's performance under a given contract.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

ii) Sales of goods

Revenue related to sales of goods, which may include powders and spare parts are measured based on the consideration specified in contracts with customers. The Company recognizes revenue at a point in time when it transfers control of the goods to the buyer. This is generally at the time the customer obtains legal title to the product and when it is physically transferred to the custody transfer point agreed with the customer.

(b) Foreign currency translation

Foreign currency balances are translated at year-end exchange rates for monetary items and at historical rates for non-monetary items. Revenues and expenses are translated using average exchange rates prevailing at the time of the transaction. Translation gains or losses are included in the determination of comprehensive loss.

(c) Inventories

Inventories are composed of raw materials and finished goods. Inventories are valued at the lower of cost and net realizable value. The cost of inventories is based on the first-in, first-out principle. Cost comprises all costs of purchases and costs directly related to the conversion of raw materials to finished goods. Net realizable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and selling costs. Inventory held for sale pending receipt of export permits is classified as non-current assets.

(d) Deferred taxes

i) Current tax

Current tax assets and liabilities for the current and prior years are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted by the statements of financial position date.

ii) Deferred tax

Deferred tax is provided using the liability method, providing for temporary differences between the tax bases of assets and liabilities and their carrying amounts in the financial statements. The temporary difference is not provided for if it arises from the initial recognition of goodwill or the initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss. The amount of deferred tax provided is based on the expected manner of realization or settlement of the carrying amount of assets and liabilities, using tax rates enacted or substantively enacted at the financial position reporting date and whose implementation is expected over the period in which the deferred tax is realized or recovered. A deferred tax asset is recognized only to the extent that it is probable that future taxable profits will be available against which the asset can be used.

Deferred tax assets and liabilities are presented as non-current. Assets and liabilities are offset where the entity has a legally enforceable right to offset current tax assets and liabilities or deferred tax assets and liabilities, and the respective assets and liabilities relate to income taxes levied by the same taxation authority on the same taxable entity or different taxable entities which intend to settle the liabilities and assets on a net basis.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

(e) Loss per share

The Company presents basic loss per share data for its common shares. Basic loss per share is computed by dividing net loss by the weighted average number of common shares outstanding during the year. Diluted loss per share is computed similarly to basic earnings per share, except that the weighted average number of shares outstanding is increased to include shares from the assumed exercise of stock options and share purchase warrants, if dilutive. The number of additional shares is calculated by assuming that outstanding share options and warrants were exercised and that the proceeds from such exercises were used to acquire common shares at the average market price during the year. For the years ended December 31, 2019 and 2018, potential shares from all outstanding stock options, share purchase warrants and convertible debentures have been excluded from the calculation of diluted loss per share as their inclusion is considered anti-dilutive in periods when a loss is incurred.

(f) Property and equipment

Property and equipment are measured at cost less accumulated depreciation and accumulated impairment losses if applicable. Cost includes expenditures that are directly attributable to the acquisition of the asset and bringing the asset into operation. Borrowing costs capitalized to asset under development represents the interest expense calculated under the effective interest method and does not include any fair value adjustments of investments designated at fair value through profit and loss. Investment tax credits related to the purchase or development of property and equipment are recorded in reduction of the cost. When major parts of an item of property and equipment have different useful lives, they are accounted for separately. Property and equipment are depreciated from the acquisition date over their respective useful life. Depreciation of an asset under construction begins when it is available for use, i.e. when it is in the location and condition necessary for it to be capable of operating in the manner intended by the Company.

Depreciation is calculated using the following methods and rates:

| | |
|---------------------------|---|
| Computer equipment | Straight line over 2 years |
| Machinery and equipment | Straight line over 5 years |
| Automobile | Straight line over 3 years |
| Leasehold improvements | The lesser of the term of the lease or the useful life (20 years) |
| Plasma Atomization System | Straight line over 20 years |

Impairment – non-financial assets

The carrying amounts of the Company's non-financial assets are assessed at each reporting date to determine whether there is an indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated.

Impairment losses recognized in prior periods are assessed at each reporting date as to whether there are any indications that the previously recognized losses may no longer exist or may be decreased. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognized for the asset in prior years.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

Depreciation methods, useful lives and residual values are reviewed at each financial year-end and adjusted prospectively if appropriate.

(g) Leases

The Company did not restate prior year comparative information under the modified retrospective approach upon the implementation of IFRS 16. Therefore, the comparative information continues to be reported under applicable accounting policies under International Accounting Standard (“IAS”) 17, “Leases” (“IAS 17”) and related interpretations.

For prior years, payments made under operating leases were recognized in net earnings on a straight-line basis over the term of the lease. Minimum lease payments made under finance leases were apportioned between the finance expense and the reduction of the outstanding liability. The finance expense was allocated to each year during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability.

Under IFRS 16, at inception, the Company assesses whether a contract is, or contains, a lease based on whether the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

The Company recognizes a right-of-use asset and a lease liability at the commencement date of the lease, i.e. the date the underlying asset is available for use.

Right-of-use assets

Right-of-use assets are measured at cost, less any accumulated depreciation and accumulated impairment losses, and adjusted for any remeasurement of lease liabilities. Cost of right-of-use assets is comprised of:

- the initial measurement amount of the lease liabilities recognized.
- any lease payments made at or before the commencement date, less any lease incentives received;
- any initial direct costs incurred; and
- an estimate of costs to dismantle and remove the underlying asset, restore the site on which it is located or restore the underlying asset to the condition required by the terms and conditions of the lease contract.

Right-of-use assets are depreciated over the shorter period of lease term and useful life of the underlying asset. If a lease transfers ownership of the underlying asset or the cost of the right-of-use asset reflects that the Company expects to exercise a purchase option, the related right-of-use asset is depreciated over the useful life of the underlying asset based on periods detailed above. The depreciation starts at the commencement date of the lease. Right-of-use assets are assessed for impairment whenever there is an indication that the right-of-use assets may be impaired.

4. Significant accounting policies (continued)

Lease liabilities

Lease liabilities are initially measured at the present value of the lease payments that are not paid at the commencement date over the lease term. The present value of the lease payments is determined using the lessee's incremental borrowing rate at the commencement date if the interest rate implicit in the lease is not readily determinable. The incremental borrowing rate is a function of the lessee's incremental borrowing rate, the nature of the underlying asset, the location of the asset, the length of the lease and the currency of the lease contract. Generally, the Company uses the lessee's incremental borrowing rate for the present value. At the commencement date, lease payments generally include fixed payments, less any lease incentives receivable, variable lease payments that depend on an index (e.g. based on inflation index) or a specified rate, and payments of penalties for terminating the lease, if the lease term reflects the lessee exercising the option to terminate the lease. Lease payments also include amounts expected to be paid under residual value guarantees and the exercise price of a purchase option if the Company is reasonably certain to exercise that option.

Variable lease payments that do not depend on an index or a specified rate are not included in the measurement of lease liabilities but instead are recognized as expenses in the period in which the event or condition that triggers the payment occurs.

After the commencement date, the carrying amount of lease liabilities is increased to reflect the accretion of interest and reduced to reflect lease payments made. In addition, the carrying amount of lease liabilities is remeasured when there is a change in future lease payments arising from a change in an index or specified rate, if there is a modification to the lease terms and conditions, a change in the estimate of the amount expected to be payable under residual value guarantee, or if the Company changes its assessment of whether it will exercise a termination, extension or purchase option. The remeasurement amount of the lease liabilities is recognized as an adjustment to the right-of-use asset, or in the profit and loss statement when the carrying amount of the right-of-use asset is reduced to zero.

Classification and presentation of lease-related expenses

Depreciation charge for right-of-use assets, expenses related to variable lease payments not included in the measurement of lease liabilities and loss (gain) related to lease modifications are allocated in the Company's profit and loss statement based on their function within the Company, while interest expense on lease liabilities is presented within finance costs.

Cash flow classification

Lease payments related to the principal portion of the lease liabilities are classified as cash flows from financing activities while lease payments related to the interest portion of the lease liabilities are classified as interest paid within cash flows from financing activities. Lease incentives received are classified as cash flows from investing activities. Variable lease payments not included in the measurement of lease liabilities are classified as cash flows from operating activities.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

(h) Government assistance and investment tax credits

Investment tax credits are comprised of scientific research and experimental development tax credits. Government assistance and investment tax credits are recognized when there is reasonable assurance of their recovery and recorded as a reduction of the related expense or cost of the asset acquired, as applicable. Investment tax credits are subject to the customary approvals by the pertinent tax authorities. Adjustments required, if any, are reflected in the year when such assessments are received.

(i) Intangible assets

Acquired intangible assets are measured at cost on initial recognition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and any accumulated impairment losses.

Intangible assets with finite lives are amortized over the useful life of the asset and assessed for impairment whenever there is an indication of impairment. Amortization expense on the intangible assets with finite lives is recognized in the statements of comprehensive loss.

Research costs are charged to comprehensive loss in the year they are incurred, net of related investment tax credits. Development costs are charged to comprehensive loss in the year they are incurred net of related investment tax credits unless they meet specific criteria related to technical, market and financial feasibility in order to be recognized as intangible assets which include:

- the technical feasibility of completing the intangible asset so that it will be available for use or sale;
- the Company has the intention to complete and the ability to use or sell the asset;
- the asset will generate future economic benefits;
- the Company has the resources to complete the asset; and
- ability to measure reliably the expenditure during development.

Costs to establish patents for internally developed technology are considered development costs and are charged to comprehensive loss in the year they are incurred unless they meet specific criteria related to technical, market and financial feasibility. Patent costs include legal and other advisor fees to obtain patents, and patent application fees.

Amortization of the development costs is calculated on a straight-line basis over the remaining useful life of the related patent and begins when development is complete. During the period of development, the asset is tested annually for impairment.

The recoverable amount of an asset or cash-generating unit (CGU) is the greater of its value in use and its fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. Assets that cannot be tested individually are grouped into the smallest independent group of assets that generate cash inflows from continuing use. For the purposes of testing non-financial assets for impairment, management has identified one CGU.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

An impairment loss is recognized if the carrying amount of an asset or its CGU exceeds its recoverable amount. Impairment losses are recognized in the statement of comprehensive loss. Impairment losses recognized in respect of the CGU are allocated first to reduce the carrying amount of goodwill allocated to the units, and then to reduce the carrying amounts on a pro-rata basis of the other assets in the unit.

Amortization is calculated on a straight-line basis:

| | <u>Useful life</u> |
|--------------------------------------|----------------------|
| Licenses | 5 to 10 years |
| Patents and Development costs | 1 to 21 years |

(j) Employee benefits

Share-based payments

The Company applies a fair value-based method of accounting to all share-based payments. Employee and director stock options are measured at their fair value of each tranche on the grant date and recognized in its respective vesting period. Non-employee stock options are measured when the services are rendered by the consultant at the fair value of the services received, if the fair value can be measured reliably. In the case the fair value of the services cannot be measured reliably, the services are measured indirectly using the fair value of the equity instruments granted. If there are unidentifiable services, then they are measured at grant date. The cost of stock options is presented as share-based payment expense. On the exercise of stock options, share capital is credited for the consideration received and for the fair value amounts previously credited to contributed surplus. The Company uses the Black-Scholes option-pricing model to estimate the fair value of share-based payments.

Deferred profit-sharing plan

The Company established a yearly Deferred Profit-Sharing Plan (“DPSP”) for all eligible employees who have materially and significantly contributed to the prosperity and profits of the Company. The significance of any contribution of any employee to the prosperity and profits of the Company for purposes of eligibility in the DPSP is determined by the Board of Directors of the Company upon such relevant information as the Board, in its sole discretion, may find relevant. All related persons to the Company are excluded from participating in the DPSP.

For all eligible employees, the Company is required to contribute to the DPSP out of the profits of the Company. The amount of the Company’s contribution will be such amount which, in the opinion of its Board of Directors, is warranted by the profits and overall financial position of the Company. During the year, the Company contributed \$Nil to the DPSP. Obligations for contributions to the DPSP are recognized as an employee benefit expense in the statement of comprehensive loss in the periods during which services are rendered by employees.

Short-term employee benefits

Short-term employee benefit obligations are measured on an undiscounted basis and are expensed as the related service is provided.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

A liability is recognised for the amount expected to be paid under the short-term incentive plan if the Company has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee, and the obligation can be estimated reliably.

Extinguishing financial liabilities with equity instruments

When equity instruments issued to a creditor to extinguish all or part of a financial liability are recognized initially, the Company measures them at the fair value of the equity instruments issued, unless that fair value cannot be reliably measured. If the fair value of the equity instruments issued cannot be reliably measured, then the equity instruments shall be measured to reflect the fair value of the financial liability extinguished.

Transactions with shareholders

Transactions with shareholders where the Company is receiving a benefit from the shareholder because an independent third party would not have been transacted at the same value is split into a capital transaction and a deemed third-party transaction. Proceeds from the deemed third-party transaction measured at fair value is recognized in the profit or loss, with the remaining proceeds being recognized directly in equity as a contribution from shareholders in the contributed surplus.

Financial Instruments

Financial assets are classified at amortized cost, fair value through profit or loss (“FVTPL”) or fair value through other comprehensive income (“FVOCI”) based on the entity’s business model for managing the financial assets and the contractual cash flow characteristics of these assets. Assessment and decision on the business model approach used is an accounting judgment.

A financial asset is measured at amortized cost if it is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows and its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding. The Company includes in this category cash and trade accounts receivable.

A financial asset is measured at fair value through profit or loss (“FVTPL”) if:

- (a) Its contractual terms do not give rise to cash flows on specified dates that are solely payments of principal and interest (SPPI) on the principal amount outstanding; or
- (b) It is not held within a business model whose objective is either to collect contractual cash flows, or to both collect contractual cash flows and sell; or
- (c)

The Company includes in this category investments in equity instruments.

Change in fair value of financial liabilities attributable to changes in the entity’s own credit risk are to be presented in other comprehensive income unless they affect amounts recorded in income.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

All financial liabilities, other than those measured at fair value through profit or loss, are included in the financial liabilities measured at amortized cost. The Company includes in this category accounts payable and accrued liabilities, term loans, long-term debt and convertible debentures.

Recognition:

The Company recognizes a financial asset or a financial liability when it becomes a party to the contractual provisions of the instrument.

Purchases or sales of financial assets that require delivery of assets within the time frame generally established by regulation or convention in the market place (regular way trades) are recognized on the trade date, i.e. the date that the Company commits to purchase or sell the asset.

Initial measurement

Financial assets and liabilities (other than financial assets at FVTPL) are measured initially at their fair value plus any directly attributable incremental costs of acquisition or issue.

Financial assets and financial liabilities at FVTPL are recorded in the statement of financial position at fair value.

All transaction costs for such instruments are recognized directly in profit or loss.

Subsequent measurement

Financial assets (other than financial assets at FVTPL) are measured at amortized cost using the effective interest method less any allowance for impairment. Gains and losses are recognized in profit or loss when the debt instruments are derecognized or impaired, as well as through the amortization process.

Financial liabilities are measured at amortized cost using the effective interest method. Gains and losses are recognized in profit or loss when the liabilities are derecognized, as well as through the amortization process.

Derecognition

A financial asset is derecognized where the rights to receive cash flows from the asset have expired, or the Company has transferred its rights to receive cash flows from the asset. The Company derecognizes a financial liability when the obligation under the liability is discharged, cancelled or expired.

Offsetting of financial instruments

Financial assets and financial liabilities are offset, and the net amount reported in the statement of financial position if, and only if, there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, or to realize the assets and settle the liabilities simultaneously.

Impairment of financial instruments

The Company applies the “expected credit loss” (“ECL”) model to financial assets measured at amortized cost. The Company’s financial assets subject to the new impairment model are cash, trade accounts receivable and deposits.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

The trade accounts receivable have no financing component and have maturities of less than 12 months at amortized cost and, as such, the Company applies an approach similar to the simplified approach for expected credit losses (ECLs) to all its trade accounts receivable. Therefore, the Company does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date.

The Company's approach to ECLs reflects a probability-weighted outcome, the time value of money and reasonable and supportable information that is available without undue cost or effort at the reporting date about past events, current conditions and forecasts of future economic conditions.

The Company uses the provision matrix as a practical expedient to measure ECLs on trade receivables, based on days past due for groupings of receivables with similar loss patterns. The provision matrix is based on historical observed loss rates over the expected life of the receivables and is adjusted for forward-looking estimates.

The impairment guidance using the ELC model did not have a significant impact on the carrying amounts of the Company's trade accounts receivable as the Company has had negligible credit losses.

Write-off

The gross carrying amount of a financial asset is written off when the Company has no reasonable expectations of recovering a financial asset in its entirety or a portion thereof.

Compound Financial Instrument

Compound financial instrument issued by the Company comprises convertible debentures that can be converted into common shares at the option of the holder, and the number of shares to be issued does not vary with changes in their fair value.

The component parts of the compound instrument issued by the Company are initially classified separately as financial liabilities and equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and an equity instrument. The conversion option that will be settled by the exchange of a fixed amount of cash or another financial asset for a fixed number of the Company's own equity instruments is an equity instrument.

At the date the convertible debentures are issued, the liability component is initially recognized at the fair value of similar debt instruments which do not have an equity conversion option. The initial amount of the liability component is determined by discounting the face value of the convertible debentures using a rate of interest prevailing for similar non-convertible instruments at the date of issue for instruments of similar terms and risks. The conversion option classified as the equity component is determined by deducting the amount of the liability component from the gross proceeds. The equity component is recognized net of income tax effects within the other equity account.

Subsequently, the liability component is accounted for at amortized cost and is accreted using the effective interest method, up to the face value of the convertible debentures during the period they are outstanding. Interest expense on the convertible debentures is composed of the interest calculated on the face value of the convertible debentures and a non-cash notional interest representing the accretion of the carrying value of the convertible debentures. The equity component is not remeasured.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

The conversion option classified as equity remains in the other equity account until the conversion option is exercised, in which case, the balance recognized in other equity is transferred to share capital. When the conversion option remains unexercised at the maturity date of the convertible debentures, the balance recognized in other equity will be transferred to contributed surplus. No gain or loss is recognized in the consolidated income statement upon conversion or expiration of the conversion option.

Transaction costs related to the issuance of convertible debentures are allocated to the liability and equity components in proportion to the allocation of the gross proceeds. Transaction costs relating to the equity component are recognized directly in other equity. Transaction costs relating to the liability component are included in the carrying amount of the liability component and are amortized over the term of the convertible debentures using the effective interest method.

Effective Interest Method

The effective interest method is a method of calculating the amortized cost of a financial asset/financial liability and of allocating interest income/expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts/payments (including all fees and points paid or received that

form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the financial instrument, or (when appropriate) a shorter period, to the net carrying amount on initial recognition.

5. Significant accounting judgments, estimates and assumptions

The preparation of financial statements requires management to make judgments, estimates and assumptions based on currently available information that affect the reported amounts of assets, liabilities and contingent assets and liabilities at the date of the financial statements and reported amounts of revenues and expenses during the reporting period. Estimates and judgments are continuously evaluated and are based on management's experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. However, actual results could differ from those estimated. By their very nature, these estimates are subject to measurement uncertainty and the effect of any changes in estimates on the financial statements of future periods could be material.

In the process of applying the Company's accounting policies, management has made the following judgments, estimates, and assumptions which have the most significant effect on the amounts recognized in the financial statements.

(a) Going concern

Information about critical judgements in applying accounting policies that have the most significant effect on the amounts recognised in the financial statements relates to the assessment of the Company's ability to continue as a going concern [note 1 (b)].

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

5. Significant accounting judgments, estimates and assumptions (continued)

(b) Assessment of impairment of property and equipment and intangible assets

At each reporting date, the Company reviews the carrying amounts of its property and equipment to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. For impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or cash generating units ("CGUs"). The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell. Value in use is based on the estimated future cash flows, discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or CGU. An impairment loss is recognised if the carrying amount of an asset or CGU exceeds its recoverable amount. Impairment losses are recognised in profit or loss.

An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

(c) Revenue recognition

Revenue recognition for long-term contracts completion requires the use of estimates to determine the recorded amount of revenues, costs in excess of billings and billings in excess of costs and profits on uncompleted contracts.

The determination of anticipated costs for completing a contract is based on estimates that can be affected by a variety of factors, including the cost of materials, labour and sub-contractors, as well as potential claims from customers and subcontractors.

As risks and uncertainties are different for each project, the sources of variations between anticipated costs and actual costs incurred will also vary by project. The determination of estimates is based on the Company's business practices as well as its historical experience. Estimates are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised.

Given this estimation process, it is possible that changes in future conditions could cause a material change in the recognized amount of revenues and costs and profits in excess of billings on uncompleted contracts and accrued expenses.

Agreements that contain multiple deliverables require the use of judgment to determine whether they contain separately identifiable performance obligations and to allocate the consideration received to each performance obligation.

(d) Stock-based payments

The Company uses the fair value method of valuing compensation expense associated with the Company's stock option plan. Estimating fair value requires determining the most appropriate valuation model for a grant of equity instruments, which is dependent on the terms and conditions of the grant. This also requires determining the most appropriate inputs to the valuation model including the expected life of the option, volatility, expected forfeitures and distribution yield. The assumptions and models are discussed in note 19.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

5. Significant accounting judgments, estimates and assumptions (continued)

(e) Useful lives of property and equipment and intangible assets

The Company estimates the useful lives of property and equipment based on the period over which the assets are expected to be available for use. The estimated useful lives of property and equipment are reviewed periodically and are updated if expectations differ from previous estimates due to physical wear and tear and legal or other limits on the use of the relevant assets. In addition, the estimation of the useful lives of property and equipment are based on management's experience with similar assets. It is possible, however, that future results of operations could be materially affected by changes in the estimates brought about by changes in factors mentioned above. The amounts and timing of recorded expenses for any period would be affected by changes in these factors and circumstances. Useful lives, depreciation rates and residual values are reviewed at least annually.

(f) Assessment of investment tax credits

The investment tax credits are estimated by management based on quantitative and qualitative analysis and interpretation of various government programmes, related restrictions, limitations, definitions, and eligibility conditions. Uncertainty over the eligibility and final assessment by taxation authorities of investment tax credits is considered a significant accounting judgment. Management involves its technical staff and external specialists

in determining if the expenditures meet the requirements of the different tax credit claims. Management believes that its accruals for investment tax credit receivables are adequate for all claims based on its assessment of requirements of the tax credit claims.

(g) Intangible assets

The recognition of development costs as intangible assets requires management's judgments to determine whether the required criteria for recognition are met including management estimates of future economic benefits.

(h) Fair value of investments

Where the fair values of investments recorded in the statement of financial position cannot be derived from active markets, they are determined using valuation techniques including the Black-Scholes models. The inputs to these models are taken from observable markets where possible, but where this is not feasible, a degree of judgment is required in establishing the fair values. The judgments include considerations of inputs such as the expected volatility and the expected life. Should any of the inputs to these models or changes in assumptions about these factors occur, this could affect the reported fair value of the investments.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

5. Significant accounting judgments, estimates and assumptions (continued)

(i) Right-of-use assets and lease liabilities

In determining the carrying amount of the right-of-use asset and corresponding lease liabilities, assumptions include the non-cancellable term of the lease plus periods covered by an option to renew or purchase the leases, estimated useful lives of the related assets, and incremental borrowing rate. Renewal and purchase options are only included in the lease term if management is reasonably certain to renew. Management considers factors such as market conditions, comparable rental rates and similar property values. The Company is also required to estimate the incremental borrowing rate specific to each portfolio of leased assets with similar characteristics if the interest rate in the lease is not readily determined. Management determines the incremental borrowing rate using base rate for similar loans plus a risk premium.

6. Revenues

Revenues by product line:

The Company's revenues from long-term contracts and sales of goods are generated primarily from PUREVAP™ related sales of \$525,556 (2018 - \$1,781,009), DROSRITE™ related sales of \$560,916 (2018 - \$1,237,740), the development and support related to systems supplied to the U.S. Military of \$637,841 (2018 - \$1,451,998), torch related sales of \$2,323,351 (2018 - Nil), and other sales and services of \$766,314 (2018 - \$559,369).

The following is a summary of the Company's revenues by revenue recognition method:

| | <u>2019</u> | <u>2018</u> |
|--|-------------------------|-------------------------|
| | \$ | \$ |
| Sales of goods under long-term contracts | 4,585,337 | 4,867,667 |
| Sales of goods in point of time | 228,641 | 162,449 |
| | <u>4,813,978</u> | <u>5,030,116</u> |

See note 28 for sales by geographic area.

Transaction price allocated to remaining performance obligations

As at December 31, 2019, revenue expected to be recognized in the future related to performance obligations that are unsatisfied (or partially satisfied) at the reporting date is \$6,011,159(2018 - \$7,697,748). Revenue will be recognized as the Company satisfies its performance obligations under long-term contracts, which is expected to occur over the next 3 years.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

7. Accounts receivable

Details of accounts receivable were as follows:

| | December 31, 2019 | December 31, 2018 |
|---------------------------------|------------------------------|----------------------|
| | <u>\$</u> | <u>\$</u> |
| 1 – 30 days | 71,423 | 281,984 |
| 31 – 60 days | 9,483 | 178,667 |
| 61 – 90 days | 17,753 | 86,567 |
| Greater than 90 days | 5,469 | 16,613 |
| Total trade accounts receivable | 104,128 | 563,831 |
| Sales tax receivable | 106,412 | 67,321 |
| | <u>210,540</u> | <u>631,152</u> |

There is no allowance for expected credit losses recorded as at December 31, 2019 and December 31, 2018.

8. Costs and profits in excess of billings on uncompleted contracts

As at December 31, 2019, the Company had four uncompleted contracts with total billings of \$89,256 which were less than total costs incurred and had recognized cumulative revenue of \$212,236 since those projects began. This compares with five contracts with total billings of \$1,087,339 which were less than total costs incurred and had recognized cumulative revenue of \$1,395,171 as at December 31, 2018.

Changes in costs and profits in excess of billings on uncompleted contracts during the year are explained by \$307,832 recognised at the beginning of the year being transferred to accounts receivable, and \$184,852 resulting from changes in the measure of progress.

9. Inventories

| | December 31, 2019 | December 31, 2018 |
|---------------|------------------------------|----------------------|
| | <u>\$</u> | <u>\$</u> |
| Powders | - | 211,466 |
| Raw Materials | - | 168,904 |
| Spare Parts | 10,068 | 2,462 |
| | <u>10,068</u> | <u>382,832</u> |

The Company decided in 2019 to start building a new and improved Plasma Powder Production equipment with advanced technological improvements with regard to production output and operating costs. The powders and raw materials related to the old Plasma atomization system were no longer deemed to have any future value and were written down by \$386,121 to their net recoverable amounts of nil.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

10. Deposits and investments

| | December 31, 2019 | December 31, 2018 |
|---|----------------------|----------------------|
| | \$ | \$ |
| Deposits | 178,105 | 51,491 |
| Investments: | | |
| Beauce Gold Fields (“BGF”) shares – level 1 | 133,354 | 102,579 |
| HPQ Silicon Resources Inc. (“HPQ”) shares - level 1 | 1,476,000 | 1,281,000 |
| HPQ warrants – level 3 | - | 310,537 |
| | <u>1,787,459</u> | <u>1,745,607</u> |

Deposits include amounts paid to suppliers, rent and utilities.

Investment in BGF (TSXV: BGF) consists of 1,025,794 of common shares. The 1,025,794 common shares of BGF were received in December 2018 as dividend in kind from a spinoff of HPQ.

Investments in HPQ (TSXV: HPQ) comprise 18,450,000 common shares (21,350,000 - 2018) and 17,750,000 warrants (18,750,000 - 2018). 1,500,000 warrants have an exercise price of \$0.25 with an expiry date of November 21, 2020 and the remaining 16,250,000 warrants have an exercise price of \$0.17 with an expiry date of August 21, 2021.

16,250,000 common shares of HPQ and 16,250,000 warrants of HPQ were purchased in cash (\$1,950,000) in 2018. 2,500,000 common shares and 2,500,000 warrants were received in 2017 in lieu of payment of services rendered by the Company to HPQ. At the transaction dates, the non-monetary transactions were measured based on the fair value of the common shares and warrants received for a total amount of \$320,000. A gain from initial recognition of the warrants of \$24,017 in 2018 was deferred off balance sheet until realized.

| | ("BGF") shares – level 1 | | ("HPQ") shares - level 1 | | HPQ warrants – level 3 | |
|----------------------------|--------------------------|----------------|--------------------------|------------------|------------------------|----------------|
| | Quantity | \$ | Quantity | \$ | Quantity | \$ |
| Balance, December 31, 2017 | - | - | 5,100,000 | 561,000 | 3,300,000 | - |
| Additions | 1,025,794 | 102,579 | 16,250,000 | 1,300,000 | 16,250,000 | 650,000 |
| Expired warrants | - | - | - | - | (800,000) | - |
| Change in the fair value | - | - | - | (580,000) | - | (339,463) |
| Balance, December 31, 2018 | <u>1,025,794</u> | <u>102,579</u> | <u>21,350,000</u> | <u>1,281,000</u> | <u>18,750,000</u> | <u>310,537</u> |
| Disposals | - | - | (2,900,000) | (261,000) | - | - |
| Expired warrants | - | - | - | - | (1,000,000) | - |
| Change in the fair value | - | 30,775 | - | 456,000 | - | (310,537) |
| Balance, December 31, 2019 | <u>1,025,794</u> | <u>133,354</u> | <u>18,450,000</u> | <u>1,476,000</u> | <u>17,750,000</u> | <u>-</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

11. Property and equipment

| | Computer equipment | Machinery and equipment | Automobile | Leasehold improvements | Equipment under construction | Total |
|---|-----------------------|----------------------------|---------------|---------------------------|------------------------------------|------------------|
| | \$ | \$ | \$ | \$ | \$ | \$ |
| Cost | | | | | | |
| Balance at December 31, 2017 | 491,833 | 1,621,899 | 21,912 | 83,215 | 1,879,455 | 4,098,314 |
| Additions | 58,031 | - | - | 821,297 | 288,681 | 1,168,009 |
| Balance at December 31, 2018 | 549,864 | 1,621,899 | 21,912 | 904,512 | 2,168,136 | 5,266,323 |
| Additions | 21,654 | - | - | 9,539 | 922,917 | 954,110 |
| Reclass to Equipment under construction | - | - | - | (749,045) | 749,045 | - |
| Reclass to right-of-use assets | (49,530) | - | - | - | - | (49,530) |
| Impairment | - | - | - | - | (2,168,136) | (2,168,136) |
| Balance at December 31, 2019 | 521,988 | 1,621,899 | 21,912 | 165,006 | 1,671,962 | 4,002,767 |
| Accumulated depreciation | | | | | | |
| Balance at December 31, 2017 | 447,155 | 1,308,952 | 15,523 | 79,190 | - | 1,850,820 |
| Depreciation | 32,647 | 62,590 | 1,917 | 10,046 | 105,421 | 212,621 |
| Balance at December 31, 2018 | 479,802 | 1,371,542 | 17,440 | 89,236 | 105,421 | 2,063,441 |
| Depreciation | 32,368 | 50,071 | 1,342 | 3,749 | 81,305 | 168,835 |
| Reclass to right-of-use assets | (20,264) | - | - | - | - | (20,264) |
| Impairment | - | - | - | - | (186,726) | (186,726) |
| Balance at December 31, 2019 | 491,906 | 1,421,613 | 18,782 | 92,985 | - | 2,025,286 |
| Carrying amounts | | | | | | |
| Balance at December 31, 2018 | 70,062 | 250,357 | 4,472 | 815,276 | 2,062,715 | 3,202,882 |
| Balance at December 31, 2019 | 30,082 | 200,286 | 3,130 | 72,021 | 1,671,962 | 1,977,481 |

In 2019 the Company commenced construction on a new and improved Plasma Powder Production equipment with advanced technological improvements with regard to production output and operating costs. As a result, the existing powder production, Plasma atomization system, was no longer deemed to have any future benefit and was written down by \$1,981,410, to the net recoverable amount of nil.

Equipment under construction includes the leasehold improvements of a clean room and the costs related to building the new Plasma Powder Production equipment.

12. Leases

The Company has entered into lease contracts mainly for buildings and computer equipment, which expire at various dates through the year 2027. Some leases have extension or purchase options for various terms. Some lease payments are based on changes in price indices. The lease contracts do not impose any financial covenants.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

12. Leases (continued)

a) Right-of-use assets

| | <u>Land and building</u> | <u>Computer equipment</u> | <u>Total</u> |
|-------------------------------------|------------------------------|-------------------------------|------------------|
| | \$ | \$ | \$ |
| Balance at January 1, 2019 | 4,073,286 | 29,266 | 4,102,552 |
| Depreciation | (348,590) | (11,193) | (359,783) |
| Balance at December 31, 2019 | 3,724,696 | 18,073 | 3,742,769 |

b) Amount recognized in the statement of comprehensive loss

| | <u>2019</u> |
|--|-------------|
| | \$ |
| Depreciation of right-of-use assets | 359,783 |
| Interest on lease liabilities | 258,288 |
| Expense related to lease payments not included in the measurement of lease liabilities | 7,264 |

Rent expense relating to operating leases under IAS 17 was \$504,445 in 2018.

c) Maturity analysis - contractual undiscounted cash flows of lease liabilities as at December 31, 2019

| | \$ |
|------------|-----------|
| 2020 | 389,152 |
| 2021 | 394,445 |
| 2022 | 3,088,912 |
| 2023 | 218,241 |
| 2024 | 213,402 |
| Thereafter | 444,588 |
| | 4,748,740 |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

13. Intangible assets

| | <u>Licenses</u> | <u>Patents</u> | <u>Development costs</u> | <u>Total</u> |
|-------------------------------------|--------------------|----------------|--------------------------|--------------------|
| | \$ | \$ | \$ | \$ |
| Cost | | | | |
| Balance at December 31, 2017 | 8,409,051 | 160,719 | 243,294 | 8,813,064 |
| Additions | - | 214,610 | 1,577 | 216,187 |
| Balance at December 31, 2018 | 8,409,051 | 375,329 | 244,871 | 9,029,251 |
| Additions | - | 197,157 | - | 197,157 |
| Write-off | (8,409,051) | - | - | (8,409,051) |
| Balance at December 31, 2019 | - | 572,486 | 244,871 | 817,357 |
| Accumulated amortization | | | | |
| Balance at December 31, 2017 | 8,409,051 | - | - | 8,409,051 |
| Amortization | - | 43,818 | 16,508 | 60,326 |
| Balance at December 31, 2018 | 8,409,051 | 43,818 | 16,508 | 8,469,377 |
| Amortization | - | 3,625 | 16,508 | 20,133 |
| Write-off | (8,409,051) | - | - | (8,409,051) |
| Balance at December 31, 2019 | - | 47,443 | 33,016 | 80,459 |
| Carrying amounts | | | | |
| Balance at December 31, 2018 | - | 331,511 | 228,363 | 559,874 |
| Balance at December 31, 2019 | - | 525,043 | 211,855 | 736,898 |

The Company's development costs have been incurred to develop plasma related technologies and the patents protect the design and specification of these technologies.

14. Accounts payable and accrued liabilities

| | <u>December 31, 2019</u> | <u>December 31, 2018</u> |
|---|--------------------------|--------------------------|
| | \$ | \$ |
| Accounts payable | 2,780,628 | 1,072,257 |
| Accrued liabilities | 1,866,822 | 1,080,128 |
| Accounts payable to the controlling shareholder | 214,470 | 205,222 |
| Accounts payable to a trust beneficially owned by the controlling shareholder | 51,234 | - |
| | 4,913,155 | 2,357,607 |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

15. Billings in excess of costs and profits on uncompleted contracts

The amount to date of costs incurred and recognized profits less recognized losses for construction projects in progress amounted to \$4,612,082(2018 - \$3,517,534).

Payments to date received were \$5,746,739 and \$1,950,000 of deposits on contracts in progress (2018 - \$5,919,944 in cash and \$1,950,000 of other assets).

Changes in billings in excess of costs and profits on uncompleted contracts during the year are explained by \$1,283,144 recognised at the beginning of the year being recognised as revenue, and an increase of \$15,391 resulting from cash received excluding amounts recognised as revenue.

16. Term loans

| | Other Term Loans ¹ | 2019 SR&ED Tax Credit loan ² | 2018 SR&ED Tax Credit loan ³ | 2017 SR&ED Tax Credit loan ⁴ | 2016 SR&ED Tax Credit loan | Total |
|----------------------------|----------------------------------|---|--|--|-------------------------------------|-----------|
| | \$ | \$ | \$ | \$ | \$ | \$ |
| Balance, December 31, 2017 | - | - | - | 247,200 | 290,200 | 537,400 |
| Repayment | - | - | - | - | (290,200) | (290,200) |
| Balance, December 31, 2018 | - | - | - | 247,200 | - | 247,200 |
| Additions | 115,200 | 247,500 | 214,000 | - | - | 576,700 |
| Conversion option | (12,800) | - | - | - | - | (12,800) |
| Financing costs | - | (63,558) | (54,955) | - | - | (118,513) |
| Accretion | 8,533 | 1,389 | 40,691 | - | - | 50,613 |
| Repayment | - | - | - | (247,200) | - | (247,200) |
| Balance, December 31, 2019 | 110,933 | 185,331 | 199,736 | - | - | 496,000 |

¹ matured May 1, 2020 bearing interest rate of 8% per annum payable at the maturity date.

² maturing December 23, 2020 bearing interest rate of 16.68% payable at the issuance.

³ matured April 3, 2020 bearing interest rate of 16.68% payable at the issuance.

⁴ matured September 30, 2018 bearing interest rate of 18% (effective interest rate 23%), repaid February 2019.

On December 23, 2019, the Company entered into a SR&ED tax credit loan of \$247,500 bearing interest at a rate of 16.68% and fees totaling \$22,375 paid at the issuance of the loan. The loan was discounted using the effective interest method. The effective interest rate on the loan is 25.68%. The loan is secured by the 2019 investment tax credit receivable and is repayable on December 22, 2020.

On March 25, 2019, the Company entered into a SR&ED tax credit loan of \$214,000 bearing interest at a rate of 16.68% and fees totaling \$19,260 paid at the issuance of the loan. The loan was discounted using the effective interest method. The effective interest rate on the loan is 25.68%. The loan is secured by the 2018 investment tax credit receivable and is repayable on April 2, 2020.

The SR&ED tax credit loans are financing, in the form of loans, with respect to the Company's scientific research and experimental development tax credits ("SR&ED Tax Credits"). The principal of the loans is subject to holdback to be disbursed upon reception of notice of assessment. The principal of the loans is subject to repayment at the earlier of (a) receipt of the SR&ED Tax Credits refund or (b) the maturity date. The SR&ED Tax Credits loans agreement provides for automatic renewal of twelve months if loan is not paid at maturity. As at December 31, 2019, the amount available under the term loan financing agreement totals \$461,500 (2018 - \$247,200).

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

16. Term loans (continued)

Pursuant to each financing, the Company granted the lender a security interest and movable hypothec on all of its assets excluding its intellectual property but including a first rank claim on the refundable portion of its SR&ED Tax Credits for each of the fiscal years ended December 31, 2018, of \$274,921 and 2019 of \$434,474.

In 2019, the Company recorded investment tax credits receivable of \$434,474 (2018 - \$274,921), of which an amount of \$80,146 (2018 - \$43,292) was recorded against property and equipment, \$179,670 (\$358,427 – 2018) was recorded against cost of sales and services, \$144,658 (2018 - \$79,529) against research and development expenses and \$30,000 (2018 - \$36,827) against selling general and administrative expenses..

On May 1, 2019 the Company entered into loan agreements with unrelated individuals totaling \$115,200 bearing interest at the annual rate of 8% payable at maturity, on May 1, 2020. The other term loans are unsecured and are convertible, at 10% discount, for a variable amount of shares into any future private placement until maturity. The fair value of the debt instrument at inception was determined using the estimated cash flows discounted using a market rate of 20%. The residual amount of the non derivative liability of \$12,800 associated with the conversion feature has been recorded in accounts payable and accrued liabilities.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

17. Long-term debt

| | | | <u>December 31, 2019</u> | <u>December 31, 2018</u> |
|---|--|--|--------------------------|--------------------------|
| | | | \$ | \$ |
| Promissory notes payable to the controlling shareholder and CEO (i) | | | 284,956 | 249,339 |
| Obligations under finance lease | | | - | 31,728 |
| | | | <u>284,956</u> | <u>281,067</u> |
| Current portion of the long-term debt | | | <u>(284,956)</u> | <u>12,491</u> |
| Long-term debt | | | <u>-</u> | <u>268,576</u> |

| | Promissory notes payable to the controlling shareholder and CEO (i) | Obligations under finance lease | Balance of sale – payable to a company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, and under common control of the controlling shareholder and CEO | Total |
|--|---|--|---|------------------|
| | \$ | \$ | \$ | \$ |
| Balance, December 31, 2017 | - | 18,736 | 111,928 | 130,664 |
| Addition | 295,000 | 24,008 | - | 319,008 |
| Fair value adjustment | (58,607) | - | - | (58,607) |
| Accretion | 12,946 | - | - | 12,946 |
| Issuance of shares in settlement of debt | - | - | (111,928) | (111,928) |
| Repayment | - | (11,016) | - | (11,016) |
| Balance, December 31, 2018 | <u>249,339</u> | <u>31,728</u> | <u>-</u> | <u>281,067</u> |
| Additions | - | - | - | - |
| Fair value adjustment | - | - | - | - |
| Accretion | 35,617 | - | - | 35,617 |
| Reclass to lease liabilities | - | (31,728) | - | (31,728) |
| Balance, December 31, 2019 | <u>284,956</u> | <u>-</u> | <u>-</u> | <u>284,956</u> |
| Current portion of long-term debt | <u>(284,956)</u> | <u>-</u> | <u>-</u> | <u>(284,956)</u> |
| Long-term debt | <u>-</u> | <u>-</u> | <u>-</u> | <u>-</u> |

(i) The promissory notes payable to the controlling shareholder and CEO of the Company total \$295,000, are unsecured and bear interest at 6% per annum payable on March 31, 2020, the maturity date. The fair value of the promissory note liability component at inception was determined using estimated future cash flows discounted using a market interest rate of 20%. The residual amount of \$58,607 representing the below market element was recorded in the shareholders' (Deficiency) Equity in contributed surplus.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

18. Convertible debentures

2015 Convertible Debenture

On April 2, 2018, the Company redeemed \$3,245,000 of the \$4,000,000 unsecured convertible debenture issued on March 30, 2015 maturing on March 30, 2018 (the "2015 Convertible Debenture"). The remaining balance of \$755,000 was redeemed on April 19, 2018, by the issuance of 1,258,333 units to Peter Photis Pascali, the father of the controlling shareholder and CEO. The amount of \$572,582 related to the equity component of the 2015 Convertible Debenture has been reclassified from Equity portion of convertible debentures to the contributed surplus at the extinguishment date.

2018 Convertible Debenture

On April 2, 2018, the Company completed a \$3,000,000 non-brokered private placement of 9.5% secured convertible debentures (the "2018 Convertible Debenture"). The 2018 convertible debentures bear interest at the rate of 9.5% per annum, with interest payable in cash on a quarterly basis, and mature on March 29, 2020. Each Debenture is convertible into common shares of the Company at a conversion price of \$0.80 per common share. The 2018 convertible debentures may be redeemed before maturity, in whole at anytime or in part from time to time at the option of the Company. In the event the Company elects to redeem the debentures before the maturity date, the Company shall be required to pay all interest that otherwise would have accrued on the debentures up to the maturity date. The 2018 convertible debentures are secured by a hypothec on the universality of all of the property, rights and assets of the Company, present and future, movable and immovable, corporeal and incorporeal.

The 2018 Convertible Debenture is a compound financial instrument and the total proceeds of the issuance was allocated between a liability for the debenture and an equity component for the conversion feature. The fair value of the debt liability component at inception was determined using estimated future cash flows discounted using a market interest rate of 20%. The residual amount representing the value of the conversion option equity component was classified in the shareholders' (Deficiency) Equity.

In connection with the convertible debenture, the Company paid finder fees in the amount of \$180,000 to the agent. Total transaction costs amount to \$315,702 and have been allocated between the liability and equity components. The effective interest rate of the liability component is 20.23%.

At the issuance date, the 2018 Convertible Debenture was recorded as follows:

| | |
|---|------------------|
| | \$ |
| Debt component, net of transaction cost of \$268,364 | 2,282,538 |
| Conversion option recognized in equity, net of transaction cost of \$47,338 | 401,760 |
| Net proceeds | <u>2,684,298</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

18. Convertible debentures (continued)

| | December 31, 2019 | December 31, 2018 |
|---|----------------------|----------------------|
| | \$ | \$ |
| Balance, beginning of year | 2,527,241 | 3,916,549 |
| Effective interest accretion | - | 83,451 |
| | 2,527,241 | 4,000,000 |
| Repayment of 2015 Convertible Debenture in cash | - | (3,245,000) |
| Repayment of 2015 Convertible Debenture in shares | - | (755,000) |
| | 2,527,241 | - |
| Issuance of 2018 Convertible Debenture | - | 2,282,538 |
| Effective interest accretion | 371,117 | 244,703 |
| Balance, end of year | 2,898,358 | 2,527,241 |

On March 30, 2020, the Company reached an agreement to extend the maturity date of its \$3,000,000 convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company paid \$300,000 of the outstanding amount (representing 10% of the principal amount), paid a one-time accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. The interest rate and conversion feature have not changed.

19. Shareholders' deficiency

Common shares and warrants

Authorized:

The Company is authorized to issue an unlimited number of Class A common shares without par value.

Issuance of shares

On October 23, 2019, the Company completed a non-brokered private placement and issued 300,000 units at a price of \$0.56 per unit, for total gross proceeds of \$168,000. Each unit consists of one common share and three-quarters (0.75) of a common share purchase warrant of the Company. Each warrant entitles the holder to acquire one common share of the Company at a price of \$0.75. Each warrant expires fifteen (15) months from issuance. The Company did not pay finder's fees or issue any finders compensation warrants in connection with this private placement.

On June 19, 2019, the Company completed a non-brokered private placement and issued 1,000,000 units at a price of \$0.58 per unit, for total gross proceeds of \$580,000. Each unit consists of one common share and one common share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until June 19, 2021. In connection with the private placement, the Company paid finder's fees in the amount of \$23,200.

On May 28, 2019, the Company completed a non-brokered private placement and issued 2,024,500 units at a price of \$0.58 per unit, for total gross proceeds of \$1,174,210. Each unit consists of one common share and one common share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until May 28, 2021. In connection with the private placement, the Company paid finder's fees in the amount of \$40,600.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

On May 15, 2019, the Company completed a non-brokered private placement and issued 2,996,500 units at a price of \$0.58 per unit, for total gross proceeds of \$1,737,970. Each unit consists of one common share and one common share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until May 15, 2021. In connection with the private placement, the Company paid finder's fees in the amount of \$42,595.

On January 7, 2019, the Company received an additional subscription and sold an additional aggregate amount of 97,400 units of the Company at a price of \$0.58 per unit for gross proceeds of \$56,492. An amount of \$5,800 from the initial subscriptions of the Private Placement dated December 17, 2018 was received on December 23, 2018 and deposited on January 3, 2019. As a result of the initial subscriptions and subsequent subscription, the Company issued and sold pursuant to the Private Placement dated December 17, 2018 a total of 2,244,367 units for gross proceeds of \$1,301,733. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until December 18, 2020.

During the year ended December 31, 2019, 1,384,000 (544,000 - 2018) stock options were exercised for net proceeds of \$306,360 (\$139,320 - 2018). The amounts credited to share capital from the exercise of stock options include an ascribed value from contributed surplus of \$287,350 (\$93,920 - 2018).

During the year ended December 31, 2018, the Company issued 1,797,500 common shares upon the exercise of warrants for net proceeds of \$629,125.

On December 17, 2018, the Company issued an amount of 2,146,967 units at a price of \$0.58 per unit, for gross proceeds of \$1,245,241. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until December 18, 2020.

On October 25, 2018, the Company issued 3,385,718 units to a company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, and an entity under common control of the controlling shareholder and CEO under a settlement agreement (see note 23).

On October 19, 2018, the Company issued an amount of 1,112,000 units as repayment of term loans and accounts payable to three creditors, which were measured at an amount of \$644,960, to reflect the fair value of the financial liabilities extinguished at that time. Each unit also consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.58 until February 13, 2021.

On October 19, 2018, the Company issued an amount of 388,750 units at a price of \$0.58 per unit, for gross proceeds of \$225,475. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.58 until February 13, 2021.

On September 28, 2018, the Company issued an amount of 3,448,276 units to a trust whose beneficiary is the controlling shareholder and CEO at a price of \$0.58 per unit, for gross proceeds of \$2,000,000. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.58 until January 28, 2021.

The Company also issued 1,850,000 units to an unrelated party for an aggregate amount of 3,108,333 at a price of \$0.60 per unit, for gross proceeds of \$1,110,000. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until April 19, 2020. In connection with the private placement, the Company paid finder fees in the amount of \$89,478 and issued 74,000 finder's compensation warrants to the agents.

PyroGenesis Canada Inc.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

On February 9, 2018 and March 7, 2018, the Company issued 1,899,999 units to a company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, and an entity under common control of the controlling shareholder and CEO under a settlement agreement (see notes 14 and 17) and 2,971,430 units to unrelated parties at a price of \$0.70 per unit, for gross proceeds of \$2,080,001. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$1.25 until August 9, 2019. In connection with the private placement, the Company paid finder's fees in the amount of \$127,750 and issued 88,000 finder's compensation warrants to the agents.

The fair value of the finder's compensation warrants issued was measured as follows based on the Black- Scholes option pricing model:

| Date of issuance | April 19, 2018 | Feb 9, 2018 |
|--|-------------------|----------------|
| Exercise price (\$) | 0.85 | 1.25 |
| Weighted-average issuance date market price (\$) | 0.62 | 0.70 |
| Expected life (months) | 24 | 18 |
| Expected volatility (%) | 71.9 | 71.9 |
| Semi-annual weighted-average risk-free interest rate (%) | 1.74 | 1.74 |
| Dividend yield (%) | 0 | 0 |

Stock option plan

The Company has a stock option plan authorizing the Board of Directors to grant options to directors, officers, employees and consultants to acquire common shares of the Company at a price computed by reference to the closing market price of the shares of the Company on the business day before the Company notifies the stock exchanges of the grant of the option. The number of shares which may be granted to any one person shall not exceed 5% (2% for consultants) of total share capital over a twelve-month period.

As at December 31, 2019, an amount of \$81,884 (\$127,195 – 2018) remains to be amortized until January 2021 related to the grant of stock options.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

Stock option plan (continued)

The following table sets out the activity in stock options:

| | Number of options | Weighted average exercise price |
|-----------------------------|----------------------|------------------------------------|
| | | \$ |
| Options, December 31, 2017 | 9,376,000 | 0.32 |
| Granted | 1,350,000 | 0.60 |
| Exercised | (544,000) | (0.26) |
| Forfeited | (260,000) | (0.25) |
| Balance – December 31, 2018 | 9,922,000 | 0.37 |
| Granted | 400,000 | 0.51 |
| Exercised | (1,384,000) | (0.22) |
| Expired | (500,000) | (0.70) |
| Balance, December 31, 2019 | 8,438,000 | 0.37 |

On September 29, 2019, the Company granted a total of 400,000 stock options to members of the Board of Directors and the Acting Chief Financial Officer of PyroGenesis. The stock options have an exercise price of \$0.51 per common share, 50% vested at grant date and 50% at the first anniversary of the grant and are exercisable over a period of 5 years. The fair value of the stock options was estimated at \$0.34 per option by applying the Black-Sholes option pricing model.

On October 29, 2018, the Company granted 100,000 stock options to an Officer of the Company. The stock options have an exercise price of \$0.52 per common share and are exercisable over a period of 5 years. The fair value of the stock options was estimated at \$0.30 per option by applying the Black-Sholes option pricing model.

On July 3, 2018, the Company granted 300,000 stock options to a member of the Board of Directors of the Company. The stock options have an exercise price of \$0.51 per common share and are exercisable over a period of 60 months. The fair value of the stock options was estimated at \$0.24 per option by applying the Black- Sholes option pricing model.

On May 10, 2018, the Company granted 250,000 stock options to a member of the Board of Directors of the Company. The stock options have an exercise price of \$0.52 per common share and are exercisable over a period of 60 months. The fair value of the stock options was estimated at \$0.29 per option by applying the Black- Sholes option pricing model.

On April 3, 2018, the Company granted 500,000 stock options to a consultant, to promote the business interests of the Company worldwide. The stock options have an exercise price of \$0.70 per common share and are exercisable over a period of 18 months. The fair value of the stock options was estimated at \$0.22 per option by applying the Black-Sholes option pricing model.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

Stock option plan (continued)

On February 23, 2018, the Company issued 200,000 stock options to an Officer of the Company with an exercise price of \$0.60 and are exercisable over a period of 60 months. The fair value of the stock options was estimated at \$0.37 per option by applying the Black-Scholes option pricing model.

The fair value of the stock options granted in the years ended December 31, 2019 and 2018 was measured based on the Black-Scholes option pricing model using the following assumptions:

| Date of grant | February 23, 2018 | April 3, 2018 | May 10, 2018 | July 3, 2018 | October 29, 2018 | September 29, 2019 (1) |
|--|-------------------|---------------|--------------|--------------|------------------|------------------------|
| Number of options granted | 200,000 | 500,000 | 250,000 | 300,000 | 100,000 | 400,000 |
| Exercise price (\$) | 0.60 | 0.70 | 0.52 | 0.51 | 0.52 | 0.51 |
| Fair value of each option under the Black Scholes pricing model (\$) | 0.365 | 0.220 | 0.289 | 0.244 | 0.300 | 0.34 |
| Assumptions under the Black Scholes model: | | | | | | |
| Fair value of the market share (\$) | 0.60 | 0.66 | 0.55 | 0.49 | 0.52 | 0.51 |
| Risk free interest rate (%) | 2.04 | 1.79 | 2.00 | 2.19 | 2.42 | 1.39 |
| Expected volatility (%) | 73 | 73 | 58 | 58 | 68 | 83 |
| Expected dividend yield | - | - | - | - | - | - |
| Expected life (number of months) | 60 | 18 | 60 | 60 | 60 | 60 |
| Forfeiture rate (%) | - | - | - | - | - | - |

(1) A total of 200,000 of the stock options granted vested on the day of the grant and 200,000 will vest on September 29, 2020.

The underlying expected volatility was determined by reference to historical data of the Company's share price. No special features inherent to the stock options granted were incorporated into the measurement of fair value.

As at December 31, 2019, the outstanding options, as issued under the stock option plan to directors, officers, employees and consultants for the purchases of one common share per option, are as follows:

| | Number of stock options Dec 31, 2018 | Granted | Exercised | Forfeitures | Number of stock options Dec 31, 2019 | Number of stock options vested | Exercise price per option \$ | Expiry date |
|--------------------|--------------------------------------|----------------|--------------------|------------------|--------------------------------------|--------------------------------|------------------------------|---------------|
| February 12, 2015 | 1,965,000 | - | (477,000) | - | 1,488,000 | 1,488,000 | 0.30 | Feb 12, 2020 |
| September 25, 2016 | 3,875,000 | - | (875,000) | - | 3,000,000 | 3,000,000 | 0.18 | Sep 25, 2021 |
| October 20, 2016 | 32,000 | - | (32,000) | - | - | - | 0.18 | Oct 20, 2021 |
| October 25, 2016 | 100,000 | - | - | - | 100,000 | 100,000 | 0.19 | Oct 25, 2021 |
| November 3, 2017 | 2,600,000 | - | - | - | 2,600,000 | 2,520,000 | 0.58 | Nov 3, 2022 |
| February 9, 2018 | 200,000 | - | - | - | 200,000 | 60,000 | 0.60 | Feb 9, 2023 |
| April 3, 2018 | 500,000 | - | - | (500,000) | - | - | 0.70 | Oct 3, 2019 |
| May 10, 2018 | 250,000 | - | - | - | 250,000 | 250,000 | 0.52 | May 10, 2023 |
| July 3, 2018 | 300,000 | - | - | - | 300,000 | 300,000 | 0.51 | July 3, 2023 |
| October 29, 2018 | 100,000 | - | - | - | 100,000 | 30,000 | 0.52 | Oct 29, 2023 |
| September 29, 2019 | - | 400,000 | - | - | 400,000 | 200,000 | 0.51 | Sept 29, 2024 |
| | <u>9,922,000</u> | <u>400,000</u> | <u>(1,384,000)</u> | <u>(500,000)</u> | <u>8,438,000</u> | <u>7,948,000</u> | <u>0.37</u> | |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

Share purchase warrants

The following table reflects the activity in warrants during the years ended December 31, 2019 and the number of issued and outstanding share purchase warrants at December 31, 2019:

| | Number of warrants December 31, 2018 | Issued | Expired | Number of warrants December 31, 2019 | Price per warrant \$ | Expiry date |
|--|--|------------------|--------------------|---|-------------------------------|-----------------|
| Issuance of units – February 9, 2018 | 4,871,429 | - | (4,871,429) | - | 1.25 | Aug 9, 2019 |
| Broker warrants – February 9, 2018 | 88,000 | - | (88,000) | - | 1.25 | Aug 9, 2019 |
| Issuance of units – April 19, 2018 | 3,108,333 | - | - | 3,108,333 | 0.85 | Apr 19, 2020 |
| Issuance of broker warrants – April 19, 2018 | 74,000 | - | - | 74,000 | 0.85 | Apr 19, 2020 |
| Issuance of units – April 20, 2018 | 3,385,715 | - | - | 3,385,715 | 0.85 | Apr 20, 2020 |
| Issuance of units – September 28, 2018 | 3,448,276 | - | - | 3,448,276 | 0.58 | Jan 28, 2021 |
| Issuance of units – October 19, 2018 | 1,500,750 | - | - | 1,500,750 | 0.58 | Feb 13, 2021 |
| Issuance of units – December 17, 2018 | 2,146,967 | 97,400 | - | 2,244,367 | 0.85 | Dec 18, 2020 |
| Issuance of units – May 15, 2019 | - | 2,996,500 | - | 2,996,500 | 0.85 | May 15, 2021 |
| Issuance of units – May 24, 2019 | - | 2,024,500 | - | 2,024,500 | 0.85 | May 24, 2021 |
| Issuance of units – June 19, 2019 | - | 1,000,000 | - | 1,000,000 | 0.85 | Jun 19, 2021 |
| Issuance of units – October 25, 2019 | - | 225,000 | - | 225,000 | 0.75 | Oct 25, 2021 |
| | <u>18,623,470</u> | <u>6,343,400</u> | <u>(4,959,429)</u> | <u>20,007,441</u> | <u>0.78</u> | |

20. Supplemental disclosure of cash flow information

Net changes in non-cash components of operating working capital

| | 2019 \$ | 2018 \$ |
|--|------------------|------------------|
| Decrease (increase) in: | | |
| Accounts receivable | 420,612 | (193,283) |
| Costs and profits in excess of billings on uncompleted contracts | 184,852 | (192,606) |
| Investment tax credits receivable | 4,099 | 164,484 |
| Deposits | 434,324 | (300,816) |
| Prepaid expenses | (30,564) | 51,254 |
| Increase (decrease) in: | | |
| Accounts payable and accrued liabilities | 2,103,997 | 405,003 |
| Billings in excess of costs and profits on uncompleted contracts | (1,267,753) | 2,505,695 |
| | <u>1,849,567</u> | <u>2,439,731</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

21. Other information

The aggregate amortization of intangible assets expense for the year ended December 31, 2019 was \$20,133 (2018 - \$60,326) and was recorded in cost of sales and services.

Depreciation on property and equipment amounted to \$168,835 for the year ended December 31, 2019 (2018 - \$212,621) and is recorded in selling, general and administrative. Employee benefits totaled \$5,967,563 in the year ended December 31, 2019 (2018 - \$6,504,081) and included share-based compensation of \$171,807 (2018 - \$673,249).

The Company has been awarded various grants during the year, which were recognized when they became receivable. The grants, received in 2019, are unconditional and amounted to \$261,088 (2018 - \$191,380). An amount of \$204,525 (2018 - \$145,470) was recorded as a reduction to the related expenses in research and development and an amount of \$56,563 (2018 - \$45,910) was recorded as a reduction to the related expenses in selling, general and administrative.

22. Net finance costs:

| | 2019 | 2018 |
|---|------------------|------------------|
| | \$ | \$ |
| Finance costs | | |
| Interest and fees on convertible debentures | 285,000 | 291,140 |
| Interest accretion of convertible debentures | 371,117 | 328,153 |
| Interest on term loans | 46,749 | 54,063 |
| Interest on promissory notes | 53,317 | 7,427 |
| Interest on lease liabilities | 258,288 | - |
| Interest on obligations under capital leases | - | 1,534 |
| Interest accretion on promissory notes | - | 22,646 |
| Change in the fair value of investments | (176,237) | 919,463 |
| Penalties and other interest expenses | 275,183 | 3,428 |
| | <u>1,113,417</u> | <u>1,627,854</u> |
| Dividend in kind | - | (102,579) |
| Capitalized borrowing costs on Equipment under construction | (52,150) | - |
| Net finance costs | <u>1,061,267</u> | <u>1,525,275</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

23. Related party transactions

During the year ended December 31, 2019 and 2018, the Company concluded the following transactions with related parties:

The Company entered into a lease agreement for rent of a property with a trust whose beneficiary is the controlling shareholder and CEO of the Company. As at January 1, 2019, following the first application of IFRS 16, the Company recognized a right-of-use asset and lease liabilities in the amount of \$1,350,487. As at December 31, 2019, the right-of-use asset and the lease liabilities amount to \$1,183,416 and \$1,218,958 respectively. In 2019, the variable components of the leases which are not included in the lease liabilities under IFRS 16, comprise property taxes for an amount of \$266,581 (2018 - \$260,803) which were charged to the Company. A balance due of \$51,134 is included in accounts payable and accrued liabilities.

In 2018, rent and property taxes were charged by a trust whose beneficiary is the controlling shareholder and CEO of the Company in the amount of \$260,803. The balance due is \$Nil.

In 2018, an amount of \$240,159 was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company, of this amount \$172,941 is included in prepaids.

An amount of \$Nil (2018 - \$240,159) was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company.

Interest expenses of \$Nil (2018 - \$9,700) were accreted on a loan from a trust whose beneficiary is the controlling shareholder and CEO of the Company.

An amount of \$Nil (2018 - \$10,213) was owed by a trust whose beneficiary is the controlling shareholder and CEO of the Company.

Interest of \$Nil (2018 - \$14,171) was paid on the \$755,000 convertible debentures held by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO. Accreted interest related to the 2015 Convertible Debenture held by Peter Photis Pascali amounted to \$Nil (2018 - \$11,623).

A balance due to the controlling shareholder and CEO of the Company amounted to \$214,470 (2018 - \$205,222) for expense report, salary and vacation payable and is included in accounts payable and accrued liabilities.

An amount of \$53,317 (2018 - \$20,373), of interest accretion was expensed in net financing costs in the year on the loan of \$295,000 from the controlling shareholder and CEO of the Company and is also included in accounts payable and accrued liabilities.

In 2018, the Company and a company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, and under common control of the controlling shareholder and CEO, entered into a settlement agreement to resolve a claim in the amount of \$5,531,928 filed on or about April, 5, 2018, made by the company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, in connection with the share for debt conversion transaction between the parties that took place in 2014. Under the share for debt conversion, the Company issued 7,500,000 common shares in 2014 to settle \$6,000,000 of the carrying value of the Balance of sale payable. The current claim was settled for an amount of \$3,700,000. The settlement agreement also constitutes the final payment of the Balance of sale, and provides for the issuance of units by the Company having a fair value of \$3,327,571 to the company owned by Mr. Peter Photis Pascali, as follows: (i) on February 9 and March 7, 2018, issuance of 1,899,999 units at a value of \$0.70 per unit with each unit consisting of 1 common share of the Company and 1 common share purchase warrant which entitles the holder to purchase 1 common share at a price of \$1.25 until August 9, 2019, and (ii) on April 30, 2018, 3,385,715 units at a value of \$0.59 per unit with each unit consisting of 1 common share of the Company and 1 common share purchase warrant which entitles the holder to purchase 1 common share at a price of \$0.85 until April 19, 2020. The units agreed to on April 30, 2018 were issued on October 25, 2018. As the claim related to a dispute that existed at year-end, a liability and related expense of \$3,215,643 was recorded as at December 31, 2017. The liability was initially measured based on the fair value of the units as at their expected issuance date, which is \$0.70 on February 9 and March 7, 2018 and \$0.59 on April 30, 2018. The difference between the fair value of the units as at April 30, 2018 and October 25, 2018 has been considered a transaction with shareholders and recorded in the shareholders' (Deficiency) Equity.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

23. Related party transactions (continued)

The key management personnel of the Company are the members of the Board of Directors and certain officers. Total compensation to key management consisted of the following:

| | <u>2019</u> | <u>2018</u> |
|---|------------------|------------------|
| | <u>\$</u> | <u>\$</u> |
| Salaries – key management | 723,000 | 408,000 |
| Pension contributions | 10,960 | 8,160 |
| Fees – Board of Directors | 110,750 | 118,000 |
| Share-based compensation – officers | 13,473 | 365,379 |
| Share-based compensation – Board of Directors | 89,025 | 114,070 |
| Other benefits – officers | 58,412 | 13,066 |
| Total compensation | <u>1,005,620</u> | <u>1,026,675</u> |

The Company has added three employees in key management amounts for 2019. A balance of \$130,604 of key management compensation, of the amounts noted above, is included in accounts payable and accrued liabilities as at December 31, 2019 (December 31, 2018 - \$127,748).

24. Financial instruments

As part of its operations, the Company carries a number of financial instruments. It is management's opinion that the Company is not exposed to significant interest, currency or credit risks arising from these financial instruments except as otherwise disclosed. The Company's overall risk management program focuses on the unpredictability of the financial market and seeks to minimize potential adverse effects on the Company's financial performance. The Company does not use derivative financial instruments to hedge these risks.

Foreign currency risk

The Company enters into transactions denominated in US dollars for which the related revenues, expenses, accounts receivable and accounts payable and accrued liabilities balances are subject to exchange rate fluctuations.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

24. Financial instruments (continued)

As at December 31, the following items are denominated in US dollars:

| | 2019 CDN | 2018 CDN |
|--|------------------|----------------|
| | \$ | \$ |
| Cash | 74,749 | 4,472 |
| Accounts receivable | 28,704 | 527,761 |
| Accounts payable and accrued liabilities | (403,273) | (240,866) |
| Total | (299,820) | 291,367 |

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.

Sensitivity analysis

At December 31, 2019, if the US Dollar changes by 10% against the Canadian dollar with all other variables held constant, the impact on pre-tax gain or loss for the year ended December 31, 2019 would have been \$(28,000) (December 31, 2018 – \$29,000).

Credit risk and credit concentration

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The maximum credit risk to which the Company is exposed as at December 31, 2019 represents the carrying amount of cash and trade accounts receivable. The Company manages its credit risk by performing credit assessments of its customers and provides allowances for potentially uncollectible accounts receivable. The Company does not generally require collateral or other security from customers on accounts receivable. The Company believes that there is no unusual exposure associated with the collection of these receivables. During the year ended December 31, 2019, five customers accounted for 77% (December 31, 2018 – three customers for 82%) of revenues from operations.

| | 2019 | | 2018 | |
|--------------|------------------|------------------------|------------------|------------------------|
| | Revenues | % of total revenues | Revenues | % of total revenues |
| | \$ | % | \$ | % |
| Customer 1 | 1,166,705 | 24 | 1,718,904 | 34 |
| Customer 2 | 835,142 | 17 | 1,221,811 | 24 |
| Customer 3 | 637,841 | 13 | 1,214,403 | 24 |
| Customer 4 | 560,916 | 12 | - | - |
| Customer 5 | 525,556 | 11 | - | - |
| Total | 3,726,160 | 77 | 4,155,118 | 82 |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

24. Financial instruments (continued)

Three customers accounted for 93% (December 31, 2018 – one customer for 85%) of trade accounts receivable with amounts owing to the Company of \$96,874 (2018 - \$478,699), representing the Company's major credit risk exposure. Credit concentration is determined based on customers representing 10% or more of total revenues and/or total accounts receivable.

Fair value of financial instruments

Financial instruments are comprised of cash, accounts receivable, investments, deposits, accounts payable and accrued liabilities, term loans, long-term debt and convertible debentures. There are three levels of fair value that reflect the significance of inputs used in determining fair values of financial instruments:

Level 1 — quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 — inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices).

Level 3 — inputs for the asset or liability that are not based on observable market data.

Investments in BGF shares are valued as at December 31, 2019 at quoted market prices and are classified as Level 1. Investments in BGF shares were valued as at December 31, 2018 based on a valuation technique that estimates a business' value based on a recent round of financing and were classified as Level 3.

Investments in HPQ shares are valued at quoted market prices and are classified as Level 1.

Investments in HPQ warrants are valued using the Black-Scholes pricing model and are classified as Level 3.

The fair values of cash, trade accounts receivable, accounts payable and accrued liabilities, term loans and longterm debt approximate their carrying amounts due to their short-term maturities.

Interest rate risk

Interest rate risk is the risk that the value of a financial instrument might be adversely affected by a change in interest rates. Changes in market interest rates may have an effect on the cash flows associated with some financial assets and liabilities, known as cash flow risk, and on the fair value of other financial assets or liabilities, known as price risk, and on the fair value of investments or liabilities, known as price risks. The Company is exposed to a risk of fair value on the term loans and convertible debentures as those financial instruments bear interest at fixed rates.

Price risk

Price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market price (other than those arising from foreign currency risk and interest risk), whether those changes are caused by factors specific to the individual financial instrument or its issuers or factors affecting all similar financial instruments traded in the market. The most significant exposure to the price risk for the Company arises from its investments in shares of public companies quoted on the TSXV Exchange. If equity prices had increased or decreased by 15% as at December 31, 2019, with all other variables held constant, the Company's investments would have increased or decreased respectively, by approximately \$241,000 (December 31, 2018 - \$262,000).

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

24. Financial instruments (continued)

Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivery of cash or another financial asset. The Company's ability to continue as a going concern is dependent on management's ability to raise required funding through future equity and / or debt issuances and to generate positive cash flows from operations (see note 1 (b)). The Company manages its liquidity risk by forecasting cash flows from operations and anticipating any investing and financing activities.

The following table summarizes the contractual amounts payable and maturities of financial liabilities as at December 31, 2019:

| | <u>Carrying value</u> | <u>Total contractual amount</u> | <u>6 months or less</u> | <u>6 to 12 months</u> |
|--|---------------------------|---|-----------------------------|-----------------------|
| | \$ | \$ | \$ | \$ |
| Accounts payable and accrued liabilities | 4,913,155 | 4,900,355 | 4,900,355 | - |
| Term loans | 496,000 | 579,795 | 332,295 | 247,500 |
| Long-term debt | 284,956 | 299,425 | 299,425 | - |
| Convertible debentures | 2,898,358 | 3,142,500 | 3,142,500 | - |
| | <u>8,592,469</u> | <u>8,922,075</u> | <u>8,674,575</u> | <u>247,500</u> |

25. Contingent liabilities

The Company is currently a party to various legal proceedings. If management believes that a loss arising from these proceedings is probable and can reasonably be estimated, that amount of the loss is recorded. As additional information becomes available, any potential liability related to these proceedings is assessed and the estimates are revised, if necessary. Based on currently available information, management believes that the ultimate outcome of these proceedings, individually and in aggregate, will not have a material adverse effect on the Company's financial position or overall trends in results of operations.

The Company had received a government grant in prior years of approximately \$800,000 to assist with the development of a new system of advanced waste treatment systems technology. The grant is potentially repayable at the rate of 3% of any consideration received as a result of the project, for which funding has been received, to a maximum of the actual grant received. This repayment provision will remain in effect until May 30, 2024. The Company abandoned the project in 2011 and accordingly, no amount is expected to be repaid.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

26. Capital management

The Company's objectives in managing capital are:

- a) To ensure sufficient liquidity to support its current operations and execute its business plan; and
- b) To provide adequate return to the shareholders

The Company's primary objectives when managing capital is to ensure the entity continues as a going concern as well as to maintain optimal returns to shareholders and benefits for other stakeholders.

The Company currently funds these requirements from cash flows from operations and with financing arrangements with third parties and shareholders. The Company is not subject to any externally imposed capital requirements.

The management of capital includes common shares, warrants reserve, contributed surplus and equity portion of convertible debentures for a total amount of \$54,154,733 (2018 - \$50,060,490) and debt of \$3,679,323, (2018 - \$3,055,508). The Company monitors its working capital in order to meet its financial obligations. As at December 31, 2019, the Company's working capital deficiency was \$10,492,101 (2018 – deficiency of \$4,101,428).

There were no changes in the Company's approach during fiscal 2019.

27. Income taxes

a) Reconciliation of income taxes

| | <u>2019</u> | <u>2018</u> |
|--|-------------|-------------|
| | <u>\$</u> | <u>\$</u> |
| Loss before income taxes | (9,171,116) | (7,845,800) |
| Income tax rates | 26.6% | 26.7% |
| Income tax recovery at the combined basic Federal and Provincial tax rates | (2,439,517) | (2,094,829) |
| Permanent differences | 271,576 | 835,340 |
| Tax rate changes | 8,153 | (68,446) |
| True-up deferred | (652,185) | (53,208) |
| Unrecognized tax assets | 2,811,973 | 1,381,143 |
| Income tax expense | <u>-</u> | <u>-</u> |

PyroGenesis Canada Inc.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

27. Income taxes (continued)

b) Deferred tax expense

| | 2019 | 2018 |
|---|-------------|-------------|
| | \$ | \$ |
| Origination and reversal of temporary differences | (2,511,973) | (1,381,142) |
| Change in unrecognized deductible temporary differences | 2,511,973 | 1,381,142 |
| Income tax expense | <u>-</u> | <u>-</u> |

c) The tax effects of significant items comprising the Company's net deferred tax assets and liabilities are as follows:

| | 2019 | 2018 |
|------------------------------------|--------------------|--------------------|
| | \$ | \$ |
| Investments | 74,863 | 97,932 |
| Financing costs | 80,685 | 87,834 |
| Property, plant and equipment | 463,353 | 112,054 |
| Intangible assets | 1,116,566 | 1,101,341 |
| Right of use assets (IFRS 16) | 57,540 | - |
| Research and development expenses | 2,027,039 | 1,878,263 |
| Non-capital losses carried forward | 7,150,683 | 4,988,950 |
| | <u>10,970,729</u> | <u>8,266,374</u> |
| Deferred tax assets not recognized | <u>-10,970,729</u> | <u>(8,266,374)</u> |
| | <u>-</u> | <u>-</u> |

d) Tax carry forward

The Company has the following non-capital losses available to reduce future income taxes:

| Expiry date | Federal | Provincial |
|-------------|-------------------|-------------------|
| | \$ | \$ |
| 2031 | 2,313,597 | 2,313,597 |
| 2032 | 3,945,870 | 3,945,870 |
| 2033 | 2,047,643 | 2,047,643 |
| 2034 | 589,007 | 589,007 |
| 2035 | 703,664 | 416,827 |
| 2036 | 3,579,827 | 3,440,527 |
| 2037 | 1,577,876 | 1,568,739 |
| 2038 | 5,716,536 | 5,650,620 |
| 2039 | 6,622,981 | 6,631,768 |
| | <u>27,097,001</u> | <u>26,604,598</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

27. Income taxes (continued)

The Company has a total of \$3,076,049 of federal income tax credits that can be carried forward for 20 years and expire from 2019 to 2038.

The Company has a total of \$9,232,220 of federal pool balance of deductible SR&ED expenditures and \$8,782,931 of Quebec R&D expenditures that can be carried forward indefinitely in the future to reduce income taxes.

28. Segment information

The Company operates in one segment, based on financial information that is available and evaluated by the Company's Board of Directors.

The Company's head office is located in Montreal, Quebec. The operation of the Company is located in one geographic area: Canada. The following is a summary of the Company's geographic information:

| | 2019 | 2018 |
|--|------------------|------------------|
| | \$ | \$ |
| Revenues from external customers located in: | | |
| Canada | 889,284 | 1,908,109 |
| United States | 852,599 | 1,643,811 |
| Europe | 1,488,208 | 147,368 |
| Mexico | 122,890 | 1,214,403 |
| Asia | 1,399,824 | 116,425 |
| Australia | 53,190 | - |
| South America | 7,983 | - |
| | <u>4,813,978</u> | <u>5,030,116</u> |

Revenue by product line and revenues recognized by revenue recognition method are presented in note 6.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

29. Subsequent events

In January and February 2020, the Company issued 1,488,000 common shares upon the exercise of 1,488,000 stock options with an exercise price of \$0.30 for total proceeds of \$446,400.

In March 2020, the World Health Organization declared a global pandemic due to the novel coronavirus (COVID- 19). The situation is constantly evolving, and the measures put in place are having multiple impacts on provincial, national and global economies. The overall effect of these events on the Company and its operations is too uncertain to be estimated at this time. The impacts will be accounted for when they are known and may be assessed.

On March 18, 2020, the Company closed a \$903,000 non-brokered secured convertible loan at 12% per annum, with a trust whose beneficiary is the controlling shareholder and CEO of the Company. The Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis in arrears and matures September 17, 2021. The Loan is convertible into common shares of the Company at a conversion price of \$0.28 per common share.

The Company received under the exclusivity contract with Drosrite International approximately US\$2,545,520 between March 23, 2020, and June 02, 2020.

On March 30, 2020 the Company reached an agreement to extend the maturity date of its \$3,000,000 convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company redeemed \$300,000 (representing 10% of the principal amount), paid a onetime accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. The interest rate and conversion feature have not changed.

The Company received under the exclusivity contract with a US tunneling corporation approximately \$1,000,000 between March and April, 2020.

On May 26, 2020, the Company completed a share debt transaction with HPQ to settle outstanding trade accounts receivable in the amount of \$395,514, for which an amount of \$30,002 was included in trade accounts receivable as at December 31, 2019, whereby the Company received 4,394,600 units at a price of \$0.09 per unit. Each unit is comprised of one common share and one common share purchase warrant. Each warrant will allow its holder to subscribe to one common share at the price of \$0.10 for a period of 36 months from the date of closing. Each share issued pursuant to the debt settlement will have a mandatory four month and one day holding period from the date of closing. This settlement is subject to the approval of the TSX Venture.

Between April 7, 2020 and June 15, 2020, the Company bought back 1,285,000 of its common shares for an amount of \$964,391 including commissions of \$12,845. In June 2020, the Company received proceeds of \$2,191,725 from 2,578,500 warrants exercised at a price of \$0.85 and \$156,600 from 270,000 warrants exercised at \$0.58.

**PYROGENESIS CANADA INC.****MANAGEMENT'S DISCUSSION AND ANALYSIS**

This management's discussion and analysis ("MD&A") is intended to assist readers in understanding the business environment, strategies, performance and risk factors of PyroGenesis Canada Inc. ("PyroGenesis", or the "Company"). The MD&A provides the reader with a view and analysis, from the perspective of management, of the Company's financial results for the three months ended March 31, 2019. The MD&A has been prepared in accordance with National Instrument 51-102, Continuous Disclosure Requirements, and should be read in conjunction with the audited financial statements and related notes thereto of the Company for the year ended December 31, 2018.

The financial statements and MD&A have been reviewed by PyroGenesis' Audit Committee and were approved by its Board of Directors on May 28, 2019. The Board of Directors is responsible for ensuring that the Company fulfills its responsibilities for financial reporting and is ultimately responsible for reviewing and approving the MD&A. The Board of Directors carries out this responsibility principally through its Audit Committee. The Audit Committee is appointed by the Board of Directors and is comprised of independent directors. The Audit Committee reports its findings to the Board of Directors for its consideration when it approves the MD&A and financial statements for issuance to shareholders.

The following information takes into account all material events that took place up until May 28, 2019, the date on which the Company's Board of Directors approved this MD&A. Unless otherwise indicated, all amounts are presented in Canadian dollars. The Company's functional and reporting currency is the Canadian dollar.

Additional information regarding PyroGenesis is available on SEDAR (www.sedar.com), OTC Markets (www.otcm Markets.com) and on the Company's website at www.pyrogenesis.com.

FORWARD-LOOKING STATEMENTS

This MD&A contains forward-looking statements. All statements other than statements of historical fact contained in this MD&A are forward-looking statements, including, without limitation, the Company's statements regarding its products and services; relations with suppliers and clients; future financial position; business strategies; potential acquisitions; potential business partnering; litigation; and plans and objectives. In certain cases, forward-looking statements can be identified by the use of words such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved" and similar words or the negative thereof. Although management of the Company believes that the expectations represented in such forward-looking statements are reasonable, there can be no assurance that such expectations will prove to be correct.



In particular, this MD&A contains forward-looking statements that relate, but are not limited, to:

- the Company's business strategies, strategic objectives and growth strategy;
- the Company's current and future capital resources and the need for additional financing;
- the Company's ability to increase sales, including the results of the successful completion of the Company's current projects;
- management's expectation that the Company will achieve sustained annual growth and profitability, and that gross margins will increase resulting in a decrease in cost of sales as a percentage of revenue; and
- the Company's overall financial performance.

By their nature, forward-looking statements require assumptions and are subject to inherent risks and uncertainties including those discussed herein. In particular, forward-looking statements relating to future sales, growth and profitability are based on the assumption that current projects will be completed, and the Company will be awarded certain anticipated contracts pursuant to recent negotiations with, and statements made by, third parties. There is significant risk that predictions and other forward-looking statements will not prove to be accurate. Readers are cautioned to not place undue reliance on forward-looking statements made herein because a number of factors could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.

The future outcomes that relate to forward-looking statements may be influenced by many factors, including, but not limited to, the strength of the Canadian, US and Asian economies; operational, funding, and liquidity risks; unforeseen engineering and environmental problems; delays or inability to obtain required financing and/or anticipated contracts; risks associated with licenses, permits and regulatory approvals; supply interruptions or labour disputes; foreign exchange fluctuations and collection risk; competition from other suppliers, or alternative, less capital intensive, energy solutions; and risk factors described elsewhere in this document under the heading "Risk Factors". We caution that the foregoing list of factors is not exhaustive, and that, when relying on forward-looking statements to make decisions with respect to the Company, investors and others should carefully consider these factors, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements.

Although the Company has attempted to identify significant factors that could cause actions, events or results to differ materially from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. Forward-looking statements are provided as of the date of this MD&A, and the Company assumes no obligation to update or revise such forward-looking statements to reflect new events or circumstances except as required under applicable securities laws.

The forward-looking statements contained herein are expressly qualified in their entirety by this cautionary statement. The forward-looking statements included in this MD&A are made as of the date of this MD&A or such other date specified herein.



OVERVIEW

PyroGenesis Canada Inc. is a world leader in the design, development, manufacturing and commercialization of advanced plasma processes. The Company provides engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working from its Montreal office and its 3,800m² production facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. PyroGenesis' core competencies allow the Company to be a leader in providing innovative plasma torches, plasma waste processes, plasma atomisation processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2008 certified and have been ISO certified since 1997. PyroGenesis is a publicly-traded Canadian company on the TSX Venture Exchange (Ticker symbol: PYR.V) and on the OTCQB in the United States (Ticker symbol: PYRNF).

SELECTED FINANCIAL INFORMATION

| | Three months ended Mar 31, | | % Change |
|-------------------------------------|----------------------------|----------------|--------------|
| | 2019 | 2018 | 2019 vs 2018 |
| Revenue | \$ 736,443 | \$ 2,060,602 | \$ -64% |
| Cost of sales and services | 644,285 | 1,354,696 | -52% |
| Gross margin | 92,158 | 705,906 | -87% |
| Expenses | | | |
| Selling, general and administrative | 1,330,005 | 1,358,369 | -2% |
| Research and development | 95,774 | 52,498 | 82% |
| Net finance costs | (454,698) | 323,834 | -240% |
| | 971,081 | 1,734,701 | -44% |
| Comprehensive loss | \$ (878,923) | \$ (1,028,795) | \$ -16% |
| Basic and diluted loss per share | \$ (0.01) | \$ (0.01) | |
| Modified EBITDA (loss) | \$ (1,136,537) | \$ (545,281) | 108% |

Modified EBITDA (loss) is not a performance measure defined under IFRS and it is not considered an alternative to Income (Loss) from operations or Comprehensive Earnings (Loss) in the context of measuring a Company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of their results and related trends, and as such increases transparency and clarity. Modified EBITDA (loss) is an important measure of operating performance because it allows management, investors and others to evaluate and compare the Company's core operating results, including our return on capital and operating efficiencies, from period to period, by removing the impact of its capital structure (interest expense to service outstanding debt), asset base (depreciation and amortization), tax consequences, and other non-operating items not requiring cash outlays including share-based compensation and change in fair value of investment. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation.



Extract from Statement of Financial Position at:

| | March 31, 2019 | Dec 31, 2018 |
|--------------------------|---------------------------|-----------------------|
| Current assets | 1,758,264 | 2,868,280 |
| Non-current assets | 11,200,808 | 5,891,195 |
| Total assets | \$ 12,959,072 | \$ 8,759,475 |
| Current liabilities | 10,406,546 | 6,969,708 |
| Non-current liabilities | 4,340,723 | 2,795,817 |
| Total liabilities | \$ 14,747,269 | \$ 9,765,525 |
| Shareholders' deficiency | \$ (1,788,197) | \$ (1,006,050) |

RESULTS OF OPERATIONS

Revenue

PyroGenesis recorded revenue of \$736,443 in the first quarter of 2019 ("Q1, 2019"), representing a decrease of 64% compared with \$2,060,602 recorded in the first quarter of 2018 ("Q1, 2018").

Revenues recorded in the first quarter of 2019 were generated primarily from:

- (i) PUREVAP™ related sales of \$94,077 (2018 Q1 - \$736,660)
- (ii) Torch related sales of \$139,813 (2018 Q1 - \$Nil)
- (iii) support services related to PAWDS-Marine systems supplied to the US Navy \$210,667 (2018 Q1 - \$527,444)

Cost of Sales and Services and Gross Margin

| | Three months ended Mar 31, | | % Change |
|--|-----------------------------------|--------------|---------------------|
| | 2019 | 2018 | 2019 vs 2018 |
| Employee compensation | \$ 428,362 | \$ 542,541 | -21% |
| Subcontracting | 5,722 | 37,478 | -85% |
| Direct materials | 163,871 | 699,215 | -77% |
| Manufacturing overhead & other | 64,424 | 141,394 | -54% |
| Foreign exchange loss | 13,198 | 22,465 | -41% |
| Investment tax credits | (36,071) | (88,397) | -59% |
| Cost of Sales and Services before Amortization of Intangible Asse | \$ 639,506 | \$ 1,354,696 | -53% |
| Amortization of intangible assets | 4,779 | - | - |
| Total Cost of Sales and Services | \$ 644,285 | \$ 1,354,696 | -52% |



Gross Margin

| | Three months ended Mar 31, | |
|----------------------------|----------------------------|--------------|
| | 2019 | 2018 |
| Revenue | \$ 736,443 | \$ 2,060,602 |
| Cost of Sales and Services | 644,285 | 1,354,696 |
| Gross Margin | \$ 92,158 | \$ 705,906 |
| Gross Margin % | 12.5% | 34.3% |

Cost of sales and services before amortization of intangible assets is not a performance measure defined under IFRS and it is not considered an alternative to gross margin in the context of measuring the Company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of its results and related trends, and increases transparency and clarity. Gross margin before amortization of intangible assets is an important measure of operating performance because it allows management, investors and others to evaluate and compare the Company's core operating results, including its return on capital and operating efficiencies, from period to period, by removing the impact of non-operating items not requiring cash outlays. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation or a substitute for financial measures prepared in accordance with IFRS.

Cost of sales and services before amortization of intangible assets was \$639,506 in Q1 2019, representing a decrease of 53% compared with \$1,354,696 in Q1 2018, primarily due to lower direct materials and manufacturing overhead as a result of lower revenues in Q1 2019.

In Q1 2019, employee compensation, subcontracting, direct materials and manufacturing overhead decreased to \$662,379 (Q1 2018 - \$1,420,628). The gross margin for Q1 2019 was \$92,158 or 12.5% of revenue compared to a gross margin of \$705,906 or 34.3% of revenue for Q1 2018. As a result of the type of contracts being executed, the nature of the project activity had a significant impact on the gross margin and the overall level of cost of sales and services reported in a period, as well as the composition of the cost of sales and services, as the mix between labour, materials and subcontracts may be significantly different.

Investment tax credits recorded against cost of sales are related to projects that qualify for tax credits from the provincial government of Quebec. Qualifying tax credits decreased to \$36,071 in Q1 2019, compared with \$88,397 in Q1 2018. This represents a decrease of 59% year-over-year. The decrease in Q1 2019 is primarily due to the Investment tax credits being recorded against the respective expenses in cost of goods sold, selling and general expenses and research and development expenses, versus all of the investment tax credits of Q1 2018 being recorded against cost of goods sold only, and the offset of a government grant related to our qualifying research and development costs. In total, the Company earned investment tax credits of \$67,808 in Q1 2019.

The amortization of intangible assets of \$4,779 in Q1 2019 and \$Nil for Q1 2018 relates to patents and deferred development costs. Of note, these expenses are non-cash items and will be amortized over the duration of the patent lives.



Selling, General and Administrative Expenses

| | Three months ended Mar 31. | | % Change |
|--|----------------------------|---------------------|------------|
| | 2019 | 2018 | 2019vs2018 |
| Employee compensation | \$ 812,673 | \$ 621,190 | 31% |
| Professional fees | 155,166 | 226,350 | -31% |
| Office and general | 60,770 | 159,622 | -62% |
| Travel | 76,002 | 124,870 | -39% |
| Depreciation on property and equipment | 48,149 | 29,717 | 62% |
| Depreciation on right of use assets | 109,672 | - | 100% |
| Investment tax credits | (7,413) | - | 100% |
| Government grants | (22,038) | (10,894) | 102% |
| Other expenses | 62,540 | 77,551 | -19% |
| Sub-total before Share-based payments | \$ 1,295,521 | \$ 1,228,406 | 5% |
| Share-based payments | 34,484 | 129,963 | -73% |
| Total selling, general and administrative | \$ 1,330,005 | \$ 1,358,369 | -2% |

Included within Selling, General and Administrative expenses (“SG&A”) are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for Q1 2019 excluding the costs associated with share-based compensation (a non-cash item in which options vest principally over a four-year period), were \$1,295,521 representing an increase of 5% compared with \$1,228,406 reported for Q1 2018.

The increase in SG&A expenses in Q1 2019 over the same period in 2018 is mainly attributable to the net effect of:

- i) an increase of 31% in employee compensation due primarily to additional headcount,
- ii) a decrease of 31% for professional fees, primarily due to a decrease in legal fees and employee recruitment expenses,
- iii) a decrease of 62% in office and general expenses, is primarily due to the reclassification of rent expense to depreciation right of use assets,
- iv) travel costs decreased by 39%, due to a decrease in travel abroad,
- v) depreciation on property and equipment increased by 62% due to higher amounts of property and equipment being depreciated,
- vi) depreciation on right of use assets increased by 100% due to reclassification of rent expense to depreciation right of use assets,
- vii) Investment tax credits increased by 100% due to the investment tax credits being recorded against the respective expenses in cost of goods sold, selling and general expenses and research and development expenses versus all of the investment tax credits of Q1 2018 being recorded against cost of goods sold only,
- viii) government grants increased by 102% due to a government grant contribution for a maximum amount of \$350,000 for the period 2018-2020,
- ix) other expenses decreased by 19%, primarily due to a decrease in advertising expenses and in the reclassification of lease property taxes to depreciation right of use assets.



Separately, share based payments decreased by 73% in Q1 2019 over the same period in 2018 as a result of the vesting structure of the stock option plan including the stock options granted in 2018.

Research and Development (“R&D”) Costs

| | Three months ended Mar 31, | | % Change |
|---|----------------------------|------------------|-------------|
| | 2019 | 2018 | 2019vs2018 |
| Employee compensation | \$ 190,115 | \$ 50,012 | 280% |
| Investment tax credits | (24,324) | - | 100% |
| Materials and equipment | 37,395 | 226 | 16460% |
| Other expenses | 2,564 | 2,260 | 13% |
| Sub-total before government grants | \$ 205,750 | \$ 52,498 | 292% |
| Government grants | (109,976) | - | 100% |
| Total net R&D costs | \$ 95,774 | \$ 52,498 | 82% |

The Company incurred \$95,774 of R&D costs, net of government grants, on internal projects in Q1 2019, an increase of 82% as compared with \$52,498 in Q1 2018. The increase in Q1 2019 is related to torch development and plasma atomization related expenses.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and Experimental Development (“SR&ED”) tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see “Cost of Sales” above).

Net Finance Costs

| | Three months ended Mar 31, | | % Change |
|---|----------------------------|-------------------|--------------|
| | 2019 | 2018 | 2019vs2018 |
| Adjustment to the fair value of investments | \$ (706,196) | \$ 219,000 | -422% |
| Finance expenses | 251,498 | 104,834 | 140% |
| Net finance costs | \$ (454,698) | \$ 323,834 | -240% |

Finance costs for Q1 2019 totaled \$(454,698) as compared with \$323,834 for Q1 2018, representing a decrease of 240% year-over-year. The decrease in finance costs in Q1 2019, is primarily attributable to the adjustment in fair value of investments in HPQ Silicon Resources Inc. and Beauce Gold Fields. The adjustment to the fair market value of investments for Q1 2019 resulted in a gain of \$706,196 compared to a loss in the amount of \$219,000 in Q1 2018.



Depreciation on Property and Equipment

Three months ended Mar 31. % Change
2019 2018 2019vs2018

| | 2019 | 2018 | % Change |
|---|------------------|------------------|-----------------|
| Depreciation on property and equipment | \$ 48,149 | \$ 29,717 | 62% |

The depreciation on property and equipment increased to \$48,149 in Q1 2019, compared with \$29,717 in Q1 2018. The 62% increase is due to higher amounts of property and equipment being depreciated.

Net comprehensive loss

Three months ended Mar 31. % Change
2019 2018 2019vs2018

| | 2019 | 2018 | % Change |
|-------------------------------|---------------------|-----------------------|-----------------|
| Net comprehensive loss | \$ (878,923) | \$ (1,028,795) | -15% |

The net comprehensive loss for Q1 2019 of \$878,923 compared to a loss of \$1,028,795, in Q1 2018, represents a decrease of 15% year-over-year. The decrease of \$149,872 in the comprehensive loss in Q1 2019 is primarily attributable to the factors described above, which have been summarized as follows:

- (i) a decrease in product and service-related revenue of \$1,324,159 arising in Q1 2019,
- (ii) a decrease in cost of sales and services totaling \$710,411, primarily due to a decrease in employee compensation, a decrease in subcontracting, a decrease in direct materials, decrease in manufacturing overhead, a decrease in investment tax credits, and an increase in amortization of intangible assets,
- (iii) a decrease in SG&A expenses of \$28,364 arising in Q1 2019 primarily due to a decrease in professional fees, a decrease in travel, and a decrease in other expenses,
- (iv) an increase in R&D expenses of \$43,276 primarily due to an increase in employee compensation, and materials & equipment,
- (v) a decrease in net finance costs of \$778,532 in Q1 2019 primarily due to the fair value adjustment of investments.



Reconciliation of Non-IFRS measures (EBITDA, Adjusted and Modified)

| | Three months ended Mar 31. | | % Change |
|--|----------------------------|---------------------|--------------|
| | 2019 | 2018 | 2019vs2018 |
| Comprehensive loss | \$ (878,923) | \$ (1,028,795) | -16% |
| Depreciation on property and equipment | 48,149 | 29,717 | 62% |
| Depreciation rou assets | 109,672 | - | 100% |
| Amortization of intangible assets | 4,779 | - | 100% |
| Financing charges | 251,498 | 104,834 | 140% |
| EBITDA (loss) | \$ (464,825) | \$ (894,244) | -48% |
| Other non-cash items: | | | |
| Share-based payments | 34,484 | 129,963 | -73% |
| Adjusted EBITDA (loss) | \$ (430,341) | \$ (764,281) | -44% |
| Change in fair value of investments | (706,196) | 219,000 | 422% |
| Modified EBITDA (loss) | \$ (1,136,537) | \$ (545,281) | -108% |

EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation and Amortization, Adjusted EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation, Amortization and other non-cash items including share-based payment costs, and Modified EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation, Amortization and other non-cash items including share-based payment costs and change in fair value of investments.

EBITDA, Adjusted EBITDA and Modified EBITDA are not performance measures defined under IFRS and they are not considered an alternative to income or loss from operations, or to comprehensive earnings or loss, in the context of measuring a company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of its results and related trends and increases transparency and clarity. Management believes that EBITDA, Adjusted EBITDA and Modified EBITDA are important measures of operating performance because it allows management, investors and others to evaluate and compare the Company's operating results, including its return on capital and operating efficiencies, from period-to-period by removing the impact of the Company's capital structure (interest expense to service outstanding debt), asset base (depreciation and amortization), tax consequences, and other non-operating items not requiring cash outlays including the adjustment to the fair value of investments and share-based compensation. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation.

The EBITDA loss in Q1 2019 was \$464,825 compared with an EBITDA loss of \$894,244 for Q1 2018, representing a decrease of 48% year-over-year. The \$429,419 decrease in the EBITDA loss in Q1 2019 compared with Q1 2018 is due to the decrease in comprehensive loss of \$149,872, offset by an increase in depreciation on property and equipment of \$18,432, an increase in depreciation of right of use assets of \$109,672, an increase in amortization of intangible assets of \$4,779 and an increase in finance charges of \$146,664.

Adjusted EBITDA loss in Q1 2019 was \$430,341 compared with an Adjusted EBITDA loss of \$764,281 for Q1 2018. The decrease of \$333,940 in the Adjusted EBITDA loss in Q1 2019 is attributable to a decrease in EBITDA loss of \$429,419, offset by a decrease of \$95,479 in share-based payments.

The Modified EBITDA loss in Q1 2019 was \$1,136,537 compared with a Modified EBITDA loss of \$545,281 for Q1 2018, representing an increase of 108%. The increase in the Modified EBITDA loss in Q1 2019 is attributable to the decrease as mentioned above in the Adjusted EBITDA of \$333,940 and an increase in the change of fair value of investments of \$925,196.



SUMMARY OF QUARTERLY RESULTS

| | 2019 | 2018 | | | |
|--|-----------------|---------------------|------------------|------------------|------------------|
| | Q1 | Q4 | Q3 | Q2 | Q1 |
| Revenues | \$ 736,443 | \$ 450,436 | \$ 1,097,726 | \$ 1,421,352 | \$ 2,060,602 |
| Gross margin Gross margin % | 96,936 13.2% | (345,158) -76.6% | 252,152 23.0% | 496,398 34.9% | 705,906 34.3% |
| Comprehensive loss | (878,923) | (2,523,283) | (2,758,831) | (1,534,890) | (1,028,796) |
| Net loss per share - basic and diluted | (0.01) | (0.02) | (0.02) | (0.01) | (0.01) |

The majority of PyroGenesis' revenue is recognised from long-term contracts over time and is dependent on the timing of project initiation and execution, including project engineering, manufacturing, and testing. In Q1 2019 the Company has adopted IFRS 15 dealing with revenue from contracts with customers.

LIQUIDITY AND CAPITAL RESOURCES

The following table summarizes the contractual maturities of financial liabilities as at March 31, 2019.

| | Total ¹ | 6 months or less | 6 to 12 months | 1- 3 years | Thereafter |
|---|--------------------|---------------------|-------------------|------------------|------------------|
| | \$ | \$ | \$ | \$ | |
| Accounts payable and accrued liabilities | 2,452,917 | 2,452,917 | - | - | - |
| Lease liabilities | 5,643,199 | 252,768 | 263,417 | 3,993,569 | 1,133,445 |
| Term loans to the controlling shareholder | 317,125 | - | 317,125 | - | - |
| Convertible debentures | 3,570,000 | 142,500 | 142,500 | 3,285,000 | - |
| | <u>11,983,241</u> | <u>2,848,185</u> | <u>723,042</u> | <u>7,278,569</u> | <u>1,133,445</u> |

¹ Including interest to be paid

The Company has incurred, in the last several years, operating losses and negative cash flows from operations, resulting in an accumulated deficit of \$51,945,463 and a negative working capital of \$8,648,282 as at Q1 2019, (December 31, 2018 - \$51,066,540 and \$4,101,428 respectively). Furthermore, as at Q1 2019, the Company's current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$141,850 (December 31, 2018 - \$644,981). The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.



Revenue generated from active projects does not yet produce sufficient positive cash flow to fund operations. However, the Company has a strong backlog from signed contracts totaling \$8.5 million, and a pipeline of prospective new projects resulting in the Company's business plan becoming less dependent on raising additional funds to finance operations within and beyond the next 12 months. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so, should it need to, in the future. If the Company is unable to obtain sufficient additional financing when needed, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations. Until such financing is secured, there exists a material uncertainty that may cast significant doubt about the Company's ability to continue operating as a going concern and realize its assets and settle its liabilities and commitments in the normal course of business. See note 1(b) to the financial statements.

SUMMARY OF CASH FLOWS

| | Three months ended Mar 31, | |
|---|-----------------------------------|-----------------------|
| | 2019 | 2018 |
| Cash provided by (used in) operating activities | \$ (137,312) | \$ (1,183,696) |
| Cash provided by (used in) investing activities | (128,417) | (683,599) |
| Cash provided by (used in) financing activities | (237,402) | 3,829,437 |
| Increase (decrease) in cash | (503,131) | 1,962,142 |
| Cash - end of period | 141,850 | 2,584,988 |

During the three months ended March 31, 2019, cash flows used by operating activities was \$137,312 compared to \$1,183,696 for the same period in the prior year.

The use of cash during Q1, 2019 consists of the comprehensive loss of \$878,923 (2018 - \$1,028,795) plus adjustments for operating activities of \$257,614 (2018 - \$483,514), plus a net change in non-cash operating working capital items of \$1,201,518 (2018 - net decrease of \$637,926) plus interest paid of \$155,569 (2018 - interest paid of \$489).

Investing activities resulted in a use of cash of \$128,417 in 2019, compared to a use of cash of \$683,599 in 2018 resulting from the purchase of inventories, property and equipment and reimbursement of deposits.

Financing activities in Q1, 2019 resulted in a use of funds of \$237,402, compared with a net source of funds of \$3,829,437 for the same periods in 2018. In Q1, 2019, the Company repaid loans of \$247,200, made payment of lease liabilities of \$52,494 and received a reimbursement of a deposit of \$62,292. In 2018, the source of funds resulted from the issuance of common shares upon exercise of warrants, units and stock options, convertible debentures for net proceeds of \$4,121,717 raised for general working capital purposes, and repaid an amount of \$292,280 in loans and capital lease obligations.

The net cash position of the Company decreased by \$503,131 for Q1, 2019 compared to a net increase of \$1,962,142 for Q1, 2018.



CAPITAL STOCK INFORMATION

The authorized share capital of the Company consists of an unlimited number of Class A common shares (the “Common Shares”). As at May 28, 2019 PyroGenesis had 138,619,450 on shares, 23,741,870 share purchase warrants, 9,922,000 outstanding stock options issued, and 9,035,000 exercisable options issued.

GOING CONCERN

Cash generated from contracts and from providing engineering services to clients has historically been insufficient to meet the overall cash requirements of the Company to cover operating costs. For the Company to generate sufficient positive cash flows from operations and meet current cash requirements, the level of business must exceed that recorded to date. Management expects that the investments currently being made in accelerating projects under development for various clients, together with executing on the \$8.5 million backlog at May 28 2019, (169% of 2018 revenues) which is primarily related to the Company’s successful diversification into niche markets of the additive manufacturing (including 3D printing), and metals & mining industries, will continue to improve the Company’s cash position.

To date, the Company has raised financing primarily through successive issuances of equity and convertible debentures. There is no certainty that the Company will continue to be able to raise additional financing or expand its sales to fund its operations, although management is confident that it will be able to do so. These conditions indicate the existence of a material uncertainty that may cast significant doubt on the Company’s ability to continue as a going concern.

The December 31, 2018 financial statements have been prepared using International Financial Reporting Standards (“IFRS”) applicable to a going concern, which contemplates the realization of assets and settlement of liabilities in the normal course of business as they become due. If the going concern assumption were not appropriate for these financial statements then adjustments would be necessary to the carrying value of assets and liabilities, the reported expenses and the statements of financial position classifications used. The impact on the financial statements could be material.

RELATED PARTY TRANSACTIONS

During the three months ended March 31, 2019, the Company concluded the following transactions with related parties:

Lease payments of \$66,679 were paid to a trust whose beneficiary is the controlling shareholder and CEO (rent and property taxes of \$51,946 were charges in 2018). A balance due of \$1,755,477 (2018 - \$91,550) is included in lease liabilities at March 31, 2019.

An amount of \$240,159 was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company (December 31, 2018 – \$240,519), of this amount \$112,034 is included in prepaids.

An amount of \$10,213 was owed by a trust whose beneficiary is the controlling shareholder and CEO of the Company (December 31, 2018 – \$10,213) of this amount \$10,213 is included in accounts receivable.



A balance due to the controlling shareholder and CEO of the Company amounted to \$166,309 (December 31, 2018 - \$193,842) for expense report, salary and vacation payables and is included in accounts payable and accrued liabilities as at March 31, 2019.

An amount of \$4,364 (December 31, 2018 - \$7,427), of interest payable and an accretion amount of \$8,132 (December 31, 2018 - \$12,946), were accrued on the loan of \$295,000 from the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

The key management personnel of the Company are the members of the Board of Directors and certain officers. Total compensation to key management consisted of the following:

| | 2019 | 2018 |
|---------------------------|----------------|----------------|
| | \$ | \$ |
| Salaries –officers | 102,000 | 124,000 |
| Pension contributions | 2,040 | 2,040 |
| Fees – Board of Directors | 24,000 | |
| Other benefits – officers | 4,391 | 3,381 |
| Total compensation | 132,431 | 139,421 |

A balance of \$40,252 of key management compensation, of the amounts noted above, is included in accounts payable and accrued liabilities as at March 31, 2019 (December 31, 2018 - \$127,748).

SUBSEQUENT EVENTS

On April 4, 2019 the Company received an amount of \$157,122 from a term loan with respect to its scientific research and experimental development tax credit ("SR&ED Tax Credits") for the Company's fiscal years ending December 31, 2018. The loan bears a yearly interest rate of 16.68% for a term of twelve months.

On April 29, 2019 the Company announced an imminent potential contract of over \$20,000,000 in first year revenues, together with significant subsequent years revenues.

On May 15, 2019, the Company issued 2,996,500 Units to unrelated parties at a price of \$0.58 per Unit, for gross proceeds of \$1,737,970. Each Unit consists of one common share and one common share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until May 15th, 2021. Each Unit will be subject to a statutory hold period of four months and one day from the date of closing. In connection with the private placement the Company paid finder's fees in the amount of \$42,595.

On May 28, 2019, the Company issued 2,024,500 Units to unrelated parties at a price of \$0.58 per Unit, for gross proceeds of \$1,174,210. Each Unit consists of one common share and one common share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until May 28, 2021. Each Unit will be subject to a statutory hold period of four months and one day from the date of closing. In connection with the private placement the Company paid finder's fees in the amount of \$40,600.



On May 30, 2019, the President and CEO of the Company Mr. Photis Peter Pascali announced that he acquired ownership of 3,385,715 Common Shares and 3,385,715 Warrants in the capital of the Company at a price of \$0.55 per Common Share representing an aggregate amount of \$1,862,143. Each Warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until April 20, 2020. The acquisition of these Common Shares represents approximately 2.44% of the Company's issued and outstanding shares.

CRITICAL ACCOUNTING ESTIMATES, NEW AND FUTURE ACCOUNTING POLICIES AND FINANCIAL INSTRUMENTS

For a discussion of critical accounting estimates, new and future accounting policies and financial instruments, please refer to notes 3, 4, 5 and 24 of the annual 2018 Financial Statements.

RISK FACTORS

PyroGenesis is subject to a number of risks and uncertainties that could significantly affect the Company's financial condition and performance. This list of risk factors may not be exhaustive as the Company operates in a rapidly changing business environment and new risk factors emerge from time to time. The Company cannot predict such risk factors, nor can the Company assess the impact, if any, of such risk factors or uncertainties on its business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those projected in any forward-looking statements. Accordingly, neither shareholders of the Company nor purchasers of securities of the Company should rely on forward-looking statements as a prediction of actual results. If any of these risks actually occur, the Company's business, results of operations, financial position and cash flows could be adversely affected. In any such case, the market price of the Company's common shares could decline, and investors may lose all or part of their investment.

Revenue Risks

PyroGenesis may experience delays in achieving revenues, particularly with plasma gasification projects which have a long sales cycle. Revenues may be delayed or negatively impacted by issues encountered by the Company or its clients including:

- (a) unforeseen engineering and/or environmental problems;
- (b) delays or inability to obtain required financing, licenses, permits and/or regulatory approvals;
- (c) supply interruptions and/or labour disputes;
- (d) foreign exchange fluctuations and/or collection risk; and
- (e) competition from other suppliers and/or alternative energy solutions that are less capital intensive.

There is no assurance that the business will perform as expected or that returns from the business will support the expenditures needed to develop it.



Technology Development and Manufacturing Capability Risks

PyroGenesis recently expanded into new areas of business and, as a result, many of the Company's products are at various stages of the development cycle. The Company may be unable to commercialise such products, or it may be unable to manufacture such products in a commercially viable manner. Whilst management is confident in both its technology and in its team of experienced engineers, scientists and technicians, it cannot know with certainty, which of its products will be commercialised, when such products will be commercialised, or whether such products will be able to be manufactured and distributed profitably.

Lack of Product Revenues/History of Losses

PyroGenesis has incurred losses in the majority of years since its inception. The Company's operations have not generated sufficient earnings and cash flows to date to result in consistent profitability or positive cash flow. Consequently, the Company's continued existence is dependent upon its ability to generate profitable operations by establishing and expanding its client base and/or raising adequate long-term financing. PyroGenesis has relied primarily on equity financing, debt financing, partner funding and government funding to carry on its business to date. The ability of the Company to achieve profitable sustainable operations in the future is uncertain. PyroGenesis has not yet demonstrated its ability to consistently achieve positive gross margins and its ongoing efforts to improve product gross margins may be insufficient to result in profitability.

Additional financing and dilution

PyroGenesis will require additional financing to support ongoing operations and to undertake capital expenditures. There can be no assurance that additional financing will be available to the Company when needed, or on terms acceptable to the Company. PyroGenesis' inability to raise financing to support ongoing operations or to fund capital expenditures could limit the Company's growth and may have a material adverse effect upon the Company.

The Company does not exclude raising additional funds by equity financing. In addition, at May 28, 2019, 9,922,000 stock options are currently issued and outstanding, together with 23,741,870 share purchase warrants and \$3,000,000 convertible debentures. The exercise of stock options and/or warrants, together with the conversion of debentures, as well as any new equity financings, represents dilution factors for present and future shareholders.

Sales Cycle and Fixed Price Contracts

PyroGenesis sales cycle is long and the signing of new contracts is subject to delay, over which the Company has little control. The Company also enters into sales contracts with fixed pricing, which may be impacted by changes over the period of implementation. There is no assurance that delays or problems in fulfilling contracts with clients will not adversely affect the Company's activities, operating results or financial position.



Reliance on Technology

PyroGenesis will depend upon continuous improvements in technology to meet client demands in respect of performance and cost, and to explore additional business opportunities. There can be no assurance that the Company will be successful in its efforts in this regard or that it will have the resources available to meet this demand. Whilst management anticipates that the research and development will allow the Company to explore additional business opportunities, there is no guarantee that such business opportunities will be presented or realised. The commercial advantage of the Company will depend to a significant extent on the intellectual property and proprietary technology of PyroGenesis and the ability of the Company to prevent others from copying such proprietary technologies. PyroGenesis currently relies on intellectual property rights and other contractual or proprietary rights, including (without limitation) copyright, trade secrets, confidential procedures, contractual provisions, licenses and patents, to protect its proprietary technology. PyroGenesis may have to engage in litigation in order to protect its patents or other intellectual property rights, or to determine the validity or scope of the proprietary rights of others. This type of litigation can be expensive and time consuming, regardless of whether or not the Company is successful. PyroGenesis may seek patents or other similar protections in respect of particular technology; however, there can be no assurance that any future patent applications will actually result in issued patents, or that, even if patents are issued, they will be of sufficient scope or strength to provide meaningful protection or any commercial advantage to the Company. Moreover, the process of seeking patent protection can itself be long and expensive. In the meantime, competitors may develop technologies that are similar or superior to PyroGenesis' technology or design around the patents owned by the Company, thereby adversely affecting the Company's competitive advantage in one or more of its areas of business. Despite the efforts of the Company, its intellectual property rights may be invalidated, circumvented, challenged, infringed or required to be licensed to others. It cannot be assured that any steps the Company may take to protect its intellectual property rights and other rights to such proprietary technologies that are central to the Company's operations will prevent misappropriation or infringement of its technology.

Changes to Contracts

PyroGenesis is dependent upon its ability to establish and develop new relationships and to build on existing relationships with current clients. The Company cannot provide assurance that it will be successful in maintaining or advancing its relationships with current clients or procure additional clients. In addition, PyroGenesis cannot provide assurance that the U.S. Military and/or other military clients will continue to provide the Company with business. Sales to governments and governmental entities are subject to specific additional risks, such as delays in funding, termination of contracts or sub-contracts at the convenience of the government, termination, reduction or modification of contracts or sub-contracts in the event of changes in the government's policies or as a result of budgetary constraints and increased or unexpected costs resulting in losses or reduced profits under fixed price contracts.

Foreign Exchange Exposure

PyroGenesis' products and services are increasingly being sold in markets outside of Canada, whilst most of its operating expenses and capital expenditures are denominated in Canadian dollars. As a result, the Company is exposed to fluctuations in the foreign exchange rates between Canadian dollar and the currency in which a particular sale is transacted, which may result in foreign exchange losses that could affect earnings.

Competition

The industry is competitive and PyroGenesis competes with a substantial number of companies which have greater technical and financial resources. There can be no assurance that such competitors will not substantially increase the resources devoted to the development and marketing of products and services that compete with those of the Company or that new or existing competitors will not enter the various markets in which PyroGenesis is active. There can be no assurance that competitors will not develop new and unknown technologies with which the Company may have difficulty competing. Furthermore, failure to remain cost competitive may result in PyroGenesis losing business to its competitors.



Management and Key Personnel

PyroGenesis depends on the skills and experience of its management team and other key employees. The Company relies heavily on its ability to attract and retain highly-skilled personnel in a competitive environment. PyroGenesis may be unable to recruit, retain, and motivate highly-skilled employees in order to assist the Company's business, especially activities that are essential to the success of the Company. Failure to recruit and retain highly-skilled employees may adversely affect PyroGenesis' business, financial condition and results of operations.

Implementation of a strategic plan

PyroGenesis' commercial strategy aims to leverage its products, consumables, and services whilst focusing on the resolution of problems within niche markets within the industries served by the Company. There can be no assurances as to the success of the Company's strategic plan, which should be considered under the risks perspective and difficulties frequently encountered by a developing business.

Adverse Decisions of Sovereign Governments

PyroGenesis conducts an increasing portion of its business internationally. There is no assurance that any sovereign government, including Canada's, will not establish laws or regulations that will not be detrimental to the Company's interests or that, as a foreign corporation, it will continue to have access to the regulatory agencies in other countries. Governments have, from time to time, established foreign exchange controls, which could have a material adverse effect on the Company's business, financial condition and results of operations.

Governmental Regulation

PyroGenesis is subject to a variety of federal, provincial, state, local and international laws and regulations relating namely to the environment, health and safety, export controls, currency exchange, labour and employment and taxation. These laws and regulations are complex, change frequently and have tended to become more stringent over time. Failure to comply with these laws and regulations may result in a variety of administrative, civil and criminal enforcement measures, including assessment of monetary penalties, imposition of remedial requirements and issuance of injunctions as to future compliance. The Company may be subject to compliance audits by regulatory authorities in the various countries in which it operates.

Environmental Liability

PyroGenesis is subject to various environmental laws and regulations enacted in the jurisdictions in which it operates, which govern the manufacturing, processing, importation, transportation, handling and disposal of certain materials used in the Company's operations. Management believes that it has adequate procedures in place to address compliance with current environmental laws and regulations. Furthermore, management monitors the Company's practices concerning the handling of environmentally hazardous materials. However, there can be no assurance that the Company's procedures will prevent environmental damage occurring from spills of materials handled by the Company or that such damage has not already occurred. On occasion, substantial liabilities to third parties may be incurred. The Company may have the benefit of insurance maintained by it or the operator, however, the Company may become liable for damages against which it cannot adequately insure or against which it may elect not to insure because of high costs or other reasons. The Company's clients are subject to similar environmental laws and regulations, as well as limits on emissions to the air and discharges into surface and sub-surface waters. While regulatory developments that may follow in subsequent years could have the effect of reducing industry activity, the Company cannot predict the nature of the restrictions that may be imposed. The Company may be required to increase operating expenses or capital expenditures in order to comply with any new restrictions or regulations.



Product Liability and Other Lawsuits

PyroGenesis is subject to a variety of potential product liabilities claims and other lawsuits related with its operations, including liabilities and expenses associated with product defects. The Company maintains product liability and other insurance coverage that management believes is generally in accordance with the market practice in its industry, but there can be no assurance that the Company will always be adequately insured against all such potential liabilities.

Market Liquidity

The market price for the common shares of the Company could be subject to wide fluctuations. Factors such as the announcement of significant contracts, technological innovations, new commercial products, patents, a change in regulations, quarterly financial results, future sales of common shares by the Company or current shareholders, and many other factors could have considerable repercussions on the price of the Company's common shares. In addition, the financial markets may experience significant price and value fluctuations that affect the market prices of equity securities of companies that sometimes are unrelated to the operating performance of these companies. Broad market fluctuations, as well as economic conditions generally may adversely affect the market price of the Company's common shares.

Information systems disruptions

The Company's business depends on the efficient and uninterrupted operation of its computer and communications software, hardware systems, and its other information technology. If such systems were to fail, or the Company was unable to successfully expand the capacity of these systems or integrate new technologies into its existing systems, its operations and financial results could be adversely affected.



OUTLOOK

2019 is turning into the year that bears the fruit of 2018 strategies, in which PyroGenesis successfully positioned itself with unique and strategic partnerships, geared to effectively accelerate commercialization in two of its three business segments.

In 2018, the Company successfully positioned each of its commercial business lines for rapid growth by strategically partnering with multi-billion-dollar entities who have identified PyroGenesis' offerings to be unique, in demand, and of such a commercial nature as to warrant such unique relationships.

By the end of 2018 PyroGenesis could boast of a unique relationship with a multi-billion-dollar entity in each of its three commercial offerings:

- 1) The US Navy within the Military/Environmental sector;
- 2) A Japanese trading house within the DROSRITE™ (tolling) offering;
- 3) Aubert & Duval within the Additive Manufacturing/3D printing ("AM") offering.

Most companies would be thankful for one such relationship, but PyroGenesis has successfully developed three.

It became readily apparent to management that partnering with the right entity could significantly accelerate commercialization in each of its new business lines. This, however, would come with a cost in 2018. In order to succeed, PyroGenesis would have to dedicate significant resources to demonstrating the value proposition, and capabilities, to these entities. This meant that assets which should have been dedicated to sales now had to be deployed to developing these relationships. This not only impacted revenues, but it also increased costs of non-paying projects. We have seen this effect continue into Q1 2019, which we expect will continue to some degree into Q2, 2019.

To date, PyroGenesis has announced that it should be awarded a two-ship build for its PAWDS unit, for approximately \$13.5MM. Add to this the recently announced potential contract with 1st year revenues of \$20MM (\$30-50MM in subsequent years revenues) and the impact of this strategy is apparent: over \$30MM in revenues over the next 18 months. Approximately 6x 2018 revenues.

2019 should also be the year in which the Company takes steps, outside of the ordinary course of business, to unlock additional value for investors.

One such step that has been announced is the spin-off of the Company's additive manufacturing capabilities.

Another step, which is likewise outside the ordinary course of business, and is geared to unlocking shareholder value, is the previously announced up-listing of the Company's stock to a more senior exchange other than the one the Company is currently on. This is projected to be completed by year-end.

There are other steps, outside the ordinary course of business, that the Company is considering, to further increase shareholder value. The first of which should be announced in early Q3, 2019.

In short, 2019 is playing out to be the first of many years which will bear the fruit of strategic decisions made in the recent past.



PYROGENESIS CANADA INC.

ANNUAL INFORMATION FORM

FOR THE YEAR ENDED DECEMBER 31, 2019

Dated October 19, 2020

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EXPLANATORY NOTES

The information in this annual information form (this “**AIF**”) of PyroGenesis is stated as at December 31, 2019, unless otherwise indicated. For an explanation of the capitalized terms and expressions and certain defined terms, please refer to the “Glossary of Terms” at the end of this AIF.

In this AIF, where the context so requires, references to the “Company”, “PyroGenesis”, “it”, “its” or similar expressions refer to PyroGenesis Canada Inc., a Canadian corporation. In this AIF, unless otherwise indicated, all references to “\$”, “C\$” or “dollars” are to Canadian dollars, all references to “US\$” are to U.S. dollars and all references to “€\$” are to euros. Amounts are stated in Canadian dollars unless otherwise indicated.

This AIF should be read in conjunction with the information contained in the Company’s audited consolidated financial statements and related notes for the year ended December 31, 2019 and the management’s discussion and analysis thereon.

The Company has certain proprietary or contractual rights to certain company names, product names, trade names and trademarks used in this AIF that are important to its business, including PyroGenesis, PyroGenesis Additive, NEXGEN, DROSRITE, PUREVAP, SPARC, APT, APTH, RPT, MINIGUN, SPT, PAWDS, PPRS, PACWADS and PAGV. The Company has omitted the registered trademark (®) and trademark (™) symbols and any other related symbols for such trademarks and all related trademarks, including those related to specific products or services, when used in this AIF. All other names and trademarks are the property of their respective owners.

FORWARD-LOOKING STATEMENTS

This AIF contains forward-looking statements and forward-looking information (collectively, “**forward-looking statements**”) within the meaning of applicable securities legislation. All statements other than statements of historical fact contained in this AIF are forward-looking statements, including, without limitation, the Company’s: statements regarding its products and services; the execution of its growth strategy; relations with suppliers and customers; future financial position; business strategy; potential acquisitions; potential business partnering; litigation; and plans and objectives. In certain cases, forward-looking statements can be identified by the use of words such as “plans”, “expects” or “does not expect”, “is expected”, “budget”, “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates” or “does not anticipate”, or “believes”, or variations of such words and phrases or state that certain actions, events or results “may”, “could”, “would”, “might” or “will be taken”, “occur” or “be achieved” and similar words or the negative thereof. These forward-looking statements are based on management’s current expectations and are subject to a number of risks, uncertainties, and assumptions, including market and economic conditions, business prospects or opportunities, future plans and strategies, projections and anticipated events and trends that affect the Company and its industry. Although management of the Company believes that the expectations reflected in such forward-looking statements are reasonable and are based on reasonable assumptions and estimates as of the date hereof, there can be no assurance that these assumptions or estimates are accurate or that any of these expectations will prove accurate.

Actual results and developments are likely to differ, and may differ materially, from those anticipated by the Company and expressed or implied by the forward-looking statements contained in this AIF. Such statements are based on a number of assumptions and risks which may prove to be incorrect. Important assumptions relating to the forward-looking statements contained in this AIF include, among other things, assumptions concerning:

- the Company’s business strategies, strategic objectives and growth strategy;
- the Company’s expected production volumes, rates and costs;
- the Company’s current and future capital resources and the need for additional financing;
- the Company’s ability to increase sales from new and existing customers, and the results of the successful completion of the Company’s current projects;
- management’s expectation that the Company will achieve growth and profitability;

- the Company's overall financial performance;
- the Company continuing to maintain sufficient and effective production and research and development;
- there being no significant reduction in the availability of qualified and cost-effective human resources;
- there will be adequate liquidity available to the Company to carry out its operations;
- the Company's ability to obtain and retain key personnel; and
- the success of intellectual property applications.

By their nature, forward-looking statements require assumptions and are subject to inherent risks and uncertainties including those discussed herein. There is significant risk that predictions and other forward-looking statements will not prove to be accurate. Readers are cautioned to not place undue reliance on forward-looking statements made herein because a number of factors could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.

The future outcomes that relate to forward-looking statements may be influenced by many factors, including, but not limited to, the risk factors described under the heading "Risk Factors". The Company cautions that the foregoing list of factors is not exhaustive, and that, when relying on forward-looking statements to make decisions with respect to the Company, investors and others should carefully consider these factors, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements.

Although the forward-looking statements contained in this AIF are based upon what management currently believes to be reasonable assumptions, the Company cannot assure investors that actual results, performance or achievements will be consistent with these forward-looking statements and additional risks and uncertainties discussed in the Company's materials filed with the Canadian securities regulatory authorities from time to time, available under the Company's profile on SEDAR at www.sedar.com. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. Forward-looking statements are provided as of the date of this AIF, and the Company assumes no obligation to update or revise such forward-looking statements to reflect new events or circumstances except as required under applicable securities laws.

The forward-looking statements contained in this AIF are expressly qualified in their entirety by this cautionary statement and are made as of the date of this AIF or such other date specified herein.

MARKET AND INDUSTRY DATA

Unless otherwise indicated, information contained in this AIF concerning the industry and the markets in which the Company operates, including its general expectations, market position and market opportunity, is based on information from industry publications and reports generated by several third parties and management estimates. Unless otherwise indicated, management estimates are derived from publicly available information released by independent industry analysts and third-party sources, as well as data from the Company's internal research, and are based on assumptions made by the Company based on such data and its knowledge of such industry and markets, which the Company believes to be reasonable. These industry publications and reports generally indicate that the information contained therein was obtained from sources believed to be reliable, but do not guarantee the accuracy and completeness of such information. The Company has not independently verified the data in such publications, reports or resources, and such information is inherently imprecise. In addition, projections, assumptions and estimates of the Company's future performance and the future performance of the industry in which the Company operates are necessarily subject to a high degree of uncertainty and risk due to a variety of factors, including those described under "Forward-Looking Statements" and "Risk Factors".

CORPORATE STRUCTURE

Name, Address and Incorporation

PyroGenesis is a corporation governed by the provisions of the *Canada Business Corporations Act* (“**CBCA**”) and results from an amalgamation completed on July 11, 2011 under the CBCA of Industrial Growth Income Corporation (“**IGIC**”) and PyroGenesis Canada Inc., a predecessor entity incorporated on June 5, 2006, to form the Company. Prior to the amalgamation, which constituted its qualifying transaction, IGIC was a capital pool company listed on the TSX-V.

The Company’s head and registered office is located at 1744 William Street, Suite 200, Montréal, Québec, Canada, H3J 1R4.

Inter-corporate Relationships

The Company has no subsidiaries or other inter-corporate relationships.

GENERAL DEVELOPMENT OF THE BUSINESS

The following is a summary of the significant events that have influenced the general development of the business of the Company over the last three completed years.

Year Ended December 31, 2017

Expansion & Development of Product Offerings

On June 14, 2017, PyroGenesis launched PyroGenesis Additive, a product line of PyroGenesis dedicated to additive manufacturing. See “Business of the Company - Products and Services – Production of High Purity Spherical Metal Powders” for details.

Contracts and Milestones

In January, February and March 2017 PyroGenesis received the 2nd, 3rd and 4th milestone payments, totaling \$1,062,000, under a previously announced \$8,260,000 contract with HPQ Silicon Resources Inc. (TSX-V: HPQ) under which PyroGenesis would provide a PUREVAP pilot system capable of producing 200-metric tonnes per year of silicon metal directly from quartz. In 2018, the capacity of the system was subsequently reduced to 50-metric tonnes per year.

Year Ended December 31, 2018

Expansion & Development of Product Offerings

Proposed Global DROSRITE Tolling Services

On November 6, 2018, PyroGenesis announced it had entered into a memorandum of understanding with one of the major Japanese trading houses which outlines how the parties will seek to move forward towards a potential joint venture partnership for the purpose of developing DROSRITE tolling services globally. At the time of the announcement, the proposed partner had assets in excess of \$25 billion, annual revenues in excess of \$5.4 billion, and an annual profit in excess of \$2.0 billion. Discussions with the trading house are still ongoing.

A tolling service arrangement is one in which a smelter provides dross (a residue generated by primary and secondary metal producers) to a third party to process either on or off-site. The memorandum of understanding envisions moving forward with test cases to provide tolling services. These test cases would serve as a basis on which to determine if, and how, the parties would jointly provide tolling services on a global basis, using PyroGenesis’ proprietary DROSRITE system to process the dross and recover valuable metals for a fee. The partner’s extensive global network and administrative depth would provide a solid platform for the expansion of the services.

DROSRITE Mini

On June 25, 2018, PyroGenesis announced a new strategy involving a new DROSRITE system, the DROSRITE Mini. The DROSRITE Mini system can economically process 500 tons of dross/year as compared to the 5,000 tons dross/year that the DROSRITE systems are designed for. The smaller and less expensive system enables the Company to target thousands of smaller facilities for which the DROSRITE system far exceeded these facilities' needs.

Metallic Powders

On August 14 and 20, 2018, PyroGenesis announced that its metallic powders had either met or exceeded rigorous properties requirements under intensive chemical and mechanical analysis conducted by a leading 3D printer original equipment manufacturer. The powder tested was Ti-6Al-4V grade 23; one of the most sought-after powders in metal 3D printing, particularly from plasma atomization. The analysis consisted of, amongst other things, validating chemical composition, printing properties, density, hardness and tensile strength. As a result of the positive results, PyroGenesis became a supplier of powders to the customer, and became an approved supplier to the customer's end-users. Any user of this printer type commercialized by the customer can either purchase PyroGenesis' powder from the customer or directly from PyroGenesis for use in their printers. PyroGenesis also announced that it was now being recommended by the leading 3D Printer original equipment manufacturer to their customers as a powder supplier for titanium powders.

Contracts and Milestones

Metallic Powder Commercial Contract

On May 17, 2018, PyroGenesis announced that it had signed its first major exclusive commercial agreement for the sale of titanium (Ti-6Al-4V) powders for use in the additive manufacturing industry, after having been qualified as an approved supplier by a client in Asia. The agreement provided for a minimum sales volume of 10,000 kg (10 tons) during the two-year term of the agreement and was limited geographically to a specific territory in Asia. This agreement also granted the Company exclusive distribution rights of titanium powders (Ti64 Grade 23) into a specific territory in Asia.

Contracts with US Military

On September 10, 2018, PyroGenesis announced that it had entered into contracts with the US Military totaling US\$509,000 for general ongoing upgrades and maintenance for PAWDS systems previously sold by PyroGenesis.

DROSRITE Orders & Deliveries

On October 4, 2018, PyroGenesis announced it had received a down payment of US\$699,985 towards an order from an Asian client for two DROSRITE furnace systems, each with a capacity of 5,000 tons/year. These DROSRITE systems were the third and fourth commercial systems sold by PyroGenesis, and the first order from this client. Delivery of the systems are expected to be completed in 2021.

The Company also announced that a commercial DROSRITE system had been delivered to a client's facility in North America pursuant to an order placed in July 2018.

Financings

2018 Convertible Debenture

On March 29, 2018, the Company completed a \$3,000,000 non-brokered private placement of 9.5% secured convertible debentures (the "**2018 Convertible Debenture**"). The 2018 convertible debentures bear interest at the rate of 9.5% per annum, with interest payable in cash on a quarterly basis, and mature on March 29, 2020. Each debenture is convertible into Common Shares at a conversion price of \$0.80 per Common Share. The 2018 Convertible Debentures are secured by a hypothec on the universality of all of the assets of the Company. In connection with the 2018 Convertible Debenture, the Company paid finder fees in the amount of \$180,000 to the agent.

On March 30, 2020, the Company reached an agreement to extend the maturity date of its \$3,000,000 convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company paid \$300,000 of the outstanding amount (representing 10% of the principal amount), paid a one-time accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. The interest rate and conversion feature had not changed.

As of June 30, 2020, the Company had retired the 2018 Convertible Debentures in full, \$304,500 paid in cash and \$2,695,500 was converted into Common Shares.

March 2018 Private Placement

On February 9, 2018, the Company completed the first tranche of a private placement consisting of the issuance and sale of 3,271,429 units at a price of \$0.70 per unit for gross proceeds of \$2,290,000.30 to the Company (the “**March 2018 First Tranche Private Placement**”). On March 7, 2018, the Company completed the second tranche of a private placement consisting of the issuance and sale of 1,600,000 units of the Company at a price of \$0.70 per unit for gross proceeds of \$1,120,000 to the Company (the “**March 2018 Second Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$1.25 until August 9, 2019. The warrants from the two private placements were not exercised and are expired.

In the aggregate, the Company issued and sold pursuant to the March 2018 First Tranche Private Placement and March 2018 Second Tranche Private Placement a total of 4,871,429 units for gross proceeds of \$3,410,000.30 to the Company, and paid finder fees in the amount of \$123,200 and issued 88,000 finder’s compensation warrants to the agents, each compensation warrant entitling the holder thereof to purchase one Common Share at a price of \$1.25 until August 9, 2019.

April 2018 Private Placement

On April 19, 2018, the Company completed a private placement consisting of the issuance and sale of 3,108,333 units at a price of \$0.60 per unit for gross proceeds of \$1,864,999.80 to the Company. Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.85 until April 19, 2020. In connection with this private placement, the Company paid finder fees in the amount of \$88,800 and issued 74,000 finder’s compensation warrants (the “**April 2018 Compensation Warrants**”) to the agents. Each April 2018 Compensation Warrant entitles the holder thereof to purchase one Common Share at a price of \$0.85 until April 19, 2020. The warrants from the two private placements were not exercised and are expired.

October 2018 Private Placement

On October 2, 2018, the Company completed the first tranche of a non-brokered private placement and issued 3,448,276 units to the Pascali Trust, at a price of \$0.58 per unit, for gross proceeds of \$2,000,000 (the “**October 2018 First Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.58 until February 13, 2021 (“**February 13, 2021 First Private Placement Warrants**”).

On October 19, 2018, the Company completed the second tranche of a non-brokered private placement and issued an amount of 388,750 units at a price of \$0.58 per unit, for gross proceeds of \$225,475 (the “**October 2018 Second Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.58 until February 13, 2021 (“**February 13, 2021 Second Private Placement Warrants**”). In addition, the Company issued 1,112,000 units as a repayment of term loans and account payable to three creditors, which were valued at an amount of \$644,960, to reflect the fair value of the financial liabilities extinguished at that time. Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.58 until February 13, 2021 (“**February 13, 2021 Creditor Warrants**”).

In the aggregate, the Company issued and sold pursuant to the October 2018 First Tranche Private Placement and October 2018 Second Tranche Private Placement a total of 3,837,026 units for gross proceeds of \$2,225,475.08 to the Company.

December 2018 Private Placement

On December 17, 2018, the Company completed the first tranche of a non-brokered private placement and issued 2,146,967 units at a price of \$0.58 per unit, for gross proceeds of \$1,245,241 (the “**December 2018 First Tranche Private Placement**”). On January 7, 2019, the Company completed the second tranche of a non-brokered private placement and issued 97,400 units at a price of \$0.58 per unit for gross proceeds of \$56,492 (the “**December 2018 Second Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.85 until December 18, 2020 (the “**December 18, 2020 Warrants**”).

In the aggregate, the Company issued and sold pursuant to the December 2018 First Tranche Private Placement and December 2018 Second Tranche Private Placement a total of 2,244,367 units for gross proceeds of \$1,301,733 to the Company.

Additional Developments

On March 22, 2018, PyroGenesis announced it had been ranked by the TSX-V as one of the strongest companies on the TSX-V and had been chosen to be included in the TSX Venture 50® group of companies as one of the top-10 cleantech companies on the TSX-V.

On April 27, 2018, PyroGenesis announced that Mr. Angelos Vlasopoulos, director and chair of the Audit Committee, had resigned. Mr. Alain Curleigh, chair of the board of directors of the Company (the “**Board**” or the “**Board of Directors**”), assumed interim responsibility as chair of the Audit Committee. On May 10, 2018, PyroGenesis announced the appointment of Mr. Andrew Abdalla, CPA, CA, to the Board as an independent director and chair of the Audit Committee.

On August 13, 2018, PyroGenesis announced that it had increased its ownership in HPQ Silicon Resources Inc. (“**HPQ**”) (TSX-V: HPQ) to 9.6% (12.03% on a fully diluted basis) by acquiring 16,250,000 units of HPQ in a private placement at a price of 0.12\$ per unit for a total investment price of \$1,950,000. Each unit consists of one common share of HPQ and one common share of HPQ purchase warrant. Each warrant entitles the Company to purchase one common share of HPQ at a price of \$0.17 for a period of 36 months following the issue date.

On October 16, 2018, PyroGenesis announced the completion of its cutting-edge additive manufacturing metal powder production facility. This state-of-the-art facility is strictly dedicated to the production of plasma atomized titanium alloy powders (Ti-6Al-4V), allowing the Company to primarily target the aerospace and biomedical industries. The facility houses a new plasma-based atomization unit and includes sufficient space for inventory storage and logistics operations, and has allowed the Company to reduce its production costs significantly. The facility is ISO 9001:2015 certified (quality management systems) and AS9100D certified (aviation, space, and defense).

Year Ended December 31, 2019

Expansion & Development of Product Offerings

On March 19, 2019, PyroGenesis unveiled its new NexGen plasma atomization system, which produces metal powder at over 25 kilograms/hour for the additive manufacturing industry, specifically the 3D printing industry.

Contracts and Milestones

Plasma Torch System

On January 7, 2019, PyroGenesis announced it had been awarded under a competitive bid process with RISE Energy Technology Center AB, a Swedish company, a contract for a 900 kilowatts plasma torch system valued at more than \$1,000,000 (the “**2019 RISE Agreement**”). On September 18, 2019, PyroGenesis announced that it had successfully completed the factory acceptance testing witnessed by RISE Energy Technology Center AB at PyroGenesis’ facility in Montréal. PyroGenesis received payments from RISE Energy Technology Center AB totaling €643,196 to design, build, test and transfer a 900 kW-gross high air plasma torch system that will be used by RISE Energy Technology Center AB for iron ore pelletization.

Partnership with Aubert & Duval for Titanium Powder

On January 8, 2019, PyroGenesis announced that it had signed a mutually exclusive partnership agreement with Aubert & Duval, a subsidiary of the ERAMET Group. The mutually exclusive agreement, which expires on December 31, 2025, provides that PyroGenesis will supply plasma atomized titanium powder for distribution by Aubert & Duval to the additive manufacturing market in Europe.

Agreement with Drosrite International

On October 9, 2019, PyroGenesis announced that Drosrite International LLC (“**Drosrite International**”), a US-based private company, had signed a dross processing service agreement with Radian Oil & Gas Services Company, an oil and gas services company operating in the Middle East. The dross processing service agreement was structured as a “BOOT” agreement (build, own, operate and transfer) having a 20-year term and using the Company’s DROSRITE technology.

The dross processing service agreement provides that Drosrite International will manufacture and deliver to Radian Oil & Gas five DROSRITE TPY systems with an annual treatment capacity of approximately 5,000 tons per year each and two DROSRITE TPY systems with an annual treatment capacity of approximately 10,000 tons per year each, for a total annual treatment capacity of 30,000 to 40,000 tons per year of white and black aluminum dross, all of which will be installed at the Ras Al-Khair aluminium smelting facility of Ma’aden Aluminum Company. In addition, Drosrite International will oversee the installation of the systems at the Ras Al-Khair facility. Drosrite International will also supply spare parts over the 20-year duration of the agreement and be entitled to receive an annual royalty. A consideration of approximately US\$15 million is payable to Drosrite International during the first year of the contract for the engineering, design, supply, installation, supervision and commissioning of the systems, of which approximately US\$5.7 million has been paid as of the date of this AIF following the satisfaction of certain milestones. Drosrite International will receive additional payments in the future for spare parts as well as annual royalty payments during the term of the agreement.

In connection with the dross processing service agreement between Drosrite International and Radian Oil & Gas, an agreement dated August 29, 2019 was entered into between PyroGenesis and Drosrite International (the “**Drosrite International Exclusive Agreement**”) under which Drosrite International received the required rights from PyroGenesis to perform its obligations under its agreement with Radian Oil & Gas. Under the Drosrite International Exclusive Agreement, PyroGenesis will receive payments equal to the payments received by Drosrite International under its agreement with Radian Oil & Gas. Milestone payments to be received by PyroGenesis under the Drosrite International Exclusive Agreement during the first year of the agreement are estimated at approximately \$20 million. In addition, PyroGenesis will be entitled to receive additional payments from Drosrite International on an annual basis during the term of the agreement between Drosrite International and Radian Oil & Gas. Based on the estimated payments that it will receive in the future subject to the terms of the agreement, PyroGenesis estimates that the agreement has a total value of over \$55 million. The net present value, using a 5% discount rate, of the subsequent annual payments is estimated at approximately \$35 million.

Financings

May 2019 Private Placement

On May 15, 2019, the Company completed the first tranche of a non-brokered private placement and issued 2,996,500 units at a price of \$0.58 per unit, for total gross proceeds of \$1,737,970 (the “**May 2019 First Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.85 until May 15, 2021 (the “**May 15, 2021 Warrants**”).

On May 28, 2019, the Company completed the second tranche of a non-brokered private placement and issued 2,024,500 units at a price of \$0.58 per unit, for total gross proceeds of \$1,174,210 (the “**May 2019 Second Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.85 until May 28, 2021 (the “**May 28, 2021 Warrants**”).

In the aggregate, the Company issued and sold pursuant to the May 2019 First Tranche Private Placement and May 2019 Second Tranche Private Placement a total of 5,021,000 units for gross proceeds of \$2,912,180 to the Company.

June 2019 Private Placement

On June 19, 2019, the Company completed a non-brokered private placement and issued 1,000,000 units at a price of \$0.58 per unit, for total gross proceeds of \$580,000 (the “**June 2019 Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant of the Company. Each warrant entitles the holder to acquire one Common Share at a price of \$0.85 until June 19, 2021 (the “**June 19, 2021 Warrants**”). In connection with the private placement, the Company paid finder’s fees in the amount of \$23,200.

October 2019 Private Placement

On October 23, 2019, the Company completed a non-brokered private placement and issued 300,000 units at a price of \$0.56 per unit, for total gross proceeds of \$168,000 (the “**October 2019 Private Placement**”). Each unit consists of one Common Share and three-quarters (0.75) of a Common Share purchase warrant of the Company. Each warrant entitles the holder to acquire one Common Share at a price of \$0.75 until January 25, 2021 (the “**January 25, 2021 Warrants**”).

Scientific Research and Experimental Development Loans

On December 23, 2019, the Company entered into a Scientific Research and Experimental Development (“**SR&ED**”) tax credit loan of \$247,500 bearing interest at a rate of 16.68% and fees totaling \$22,275 paid at the issuance of the loan (the “**2019 SR&ED Loan**”). The 2019 SR&ED Loan is secured by the Company’s 2019 investment tax credit receivable and is repayable on December 23, 2020. As at December 31, 2019, the amount available under the 2019 SR&ED Loan is of \$185,331.

On March 25, 2019, the Company entered into a SR&ED tax credit loan of \$214,000 bearing interest at a rate of 16.68% and fees totaling \$19,260 paid at the issuance of the loan (the “**2018 SR&ED Loan**”). As at December 31, 2019, the amount available under the 2018 SR&ED Loan is of \$199,736. The 2017 SR&ED Loan was repaid on February 6, 2019, 2018 SR&ED Loan was repaid on May 21, 2020 and 2019 SR&ED Loan was repaid on July 28, 2020.

The SR&ED tax credit loans are financing, in the form of loans with respect to the Company’s SR&ED tax credits (“**SR&ED Tax Credits**”). The principal of the loans is subject to holdback to be disbursed upon reception of the Company’s notice of assessment. The principal of each loan is subject to repayment at the earlier of (a) receipt of the SR&ED Tax Credits refund or (b) the maturity date of the respective loan.

Pursuant to each of the 2019 SR&ED Loan and the 2018 SR&ED Loan, the Company granted the lender a security interest and movable hypothec on all of its assets excluding its intellectual property but including a first rank claim on the refundable portion of its SR&ED Tax Credits for each of the fiscal years ended December 31, 2018, of \$274,921 and 2019 of \$434,474.

Additional Developments

On September 29, 2019, PyroGenesis announced that Mr. Alan Curleigh, Chair of the Board, and Dr. Christopher Twigge-Molecey, director and a member of the Audit Committee, had resigned. On the same date, the Company announced that Dr. Virendra Jha was appointed to the Board as an independent director and that Mr. Michael Blank was appointed to the Board as a director, and Acting Chief Financial Officer of the Company. Mr. Peter Pascali, the Chief Executive Officer of the Company, assumed the role of Chair of the Board.

Recent Developments

The global pandemic due to the novel coronavirus (COVID-19) is a situation that is constantly evolving, and the measures put in place are having multiple impacts on provincial, national and global economies. The overall effect of these events on the Company and its operations is too uncertain to be estimated at this time. The impacts will be accounted for when they are known and may be assessed.

Expansion & Development of Product Offerings

On April 30, 2020, PyroGenesis' announced it had successfully completed the first phase of a multi-phase modeling contract aimed at evaluating the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing all existing fossil fuel burners with PyroGenesis' plasma torches. Furthermore, on September 1, 2020, the Company announced the completion and acceptance of its modeling contract, which confirmed, amongst other things, that replacing fossil fuel burners with PyroGenesis' proprietary plasma torches addresses the greenhouse gas reduction strategy/policy. The modeling contract successfully demonstrated the benefits of replacing fossil fuel burners with PyroGenesis' proprietary plasma torches. More specifically, two of the most important benefits demonstrated were (i) that replacing fossil fuel burners with plasma torches was a simple replacement, plug and play process, and (ii) that PyroGenesis' proprietary plasma torches significantly reduces greenhouse gas emissions which, as a result, could play a significant role in the greenhouse gas reduction strategy/policy of its client.

On June 4, 2020, the Company announced that its quality management system for the production of metal powders for the additive manufacturing industry had been approved by one of the premier non-European aerospace companies, which may lead to being qualified as a supplier to such company. PyroGenesis' game-changing NexGen™ Plasma Atomization System produces metal powder at over 25 kilograms per hour, shattering any published plasma-atomized production rates for titanium known to management.

On June 11, 2020, the Company announced it had signed a second multi-phase torch modeling contract with a customer, aimed at evaluating the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing the customer's existing fossil fuel burners with PyroGenesis' plasma torches. The modeling contract is geared to demonstrate that replacing fossil fuel burners with PyroGenesis' proprietary plasma torches will not have any detrimental effects on the client's process of its furnace. The switch to plasma torches will also result in the additional benefit of significantly reducing the emission of sulfur dioxide (SO₂).

On September 22, 2020, the Company announced a strategy to become a global on-site dross processor delivering zero-landfill/reduced carbon, and further underscored how DROSRITE reduces greenhouse gas (GHG) emissions.

Contracts and Milestones

On March 4, 2020, the Company announced it had completed all torch tests successfully and had received final payment from RISE Energy Technology Center AB pursuant to the 2019 RISE Agreement.

On March 24, 2020, the Company announced it had received the first payment of approximately \$1.44 million under the Drosrite International Exclusive Agreement.

On April 1, 2020 and April 21, 2020, the Company received US\$400,000 and US\$325,000, respectively, under an agreement with a US-based tunneling company entered into earlier in 2020, under which the Company has demonstrated the feasibility of plasma torch underground tunneling.

On May 19, 2020, the Company announced it had entered into the final stages of negotiation for the supply of iron ore pelletizing equipment to one of the largest international producers of iron ore pellets. Discussions with the customer are ongoing as of the date of this AIF.

On June 11, 2020, the Company announced it had signed a second multi-phase torch modeling contract, aimed at evaluating the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing existing fossil fuel burners with PyroGenesis' plasma torches.

On July 2, 2020, the Company announced that it had entered into active discussions with a new potential customer, who is not only a significant player in the iron ore pelletization industry but is also a major player in the steel industry, for the sale of equipment. The Company believes there is a high probability that the customer may bypass the standard modeling phase. Discussions with the customer are ongoing as of the date of this AIF. Although there is no certainty that the discussions and relationships with the clients referred to in the May 19, 2020, June 11, 2020 and July 2, 2020 announcements will result in significant contracts for the Company, the Company estimates that there is an opportunity to enter into contracts with such clients for the sale of plasma torches, and that they collectively could have a need for more than 1,000 torches.

On August 18, 2020, PyroGenesis' announced it had signed a development agreement with HPQ Nano Silicon Powders Inc., a wholly owned subsidiary of HPQ, covering the PUREVAP Nano Silicon Reactor development program and the future commercialization of nano silicon materials made with this new, proprietary and low cost manufacturing process. The process, which is under development, is designed to transform silicon into spherical silicon nanopowders and nanowires for use in lithium-ion batteries. The agreement has an estimated value of approximately \$3 million, including a payment of approximately \$2.4 million to PyroGenesis for the sale of the intellectual property rights to the new system and a royalty of 10% on the future sales of nano silicon powders and wires by HPQ Nano Silicon Powders Inc. The royalty stream can at any time be converted by PyroGenesis into a 50% ownership of HPQ Nano Silicon Powders Inc. PyroGenesis has retained a royalty-free, exclusive, irrevocable, worldwide license to use the new system for all purposes other than the manufacturing of nano silicon powders and wires.

On September 4, 2020, PyroGenesis' announced that it had signed a contract to provide waste destruction systems for a total consideration of \$11.5 million. The contract is for two systems, one for each ship in the US Navy's current two-ship build. The contract includes a first payment of approximately \$4.8 million and should be completed within 18 months.

Financings

On March 18, 2020, the Company completed a \$903,000 non-brokered secured convertible loan with the Pascali Trust (the "**2020 Convertible Loan**"). The 2020 Convertible Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis, matures on September 17, 2021, and is convertible into common shares of the Company at a conversion price of \$0.28 per common share. The 2020 Convertible Loan was secured by a hypothec on the universality of all of the present and after acquired moveable property and assets of the Company. The Loan was subsequently converted in common shares in accordance with its terms on September 30, 2020, resulting in 3,225,000 common shares being issued.

Additional Developments

On July 28, 2020, the Company requested that the Pascali Trust convert the Convertible Loan on or before September 30, 2020. The Pascali Trust agreed to such request subject to the prepayment of 5 years rent, plus estimated yearly municipal taxes, as soon as possible but no later than December 31, 2020. This prepayment is exclusive of any regular annual rent increases contemplated by the lease between the parties.

On September 1, 2020, PyroGenesis announced that it had acquired 4,000,000 units of HPQ in a private placement at a price of \$0.60 per unit for a total investment \$2.4 million. Each unit consists of one common share of HPQ and one common share of HPQ purchase warrant. Each warrant entitles the Company to purchase one common share of HPQ at a price of \$0.61 for a period of 36 months following the issue date.

On September 22, 2020, at the Company's annual general meeting, the five members of the Board were re-elected and two additional nominees, Ms. Rodayna Kafal and Mr. Rodney Beveridge, were also elected to the Board. On the same date, PyroGenesis also unveiled its strategy to become a global on-site dross processor, delivering zero-landfill and reduced carbon solution.

BUSINESS OF THE COMPANY

General

PyroGenesis Canada Inc., a high-tech company, is a world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries.

With a team of experienced engineers, scientists and technicians working out of its headquarters and its 3,800 m² manufacturing facility, each located in Montréal, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization.

The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified.

Products and Services

The Company's highly specialized products and services are commercialized to customers operating in a wide range of industries, including the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. The advanced plasma products and services of PyroGenesis include:

- (i) plasma torches systems for the pelletizing of iron ore, which are predominantly offered to customers in the mining and metallurgical and environmental industry;
- (ii) waste destruction and waste-to-energy systems, which are predominantly offered to customers in the environmental and defense industries;
- (iii) systems for the recovery of aluminum and other metal from dross (a residue generated by primary and secondary metal producers), which are predominantly offered to customers in the mining and metallurgical industries;
- (iv) production of high purity spherical metal powders, which are predominantly offered to customers in the additive manufacturing industries, including for the 3D printing industry;
- (v) development of processes for the production of high purity silicon metals, nano powders and nanowires, which are proposed to be predominantly offered to customers in the mining and metallurgical industries, including the battery industry;
- (vi) installation, commissioning and start-up services.
- (vii) research and development, internal and external funded projects by customers.

Plasma Torches for Iron Ore Pelletization

PyroGenesis manufactures and commercializes proprietary plasma torches that are used to replace fossil fuel burners in the iron ore induration (pelletization) process. The plasma torches of PyroGenesis can heat gas up to 40,000°F, as hot as the surface of the sun.

Pelletization is the process in which iron ore is concentrated before shipment, which allows to significantly reduce the cost of transportation. In conventional technology, the process heat is provided by fuel oil or natural gas burners. The combustion, in the burners, of fossil fuels results in the production of greenhouse gases, mainly CO₂. Plasma torches, by the fact that they can convert renewable electricity to heat, offer an environmentally attractive alternative to fossil fuel burners. The plasma torches systems are predominantly offered to customers in the environmental industry. The objective of the Company is to be a significant player in the world-wide movement to reduce the carbon footprint in manufacturing.

The solutions of the Company offer a patented process to replace dirty diesel burners with clean burning plasma torches, thereby reducing GHG emissions, for the iron ore pelletization industry. The Company believes its solutions are economically superior to other alternatives with greater environment benefits. By using the Company's solutions, manufacturing companies can reduce GHG emissions without being required to shut down their facility for installation and without any meaningful changes to their workflow.

Waste Destruction and Waste-to-Energy Systems

PyroGenesis manufactures and commercializes a broad range of waste destruction and waste-to-energy systems to customers in the environmental and defense industries. At the core of these systems are the Company's plasma torches and plasma gasification reactors. The Company believes it offers the world's most complete, easy-to-operate, high temperature, plasma-based treatment systems. The waste destruction and waste-to-energy systems offered by the Company include the following:

- (i) plasma arc waste destruction systems ("PAWDS"), for waste destruction onboard ships;
- (ii) steam plasma arc refrigerant cracking ("SPARC") systems, for the destruction of certain refrigerants, including chlorofluorocarbons ("CFCs"), hydrofluorocarbons ("HFCs") and hydrochlorofluorocarbons ("HCFCs");
- (iii) plasma arc chemical warfare agent destruction systems ("PACWADS"), which are mobile platforms for the onsite destruction of chemical warfare agents;
- (iv) plasma resource recovery systems ("PRRS"), for land-based waste destruction and waste-to-energy applications;
- (v) plasma torches for waste gasification systems;
- (vi) plasma torches systems for the pelletizing of iron ore; and
- (vii) plasma arc gasification and vitrification ("PAGV").

Plasma Arc Waste Destruction System (PAWDS)

Originally developed by the Company in the late 1990s for the gasification of waste onboard US Navy aircraft carriers, PAWDS was the first plasma destruction system for marine use on the US Navy aircraft carriers. PAWDS uses plasma eductor for the fast gasification of milled waste. Navy waste is comparable to municipal solid waste, comprised of paper, cardboard, plastics, wood and rags. Since launching PAWDS in 1999, the Company received orders for four PAWDS systems for the US Navy, two of which have been delivered and installed on the Gerald R. Ford (CVN-78) and the John F. Kennedy (CVN-79) aircraft carriers, and two of which have recently been ordered. Developed in collaboration with the US Navy, at 1/5th the size and half the weight of a typical marine incinerator, the patented PAWDS has a capacity of 5 tons/day. PAWDS is a highly compact, inherently safe and efficient alternative to the shipboard waste incinerators. Due to its unique features of compactness and safety, the system has been fitted into the two forthcoming US Navy Ford-class carriers.

Steam Plasma Arc Refrigerant Cracking (SPARC)

The SPARC process is the Company's patented technology for the destruction of old refrigerants such as CFCs, HFC and HCFCs. The system is pre-assembled on skids and has demonstrated high destruction and removal efficiency of more than six "nines", or 99.9999%. SPARC uses a water vapour (steam) torch to quickly and efficiently destroy the refrigerants. The system is designed to handle wastes that have very high chlorine and fluorine content. An integrated caustic scrubber ensures that hydrochloric acid (HCl) and hydrofluoric acid (HF) emissions are well below applicable limits. The system is designed for a destruction capacity of 50 kilograms per hour based on R12, a refrigerant.

Plasma Arc Chemical Warfare Agent Destruction System (PACWADS)

PACWADS was developed by the Company for the US and UK special forces to destroy chemical warfare agents on site. The system is installed on two trailers and can be deployed quickly in areas where chemical warfare agents must be immediately destroyed. Performance tests on simulants have demonstrated destruction and removal efficiency of more than seven "nines", or 99.99999%. The system is designed to destroy the equivalent of two barrels (or approximately 318 litres) per day of sarin, a deadly nerve gas, and is also suitable for the destruction of a variety of other chemical warfare agents.

Plasma Resource Recovery System (PRRS)

The PRRS is used to convert waste to syngas (synthesis gas) and inert slag (a glass-like by-product left over after a desired metal has been separated (i.e., smelted) from its raw ore). The PRRS combines a direct current graphite arc furnace, where the inorganic portion of waste is vitrified, and the organic portion is gasified. The produced syngas is then cleaned up in a plasma-fired eductor, similar to the one used in the PAWDS technology, where tars are converted into clean syngas (i.e. carbon monoxide (CO) and hydrogen (H₂)). The resulting syngas is further cleaned of contaminants (such as HCl, sulfur compounds, particulates and volatile heavy metals) using filters and scrubbers. The resulting syngas can be used as fuel in a gas engine. The inert slag can be used as construction material.

Plasma Torches for Waste Gasification Systems

PyroGenesis' plasma torch systems are used in waste-to-energy applications, advanced material production, metallurgical processing, thermal treatment and nanotechnology manufacturing.

As a cleantech alternative to fossil fuel burning, PyroGenesis' electricity-driven plasma torch systems are easy to operate and offer a high level of safety, reliability and service life of wear components. PyroGenesis systems have been selected by a renowned list of satisfied customers, including the US Department of Defense.

Plasma Arc Gasification and Vitrification (PAGV)

As the forerunner for the Company's game-changing PRRS waste-to-energy technology, the Company's PAGV systems convert incinerator ash and other hazardous inorganic material to an inert, non-toxic slag. Slag is a glass-like by-product left over after a desired metal has been separated (i.e., smelted) from its raw ore). Using the Company's unique furnace design, the proprietary arc plasma technology uses graphite electrodes and an electrical current to create arcs between the electrodes and the melt, generating an extreme temperature environment above 1600°C, and producing the slag. This slag has been demonstrated to be effective in a wide range of applications, namely as a building material for construction (aggregate asphalt and flooring, partial replacement for cement in concrete). The Company's PAGV systems eliminate future legacy issues for operators of incinerators (i.e. municipalities, along with managers of incineration operations for industrial, hazardous, biomedical, and animal (slaughterhouse) waste) with a simple melting process for their grate and fly ash. Asbestos waste from decommissioning operations is also an excellent use for this technology. The Company's PAGV system is available in capacities ranging from 1 to 250 metric tons per day of input material per module.

Systems for the Recovery of Aluminum and Other Metal from Dross

The Company produces systems for the recovery of aluminum and other metal from dross (a residue generated by primary and secondary metal producers, as well as metal parts casters) through its DROSRITE process, which systems are predominantly offered to customers in the mining and metallurgical industries.

DROSRITE

DROSRITE is a salt-free, highly cost-effective, sustainable process for maximizing metal recovery from dross without any hazardous by-products, targeting mainly the aluminum and zinc industries. Treating dross at its source of generation in a controlled-atmosphere, tilting rotary furnace, DROSRITE eliminates costly loss of metal, while reducing a smelter's carbon footprint and energy consumption, providing customers with a significant return on investment.

Production of High Purity Spherical Metal Powders

The Company produces high purity spherical metal powders through its plasma atomization process, which are predominantly offered to customers in the additive manufacturing industries, including for the 3D printing industry.

Development of Processes for the Production of High Purity Silicon Metals, Nano Powders and Nanowires

The Company is developing processes for the production of high purity silicon metals through its PUREVAP process, and nano powders and nanowires through its PUREVAP Nano Silicon Reactor process, all of which are expected to be predominantly offered to customers in the mining and metallurgical industries, including the battery industry.

PUREVAP

PUREVAP is a patent pending one-step proprietary process that is being developed by the Company that uses a plasma arc within a vacuum furnace to produce high purity metallurgical grade silicon and solar grade silicon from quartz. PUREVAP reduces the quartz with carbon using a plasma submerged arc. Under vacuum, and at very low operating pressure, the silicon is refined in a one-step process removing all impurities and transforming it to its purest form, resulting in a high purity silicon. The Company expects that the silicon grades produced by PUREVAP will, when commercialized, be used for different applications, including solar energy.

In 2016, the Company and HPQ entered into a contract pursuant to which the Company would develop the PUREVAP process and HPQ would acquire the intellectual property rights to the PUREVAP process, for a consideration of \$7,070,000 payable to the Company. PyroGenesis retained a royalty-free, exclusive, irrevocable, worldwide license to use the process for purposes other than the production of silicon material from quartz.

PUREVAP Nano Silicon Reactor (NSiR)

The PUREVAP Nano Silicon Reactor (NSiR) is designed to transform silicon into spherical silicon nanopowders and nanowires for use in lithium-ion batteries. The new proprietary process is designed to be highly scalable and will eventually allow the production of silicon nanopowders in large quantities at a competitive cost with other materials used in the lithium-ion space. The PUREVAP Nano Silicon Reactor can use different purities of silicon as feedstock.

A subsidiary of HPQ, HPQ Nano Silicon Powders Inc., acquired the intellectual property rights to the PUREVAP Nano Silicon Reactor system in 2020 and PyroGenesis is entitled to a royalty of 10% on the future sales of nano silicon powders and wires by HPQ Nano Silicon Powders Inc. The royalty stream can at any time be converted by PyroGenesis into a 50% ownership of HPQ Nano Silicon Powders Inc. PyroGenesis has retained a royalty-free, exclusive, irrevocable, worldwide license to use the new system for all purposes other than the manufacturing of nano silicon powders and wires.

Plasma Atomization

PyroGenesis' plasma atomization process allows PyroGenesis to produce and offer to the additive manufacturing market high purity spherical metal powders, including titanium alloy powders. Many existing reactive metals cannot be transformed into high purity spherical powders; especially not in the finer size cuts such as $-45\mu\text{m}/+15\mu\text{m}$. With its extensive plasma expertise, PyroGenesis is able to convert many metals and alloys into high purity spherical powders as its plasma torches use argon gas and the reactor is backfilled with argon. This ensures the powders produced are not exposed to any oxygen during the production process and as a result, PyroGenesis is able to produce powders with extremely low interstitial (ELI) such as titanium alloy powders (Ti 6Al-4V ELI). PyroGenesis' standard offering includes commercially pure titanium (CPTi), grades 1, 2, and 3, and Ti 6Al-4V, grades 5 and 23.

Installation & Servicing

As an option in its contracts, PyroGenesis generally offers to its client installation, commissioning and start-up services. These services are typically quoted as an option in equipment sales contracts. Separately, PyroGenesis offers after sales services to its customers. This includes the sale of spare parts, consumable parts and onsite or remote service on installed systems.

Research and Development, Internal and External Funded Projects by Customers

The Company relies on a combination of internally funded and externally funded R&D to grow its intellectual property portfolio. For externally funded R&D, the company typically retains intellectual property rights for the developed technology, while providing an exclusivity to the client in the sector of application and the geographic area of interest to the client.

Markets and Opportunities

Waste Destruction and Waste-to-Energy Systems

Marine Waste Treatment Market (PAWDS)

Historically, waste onboard ships were disposed of overboard. In 1973, the *International Convention for the Prevention of Pollution from Ships* was adopted by the International Maritime Organization. This convention is intended to prevent the pollution of the marine environment by discharge of harmful waste and effluents from ships. The storage of waste on a ship takes up valuable space and the eventual disposal in port is costly. Although most modern ships have onboard marine incinerators to treat their waste, these incinerators occupy a lot of space, typically covering three to four decks. PAWDS provides a solution to this problem, as the entire system can fit in the headroom of a single deck and is capable of being started up or shut down in a matter of minutes.

The main target market for PAWDS is the US Navy, and more specifically aircraft carriers. The US Navy typically builds a new aircraft carrier every 5 to 7 years. On September 14, 2019, the US government announced its intent to buy one or two new aircraft carriers.¹ The cost of one PAWDS system for the US Navy is approximately US\$5 to 6 million.

According to the Naval Vessel Register, the U.S. Navy fleet comprises approximately 497 ships of which approximately 263 are active in commission. Of these active ships, 11 are aircraft carriers, 12 are loading docks and 2 are amphibious command ships. The Company believes these group of ships would be the most likely candidates for a retrofitting of their legacy waste management systems with a PAWDS.

Waste-to-Energy Market (PRRS)

Waste management is a large and growing market on a global scale. The methods of managing waste are shifting from disposal towards recycling and resource recovery. The Company believes that society as a whole is seeking more sustainable waste management practices that have lower environmental impacts than traditional solutions such as landfill or incineration.

¹ Inside Defense: "Spending bill cuts \$329 million from Navy's 'accelerated acquisitions'" (September 14, 2018).

In the short to medium term, the Company is targeting markets that are readily accessible for plasma waste-to-energy conversion, which include industrial, hazardous, non-hazardous remote communities, military bases and clinical wastes. In the medium to long term, the Company also intends to target the municipal solid waste market with larger system capacities of up to 100 tons/day.

The ability for the PRRS to be a viable and economic alternative at relatively small capacities compared to conventional incinerators, makes it ideally suited for the decentralized treatment of industrial, hazardous and clinical waste. The global waste-to-energy market has experienced significant growth, and is poised to grow by US\$12.26 billion from 2020 to 2024, progressing at a compound annual growth rate of over 5% during such period.²

Plasma Torch Market

Plasma torches are used for different applications: for waste treatment systems (waste gasification and vitrification), in PyroGenesis' own PAWDS and PRRS systems, in thermal spray (plasma spray) in advanced materials production and in metallurgical applications.

Plasma torches can replace conventional fuel or gas burners in industrial furnaces. For example, the Company sells torches used in a patented pelletizing apparatus to customers which allows them to perform the induration of iron ore concentrate pellets in a tunnel furnace heated by plasma torches. Through this process, the generation of CO₂ by the conventional iron ore pelletizing processes is reduced by using electricity powered plasma torches instead of burning natural gas, heavy oil or pulverized coal in burners, thereby reducing considerably industrial pollution of the atmosphere.

Based on their knowledge of the industry, members of management of the Company estimate that a typical pellet plant producing 10 million metric tonnes of pellets per year emits approximately one million metric tonnes of CO₂. The total world production of such iron pellets is approximately 400 million metric tonnes per year about 20% of the total iron ore production³. Pellet production thermal energy consumption ranges between 600 and 1,000 megajoules/tonne (0.167 to 0.278 MWh/t)⁴. Assuming all of this energy was replaced by 1 megawatt plasma torches, the Company estimates the total number of plasma torches required to satisfy worldwide demand would be in the order of 10,000 units, which represents a potential torch market in excess of \$10 billion.

In addition, the Company estimates that the iron pelletization market only represents a fraction of world fossil fuel usage for industrial heating purposes. According to the US Energy Information Administration (EIA)⁵, worldwide industrial sector energy consumption from fossil fuels (coal, liquid fuel and natural gas) represents 172.9 quadrillion BTU per year (2012 numbers). Also, according to the EIA, two thirds of the industrial energy sector consumption⁶ is used for industrial heating purposes. Converting this energy requirement into a number of 1 MW torch systems, management estimates that approximately 4 million units would be required, which translates into a potential market of approximately 4 trillion dollars.

Systems for the Recovery of Aluminum and Other Metal from Dross

The total yearly world production of dross has been estimated at 3 million tonnes per year, slightly less than 5% of the 63 million tonnes of primary aluminum produced annually, which contains up to 80% valuable aluminum. The recent growth rate of primary aluminum has been relatively slow. Aluminum production between 2017 to 2019 has remained relatively flat. From 2006 to 2016, growth rate was a little over 1%.⁷

² <https://www.businesswire.com/news/home/20200305005945/en/Global-Waste-Energy-Market-2020-2024-Evolving-Opportunities>

³ M. Huerta, J. Bolen, M. Okrutny, I. Cameron and K. O'Leary, "Guidelines for Selecting Pellet Plant Technology", Iron Ore Conference 2015 Proceedings (2015).

⁴ M. Huerta, J. Bolen, M. Okrutny, I. Cameron and K. O'Leary, "Guidelines for Selecting Pellet Plant Technology", Iron Ore Conference 2015 Proceedings (2015).

⁵ M. Huerta, J. Bolen, M. Okrutny, I. Cameron and K. O'Leary, "Guidelines for Selecting Pellet Plant Technology", Iron Ore Conference 2015 Proceedings (2015).

⁶ <https://www.iea.org/commentaries/clean-and-efficient-heat-for-industry>

Based on these figures, the Company estimates the total market for DROSRITE at 600 units of a capacity of 5,000 tonnes per year each (representing a total opportunity of approximately \$1 billion based on a selling price of \$1.75 million (NPV) per unit), with a potential of an additional six new units per year. It is important to note that more than half (approximately 56%) of the aluminum today is produced in China, a market that is difficult to enter, due to several factors, namely the lack of intellectual property protection, closed market conditions and the general political environment.

Dross is 60% metal and 40% residue. More than half of the dross (i.e. approximately 1.6 million tonnes) is not adequately recycled and are either collected by scavengers or landfilled. However, most of the primary aluminum dross is being treated by specialized firms such as PyroGenesis. Traditional treatment techniques contaminate the residues with salt. DROSRITE allows the recovery of the metal in dross and because the DROSRITE process does not contaminate the 40% residues with salt, it presents a unique additional value-added opportunity. By using the DROSRITE technology, the residues have the capacity to be converted into valuable chemical and metallurgical products, including ammonium sulphate and aluminum sulphate.

Figure 1- TRADITIONAL PROCESS



Figure 2 - PYROGENESIS ' DROSRITE PROCESS



PyroGenesis has recently refocused its marketing strategy for DROSRITE on tolling. In a tolling arrangement, PyroGenesis would build, own and operate the DROSRITE system and associated equipment for the aluminum smelter on the smelter plant location. Tolling provides the advantage of recurring revenues to PyroGenesis. Tolling revenues can vary widely by sector and geographic location. Based on discussions with potential customers, the Company estimates that usual fees for the treatment of dross vary between approximately US\$250 and US\$450 per tonne of dross treated.⁸

By allowing the combination of treating dross and creating valuable residues, the DROSRITE technology presents the Company the opportunity to create one of the first, if not the first, global onsite dross processor delivering a zero- landfill/reduced carbon solution. To the Company's knowledge, no other companies offer the complete solution that can be offered by the Company with its DROSRITE technology. With its DROSRITE technology, the Company has the potential to become the environmentally friendly solution to a long existing problem.

⁷ AICircle: "Sector Focus Report on Aluminium Dross Processing: A Global Review", (2017)

⁸ World Aluminium: "Primary Aluminium Production" (August 2020); AICircle: "Sector Focus Report on Aluminium Dross Processing: A Global Review", (2017).

Production of High Purity Silicon Metals, Nano Powders and Nanowires

Solar Industry

Solar grade silicon metal (SOG Si) is the key material needed to meet the growing demand for solar energy as each new gigawatt of capacity requires 5,000 tonnes of solar grade silicon metal. Canadian Solar estimates that solar energy will grow from ~2% of global electricity generation today to >10% by 2030.⁹ It is expected that at that time, global demand for solar grade silicon metal will reach an annual demand of 540,000 tonnes, compared to the current supply capacity of 350,000 tonnes per annum. The current market price for solar grade silicon metal is between US\$14 and US\$17 per kilogram.

Battery Industry

Research indicates that replacing graphite with nano silicon powders could allow the manufacturing of high-performance lithium-ion batteries with the capability of delivering an almost tenfold (10x) increase in anode capacity, inducing a 20-40% gain in the energy density of the next generation of lithium-ion batteries.¹⁰ The lithium-ion battery market size is estimated to grow from US\$44.2 billion in 2020 to US\$94.4 billion by 2025, equivalent to a compound annual growth rate of 16.4%.¹¹ Manufacturing of silicon nano powders is not yet commercially feasible with selling prices of US\$30,000/kg.¹²

Production of High Purity Spherical Metal Powders

Plasma atomized powders offer the best quality on the additive manufacturing market but are limited in their adoption by their high price, compared to lower-quality gas atomized powders. PyroGenesis' ability with its NexGen technology to produce high-quality powder by plasma atomization at rates comparable to gas atomization, while maximizing the yield of powder in the preferred size range for additive manufacturing, gives the Company a competitive advantage on the market.

The mutually exclusive distribution agreement with Aubert & Duval is meant to support PyroGenesis' sales on the European market. PyroGenesis is continuing its own sales efforts on the North American and Asian markets separately from this agreement and is talking to several high-level players in the aeronautics field. To the Company's knowledge, there are three main players supplying powders via plasma atomization: PyroGenesis, AP&C which is part of GE, and Tekna Advanced Materials. The demand for this product is so significant that all three players are ramping up their production capacity to meet the growing market's needs. PyroGenesis draws on its plasma torch and powder production expertise to design and develop its own torches and equipment.

According to the Wohler's Report (2018) and 3D Printing Metals Market¹³, the metals market in 2017 was estimated at US\$183 million (all metals). In 2015 the metals market was estimated at US\$88.37 million. In 2017, the metal materials market grew at an estimated rate of 44.6%. Wohler's expects that the market will continue to grow at a double-digit rate, estimated at \$3.2 billion by 2024, with future opportunities for technology expansion in excess of \$774 million. PyroGenesis is focusing its sales and marketing efforts on titanium and its alloys. Titanium is a highly sought for material in the aeronautics industry. It is also a high quality and high margin material.

⁹ Deutsche Bank: "Polysilicon Market: Global Industry Analysis 2013-2017 and Opportunity Assessment 2018-2028".

¹⁰ Chemical Engineering News: "In the Battery Materials World, the Anode's Time Has Come", Volume 97, Issue 14 (2019).

¹¹ MarketsandMarkets: "Lithium-Ion Battery Market – Global Forecast to 2025".

¹² HPQ-Silicon Resources Inc.: Innovative Silicon Solutions, 2020.

¹³ Markets and Markets: "3D Printing Metals Market by form (Powder, Filament), Technology (PBF, DED, Binder Jetting, Metal Extrusion), Metal Type (Titanium, Nickel, Stainless Steel, Aluminum), End-Use Industry (A&D, Automotive, Medical & Dental), Region – Global Forecast to 2024."

Growth Strategy

Levering off its expertise in plasma, the Company introduces plasma based technologies to, preferably, niche market, often times, by partnering with much larger companies who not only bring the credibility sought when introducing new technology, but also invaluable insight into the market and potential customers, while at the same time, providing valuable market feedback. The Company strategy is to leverage off these strategic partnerships and generate aggressive growth strategies geared to (i) broadening the customer base, as well as (ii) increasing sales to existing clients. The Company primarily targets offerings that reduce greenhouse gases as opposed to those who do not. Each of the Company's existing product lines has been vetted or adopted by multi-billion-dollar industry leaders, which supports the Company in the execution of its growth strategy. As part of its growth strategy, the Company will also selectively consider opportunities to broaden and enhance its product and market scope through acquisitions.

Employees

The Company has approximately 70 full-time staff, of which approximately 47 are technical employees (engineers, technicians, tradespeople and operators). Of the Company's 28 engineering staff, half have advanced degrees (Master or Ph.D.). Of the Company's 19 manufacturing staff, half have advanced technical degrees (technical college level).

The Company prides itself in hiring talented individuals with a complementary mix of professional experience and industry knowledge. The Company continues to develop a working environment wherein everyone is valued for their contribution to the team and rewarded for their accomplishments. The Company believes that it has one of the highest concentrations of plasma expertise under one roof in the world. As of December 31, 2019, all of the Company's employees were non-unionized. Except for Mr. Radin, the Company's management team and senior officers are located in Canada.

Facilities

The headquarters of the Company are located at 1744, William St., Suite 200, Montréal, Québec, Canada, Canada, H3J 1R4 in leased premises.

The Company's 3,800 m² leased manufacturing facility is located at 5655 Philippe-Turcot, Montréal, Québec, Canada, H4C 3K8. This facility is used to manufacture systems, produce powders and host various pilot systems for demonstration and testing, as well as to provide spare parts to the Company's existing client base.

The Company does not own any real property.

Distribution Methods

The Company sells its products and systems primarily through direct sales by its own internal sales team. The marketing of the Company's products is provided by its internal sales and marketing group located in Montréal, Canada.

Under a mutual exclusive agreement with Aubert & Duval, PyroGenesis supplies plasma atomized titanium powder to Aubert & Duval for distribution to the additive manufacturing market in Europe. In addition, Drosrite International has the right to manufacture, market, sell and distribute DROSRITE systems and the DROSRITE technology in the Kingdom of Saudi Arabia and certain other countries in the Middle East, on an exclusive basis.

The business of the Company is neither cyclical nor seasonal. The Company's products have long sales cycles, which are generally unaffected by seasonal variations.

The Company's agreements are typically for the sale of equipment. The Company gets paid on milestone payments that reflect progress on the projects. Usually, the Company tries to also obtain advance payments. For the sale of powders and parts, the Company generally invoices and gets paid upon delivery.

Intellectual Property and Research and Development


The intellectual property and proprietary rights of PyroGenesis, as well as its research and development (“**R&D**”) efforts, are important to its business. Considering the time and investment required to develop new products and obtain marketing authorization, the Company places considerable importance on protecting its research findings, trade secrets and technologies.

Intellectual Property

In efforts to secure, maintain and protect its intellectual property and proprietary rights, PyroGenesis relies on a combination of trademarks, trade secrets and other rights. The Company relies on a combination of patents, laws, licences, non-disclosure agreements and various contractual arrangements to protect its exclusive technology. Nothing, however, can guarantee that the Company’s protective measures are enforceable or sufficient to prevent illicit appropriation of its technology or development of the same or similar technology by a third party.

Tradenames and Trademarks

PyroGenesis uses the following tradenames and trademarks in connection with the sale of its services and products, none of which are registered. The tradenames and logo are used everywhere the Company does business and the common law trademarks are or have been used in connection to the sale of specific products, notably in the following jurisdictions: Canada, United States, Europe, Brazil, Saudi Arabia, Australia, Israel, Taiwan and Vietnam.

- PyroGenesis (tradenname)
- PyroGenesis Additive (tradenname)
-  (logo)
- NEXGEN
- DROSRITE
- PUREVAP
- SPARC
- APT
- APTH
- RPT MINIGUN™
- SPT
- PAWDS
- PPRS
- PACWADS
- PAGV

Patents

As of the date of this AIF, the Company owns a total of 118 patents (22 granted, 94 pending and 2 provisional) relating to its products and processes.

Research & Development

The Company’s competitive strategy is based on technology leadership of its products and services. This strategy is underpinned by a strong innovation culture and a long-standing commitment to performing research and development. The Company relies on research and development performed and conducted internally out of its Montréal facility.

As of the date of this AIF, the Company employs six engineers and scientists that are fully dedicated to research and development projects. Separately, the engineering team is also involved in research and development projects. Most research and development projects are funded by external customers and are initiated to respond to a specific customer need. Follow-on work and equipment sales can often result from these initial research and development projects. Research and development projects are mainly focused on product extension. Internal research and development expenses vary widely from year to year and depend on Company priorities.

Environmental Protection

The Company currently has two active permits from the City of Montréal for testing on laboratory and pilot scale systems at its manufacturing facility, as well as operation of its powder production system.

The Company needs to apply for a new permit each time a new project involving testing occurs. There are no costs to these permits except the time required to prepare the documentation for the City of Montréal. The time to obtain a permit is usually between two and four months.

Foreign Operations

The Company does not currently have any foreign operations outside of Canada.

Competition

PyroGenesis competes with a substantial number of companies in the industries in which it operates, some of which have greater technical and financial resources. There can be no assurance that such competitors will not substantially increase the resources devoted to the development and marketing of products and services that compete with those of the Company or that new or existing competitors will not enter the various markets in which PyroGenesis is active. There can be no assurance that competitors will not develop new and unknown technologies with which the Company may have difficulty competing. Furthermore, failure to remain cost competitive may result in PyroGenesis losing business to its competitors.

For example, in the waste destruction and waste-to-energy systems markets, the Company faces competition from Europlasma, in the systems for the recovery of aluminum and other metal from dross market, the Company faces competition from Altek, a division of Harsco Corp., and in the production of high purity spherical metal powders market, the Company faces competition from AP&C, a GE Additive company, and Tekna, a portfolio company of Arendals Fossekompagni ASA.

DIVIDENDS AND DISTRIBUTIONS

The Company has not paid any dividends, has no policy on paying dividends or distributions, and has no present intention to pay dividends. The Company currently intends to reinvest any earnings to fund the development and growth of its business. Any future payments of dividends will be at the discretion of the Board and will depend on many factors, including, among other things, the Company's financial condition, current and anticipated capital requirements, contractual requirements, solvency tests imposed by applicable corporate law and other factors it may deem relevant.

DESCRIPTION OF CAPITAL STRUCTURE

The following describes the material terms of the Company's share capital and the number of Common Shares issued and outstanding. The following description may not be complete and is subject to, and qualified in its entirety by reference to, the terms and provisions of the Company's articles (the "Articles").

Authorized Share Capital

The Company is authorized to issue an unlimited number of Common Shares without par value. Subject to the rights, privileges, restrictions and conditions attaching to any preferred shares authorized in the future, the rights of the holders of Common Shares, as a class, are equal in all respects and include the right:

- (i) Voting: to vote at any meeting of shareholders;

(ii) Dividends: to receive, as and when declared by the directors of the Company, any dividends payable on such dates, for such amounts and at such place or places as the Board may from time to time determine; and

(iii) Liquidation or Dissolution: to receive the remaining property of the Company on liquidation or dissolution.

As at the date of this AIF, there were 154,267,292 Common Shares issued and outstanding.

Stock Options and Warrants

The following table sets forth, as of October 19, 2020, the aggregate number of convertible or exchangeable securities that are outstanding.

| Description of Security | Number of convertible/exchangeable securities | Number of listed securities (Common Shares) issuable upon conversion/exchange |
|--|---|---|
| Stock Options | 9,060,000 | 9,060,000 |
| June 19, 2021 Warrants ⁽¹⁾ | 500,000 | 500,000 |
| May 28, 2021 Warrants ⁽²⁾ | 750,000 | 750,000 |
| May 15, 2021 Warrants ⁽³⁾ | 1,355,500 | 1,355,500 |
| December 18, 2020 Warrants ⁽⁴⁾ | 1,245,400 | 1,245,400 |
| February 13, 2021 Second Private Placement Warrants ⁽⁵⁾ | 118,750 | 118,750 |
| February 13, 2021 First Private Placement Warrants ⁽⁶⁾ | 3,448,276 | 3,448,276 |
| January 25, 2021 Warrants ⁽⁷⁾ | 225,000 | 225,000 |

Notes:

- (1) See “General Development of the Business - Year Ended December 31, 2019 - Financings – June 2019 Private Placement”. As of October 19, 2020, 500,000 warrants have been exercised.
- (2) See “General Development of the Business - Year Ended December 31, 2019 - Financings – May 2019 Private Placement”. As of October 19, 2020, 1,274,500 warrants have been exercised.
- (3) See “General Development of the Business - Year Ended December 31, 2019 - Financings – May 2019 Private Placement”. As of October 19, 2020, 1,641,000 warrants have been exercised.
- (4) See “General Development of the Business - Year Ended December 31, 2018 - Financings – December 2018 Private Placement”. As of October 19, 2020, 998,967 warrants have been exercised.
- (5) See “General Development of the Business - Year Ended December 31, 2018 - Financings - October 2018 Private Placement”. As of October 19, 2020, 1,382,000 warrants have been exercised.
- (6) See “General Development of the Business - Year Ended December 31, 2018 - Financings - October 2018 Private Placement”.
- (7) See “General Development of the Business - Year Ended December 31, 2019 - Financings – “October 2019 Private Placement”.

MARKET FOR SECURITIES

Trading Price and Volume

The Common Shares are listed on the TSX-V under the symbol “PYR” and trade on the OTCQB under the symbol “PYRNF” and on the Frankfurt (FRA) exchange under the symbol “8PY”. The following table sets forth information relating to the trading of the Common Shares on the TSX-V for the months indicated:

| Month | Shares | | |
|----------------|-----------|----------|----------------------|
| | High (\$) | Low (\$) | Average Daily volume |
| January 2019 | 0.68 | 0.52 | 74,391 |
| February 2019 | 0.69 | 0.60 | 55,013 |
| March 2019 | 0.68 | 0.61 | 47,481 |
| April 2019 | 0.67 | 0.58 | 73,543 |
| May 2019 | 0.77 | 0.54 | 171,257 |
| June 2019 | 0.67 | 0.52 | 75,049 |
| July 2019 | 0.65 | 0.54 | 47,442 |
| August 2019 | 0.60 | 0.50 | 55,197 |
| September 2019 | 0.59 | 0.48 | 44,725 |
| October 2019 | 0.65 | 0.50 | 153,554 |
| November 2019 | 0.57 | 0.48 | 57,785 |
| December 2019 | 0.50 | 0.40 | 95,366 |
| January 2020 | 0.49 | 0.47 | 71,906 |
| February 2020 | 0.45 | 0.43 | 89,451 |
| March 2020 | 0.50 | 0.42 | 93,710 |
| April 2020 | 0.72 | 0.55 | 204,055 |
| May 2020 | 1.43 | 1.27 | 474,380 |
| June 2020 | 2.47 | 2.32 | 787,709 |
| July 2020 | 6.15 | 5.75 | 807,083 |
| August 2020 | 5.99 | 5.76 | 263,325 |
| September 2020 | 6.43 | 5.43 | 397,089 |

Prior Sales

The following table summarizes the issuances of unlisted securities of the Company during the financial year ended December 31, 2019.

| Date of Issue | Type of Security Issued | Number of Securities Issued | Price Per Security | Total Consideration |
|--------------------|---|-----------------------------|--------------------|---------------------|
| September 29, 2019 | Stock Options | 400,000 | \$ 0.51 | n/a |
| October 23, 2019 | January 25, 2021 Warrants ⁽¹⁾ | 225,000 | \$ 0.75 | n/a |
| June 19, 2019 | June 19, 2021 Warrants ⁽²⁾ | 1,000,000 | \$ 0.85 | n/a |
| May 28, 2019 | May 28, 2021 Warrants ⁽³⁾ | 2,024,500 | \$ 0.85 | n/a |
| May 15, 2019 | May 15, 2021 Warrants ⁽⁴⁾ | 2,996,500 | \$ 0.85 | n/a |
| January 7, 2019 | December 18, 2020 Warrants ⁽⁵⁾ | 97,400 | \$ 0.85 | n/a |

Notes:

- (1) See footnote 8 under “Description of Capital Structure - Stock Options and Warrants”.
- (2) See footnote 1 under Description of Capital Structure - Stock Options and Warrants”.
- (3) See footnote 2 under “Description of Capital Structure - Stock Options and Warrants”.
- (4) See footnote 3 under “Description of Capital Structure - Stock Options and Warrants”.
- (5) See footnote 4 under “Description of Capital Structure - Stock Options and Warrants”.

DIRECTORS AND EXECUTIVE OFFICERS

The Articles of the Company provide for a minimum of three directors and a maximum of 15 directors. Each director holds office until the close of the next annual general meeting of the Company, or until his or her successor is duly elected or appointed, unless his or her office is earlier vacated.

Name and Occupation

The following table lists the names of the directors and executive officers of the Company and their province/state and country of residence, their positions and offices held with the Company, their principal occupations during the past five years, the date on which they first became officers or directors of the Company, and the number and percentage of Common Shares which is beneficially owned, directly or indirectly, or over which control or direction is exercised, by each of them.

| Name, Province/State and Country | Positions and Offices Held with the Company | Committee(s) of the Board of Directors | Director or Officer of the Company Since | Principal Occupation for the Previous Five Years | Number (and Percentage) of Common Shares Owned or Controlled |
|---|--|---|---|---|---|
| P. Peter Pascali Québec, Canada | President, Chief Executive Officer Director Chair of the Board | - | 2006 | President and Chief Executive Officer of the Company. | 77,038,722 ⁽¹⁾ (49.94)% |
| Pierre Carabin Québec, Canada | Chief Technology Officer & Chief Strategist | - | 2006 | Chief Technology Officer & Chief Strategist of the Company | 511,500 (0.33)% |
| Robert Radin South Carolina, USA | Member of the Audit Committee Director | Audit Committee | 2012 | President of Radin & Associates Consulting, LLC since 2011 | 650,000 (0.42)% |
| Andrew Abdalla, CPA, CA Québec, Canada | Chair of the Audit Committee Director | Audit Committee | 2018 | Senior partner at MNP LLP | 0 (0.0)% |

| Name, Province/State and Country | Positions and Offices Held with the Company | Committee(s) of the Board of Directors | Director or Officer of the Company Since | Principal Occupation for the Previous Five Years | Number (and Percentage) of Common Shares Owned or Controlled |
|--|---|--|---|--|--|
| Michael Blank Québec, Canada | Acting Chief Financial Officer Member of the Audit Committee Director | Audit Committee | 2019 | Vice President Finance at Newtrax Technologies from 2016 to 2019 Chief Financial Officer at Sonomax Technologies Inc./Eers Global Technologies Inc. from 2009 to 2016. | 0 (0.0%) |
| Dr. Virendra Jha Québec, Canada | Director | - | 2019 | Director on the Board of the Atomic Energy of Canada Limited. Current; Member of the Order of Canada; Vice President Canadian Space Agency 2003 to 2008; Acting President of the Canadian Space Agency 2005 to 2006;1 Chief Engineering Adviser at the Canadian Space Agency until his retirement in 2014. | 0 (0.0%) |

| Name, Province/State and Country | Positions and Offices Held with the Company | Committee(s) of the Board of Directors | Director or Officer of the Company Since | Principal Occupation for the Previous Five Years | Number (and Percentage) of Common Shares Owned or Controlled |
|------------------------------------|---|--|--|---|--|
| Rodayna Kafal Québec, Canada | Vice President, Investor Relations and Strategic Business Development Director | - | 2020 | Investor Relations and Strategic Business Development of the Company. | 50,257 (0.03%) |
| Rodney Beveridge Québec, Canada | Director | Audit Committee | 2020 | Vice President, Portfolio Manager at TD Wealth Private Investment Advice. | 0 (0.0%) |

Notes:

(1) Mr. Pascali holds 60,327,941 Common Shares directly, and indirectly holds or controls (i) 7,251,000 Common Shares through a holding company, 8339856 Canada Inc., of which he is the sole shareholder, and (ii) 9,459,781 Common Shares through the Pascali Trust, a family trust of which he is a trustee, officer and a beneficiary. "Description of Capital Structure - Stock Options and Warrants".

All executive officers of the Company work full time for the Company with the exception of Mr. Michael Blank who acts on a part-time basis, under a consulting agreement, as the Acting Chief Financial Officer. All of the executive officers of the Company are employees of the Company, and none are independent contractors.

As of October 19, 2020, the directors and executive officers of the Company, as a group, beneficially own, directly or indirectly, or exercise control or direction over, an aggregate of 78,250,479 Common Shares representing 50.72% of the issued and outstanding Common Shares.

Biographies

The following biographies provide certain selected information in respect of the persons who are serving as directors and executive officers of the Company:

P. Peter Pascali – Director, President and Chief Executive Officer and Chair of the Board

Mr. Peter Pascali, after graduating with an MBA from McGill University in 1983, became an investment banker specializing in mergers and acquisitions and public offerings. He initially worked for the Bank of Nova Scotia and then, in 1987, joined Westpac Banking Company. In 1989, he joined DeGeorge Financial Company as a strategic advisor. Mr. Pascali has been with the Company since its incorporation in 2006 where he has been responsible for developing the business strategy and marketing focus for commercializing the Company's technologies and running the business. Mr. Pascali continues to develop the Company's strategy and oversee the operational management as the President and Chief Executive Officer. In his leadership role, Mr. Pascali spearheads the Strategic Management Team which is responsible for the strategic planning and execution of the Company's business plans.

Michael Blank – Director, Acting Chief Financial Officer and Member of the Audit Committee

Mr. Blank, CPA, CA with over 30 years of executive experience in leading finance and operations for private and public organizations, has a sound professional judgement in business plan preparation, budgeting, cash flow management and internal control implementation. Mr. Blank has served as the Chief Financial Officer of the following public companies: Sonomax Technologies Inc and Applied Gaming Solutions of Canada (Pacific Lottery Corporation). Mr. Blank has acquired an extensive knowledge of taxation and audit, having spent over 10 years at KPMG, an international public accounting and consulting firm, in both Canada and Europe. Adept at explaining complex accounting and tax rules and their impacts on businesses, he provided corporate tax consulting and the information clients rely on to make strong business decisions. Mr. Blank holds a bachelor's degree in commerce with finance and accounting major with honors, from Queen's University and a diploma in Public Accounting from McGill University. Mr. Blank is a designated Chartered Professional Accountant (CPA), and qualifies as a Chartered Accountant (CA).

Robert M. Radin – Director and Member of the Audit Committee

Robert M. Radin, retired from the U.S. Army in 2011 after serving for over 35 years and attaining the rank of Major General. His last assignment was as the U.S. Army Assistant Deputy Chief of Staff, G-4, (Logistics), the Pentagon, Washington, DC. In this position he was responsible for policy development, strategic planning and budget programming for distribution, logistics force structure, readiness reporting, Army pre-positions stocks, contingency contracting and support of U.S. Army worldwide operations. Prior to joining the Army Staff, he served as the Commanding General of the U.S. Army Sustainment Command at Rock Island, Illinois. Other key assignments include: Deputy Chief of Staff for Operations and Logistics for the U.S. Army Materiel Command from 2005 to 2007; Commanding General of the Joint Munitions Command from 2004 to 2005; and from 2003 to 2004 was deployed to Kuwait as the Commanding General, U.S. Army Materiel Command-SWA and was responsible for support of U.S. land forces in Kuwait, Iraq, Afghanistan and Djibouti. After retiring from the Army in June 2011, he founded Radin & Associates Consulting, LLC, a firm that assists clients with supply chain related issues. Mr. Radin has graduated from the U.S. Military Academy at West Point and holds postgraduate degrees from the Florida Institute of Technology and the National Defense University.

Dr. Virendra Jha – Director

Dr. Virendra Jha, member of the order of Canada, has over 42 years of experience in the Canadian Space Program ranging from in-depth engineering work to senior management positions in both the private and the public sectors. Dr. Jha began his space career in 1972 when he joined the aerospace group of RCA Limited Montréal, which later became Spar Aerospace Limited. In 1988, he became the Director of Engineering at Spar Aerospace Limited. In 1991 Dr. Jha joined the Canadian Space Agency as Director of the Space Mechanics Group. In 1996, he was promoted to the position of Director General, Space Technologies Branch of the CSA. From 2003 till 2008, he was the Vice-President responsible for Science, Technology and Programs at the Canadian Space Agency. As Vice President, Dr. Jha provided strategic direction, vision and leadership to all core technical sectors of the Agency. From November 2005 until February 2006, Dr. Jha also served as the Acting President of the Canadian Space Agency. He was Chief Engineering Adviser at the Canadian Space Agency until his retirement in 2014.

Dr. Jha received his B. Tech. degree in Mechanical Engineering from the Indian Institute of Technology Delhi India, his Master's degree in Mechanical engineering from McMaster University, Hamilton, Canada, and his Ph.D. degree in Mechanical Engineering from Concordia University, Montréal, Canada and the C.Dir. (Chartered Director) Degree from McMaster University, Hamilton, Canada. Dr. Jha's technical contributions in Canadian Space Program as well as in International Space activities have been significant. His leadership and commitment to the profession is reflected by his recognition and active participation in many groups, committees and advisory boards.

Dr. Jha currently serves as a director on the Board of the Atomic Energy of Canada Limited, a Canadian federal Crown corporation and Canada's largest nuclear science and technology laboratory.

Andrew Abdalla – Director, Chair of the Audit Committee

Andrew Abdalla, CPA, CA, is a partner at MNP LLP, a leading national accounting, tax and business consulting firm in Canada. Mr. Abdalla brings to the Board of Directors more than 20 years of strategic planning, and tax advice, with a specific focus on sales and income tax, acquisitions and divestitures, business valuations, corporate reorganizations and spinoffs. Mr. Abdalla received his Chartered Professional Accountant (CPA, CA) designation in 1987. He holds a Bachelor of Commerce and a graduate diploma in public accounting from Concordia University in Montréal.

Rodayna Kafal – Director, VP, Investor Relations and Strategic Business Development

Upon graduating from McGill University in 2009 (Bachelor's degree in Chemical Engineering), Ms. Kafal took on lead roles in process engineering at the Natural Gas Technologies Centre in Montreal, where she was responsible for managing a number of high-level projects. Thereafter, she enrolled in a two-year graduate program in Industrial Engineering and Project Management at École Polytechnique de Montréal. Ms. Kafal joined PyroGenesis with a strong background in process engineering, combined with practical experience in sales, promotional activities and business relations. Ms. Kafal has been a member of PyroGenesis' Strategic Management Group since 2016 where she has been instrumental in providing input into all aspects of PyroGenesis' growth and represented the views of the investor community. As Vice President, Investor Relations and Strategic Business Development, Ms. Kafal continues to oversee PyroGenesis' complete investor relations program, while managing the Company's marketing team.

Rodney Beveridge – Director

Mr. Beveridge holds the Chartered Investment Management (CIM) designation as well as a Bachelor of Arts in Honour Applied Economics and a Bachelor of Science in Biochemistry, both from Queen's University. Mr. Beveridge is currently Vice President, Portfolio Manager at TD Wealth Private Investment Advice and has been actively involved in the financial markets since 2006. Mr. Beveridge has a unique understanding of retail markets and corporate financial structures.

Pierre Carabin – Chief Technology Officer and Chief Strategist

Mr. Pierre Carabin, Eng., has over twenty-five years of experience in process engineering and environmental technologies. Throughout his 18 years at PyroGenesis, he has been instrumental in the development of the Company's various technology platforms. He is the inventor or co-inventor of nearly forty pending and issued patents relating to high temperature chemical processes. As Chief Technology Officer, he leads PyroGenesis' engineering team in the design and development of plasma systems and is also member of the Company's Strategic Management Team which is responsible for the strategic planning and execution of the Company's business plan.

Prior to joining PyroGenesis in 1998, Pierre worked in the pulp and paper industry for 8 years, notably developing paper recycling machinery. Pierre holds a Master's degree in Chemical Engineering with honors from McGill University, and, to date, he has contributed in more than 50 technical communications for various journals and at technical conferences. As member of the OIQ, Pierre also volunteers for the Air and Waste Management Association (AWMA), Québec Section, and for the International Thermal Treatment Technologies Conference.

Sara-Catherine L. Tolszczuk – Legal Counsel and Corporate Secretary

Me Sara-Catherine Tolszczuk joined PyroGenesis Canada Inc. in 2020 as in-house Legal Counsel and Corporate Secretary. She is also a member of the Strategic Management Group which is responsible for the strategic planning and execution of the Company's business plan.

Me Tolszczuk is responsible for identifying, assessing and managing legal, reputational and regulatory risks for the Company and providing guidance on a variety of legal matters, including securities, corporate governance, contracts, employment and intellectual property. She is also responsible for drafting legal procedures and documents as well as engaging in contract negotiations with business partners and clients in support of the business objectives of the Company.

Before joining PyroGenesis, Me Tolszczuk was part of the intellectual property group of a leading independent law firm in the province of Québec. Her work involved developing strategies for the protection, commercialization and enforcement of patents, trademarks, copyrights, industrial designs and trade secrets. Sara-Catherine also acquired experience in drafting a wide range of contracts, including product development, supply and licencing, non-disclosure, and material transfer agreements. As a compliment to her intellectual property-centered practice, Sara-Catherine advised clients on matters relating to the compliance with the Consumer Protection Act, the Charter of the French Language, and Canada's Anti-Spam and privacy legislation and participated in the due diligence phase of transaction files.

Me Tolszczuk completed a Bachelor of Law and Master's degree in Biology with a concentration in life sciences and law at Université de Sherbrooke and was admitted to the Quebec Bar in 2018.

Cease Trade Orders, Bankruptcies, Penalties or Sanctions

No director, officer, or shareholder of the Company holding a sufficient number of securities of the Company to affect materially the control of the Company: (a) is, or within 10 years before the date of this AIF has been, a director or officer of any other company that, while that person was acting in that capacity, (i) was the subject of a cease trade or similar order, or an order that denied the other issuer access to any exemptions under applicable securities law, for a period of more than 30 consecutive days; or (ii) became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets; (b) has been subject to any penalties or sanctions imposed by a court relating to Canadian securities legislation or by a Canadian securities regulatory authority or has entered into a settlement agreement with a Canadian securities regulatory authority; (c) has been subject to any other penalties or sanctions imposed by a court or regulatory body that would be likely to be considered important to a reasonable investor making an investment decision; or (d) is, or has become within 10 years before the date of this AIF, bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or been subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold its assets.

Conflicts of Interest

To the best of the Company's knowledge, and other than disclosed in this AIF, there are no known existing or potential conflicts of interest among the Company, the directors and officers of the Company or other members of management or of any proposed promoter, director, officer or other member of management as a result of their outside business interests except that certain of the directors and officers serve as directors and officers of other companies, and therefore it is possible that a conflict may arise between their duties to the Company and their duties as a director or officer of such other companies. A director who has a material interest in a matter before the Board or any committee on which he or she serves is required to disclose such interest as soon as the director becomes aware of it. In situations where a director has a material interest in a matter to be considered by the Board or any committee on which he or she serves, such director may be required to absent himself or herself from the meeting while discussions and voting with respect to the matter are taking place. Directors will also be required to comply with the relevant provisions of applicable corporate laws regarding conflicts of interest.

AUDIT COMMITTEE AND CORPORATE GOVERNANCE

Audit Committee

The Company's Audit Committee is responsible for assisting the Board in monitoring the performance of management in ensuring that the Company is operating in an ethical manner and encouraging management to demonstrate a strong commitment to integrity.

The Audit Committee is also responsible for providing assistance to the Board in fulfilling its financial reporting and control responsibilities to the shareholders of the Company and to the investment community. The Audit Committee's primary responsibilities in this regard are to: (i) oversee the accounting and financial reporting process of the Company and the audit of its financial statements; (ii) monitor the Company's financial reporting process and internal control systems; (iii) review and appraise the audit activities of the Company's independent auditors; (iv) meet periodically with management and with the independent auditors; and (v) assess the relevance and reliability of the Company's financial reports to ensure they accurately portray the underlying economic circumstances and financial performance of the Company.

Audit Committee Charter

The Audit Committee's mandate is to promote and ensure that the Company complies with high standards of financial reporting, risk management and ethical behavior. The Audit Committee charter is attached hereto as Schedule "A".

Composition of the Audit Committee

The Audit Committee is comprised of four directors, Messrs. Abdalla (chairman of the Audit Committee), Blank, Radin and Beveridge. Mr. Blank is an executive officer of the Company, and as such is not independent within the meaning of NI 52-110. Messrs. Abdalla, Radin and Beveridge meet the independence requirements for members of the Audit Committee pursuant to NI 52-110. Each of the three members is financially literate within the meaning of NI 52-110, and has an understanding of the accounting principles used to prepare financial statements and varied experience as to the general application of such accounting principles, as well as an understanding of the internal controls and procedures necessary for financial reporting. For additional details regarding the education and experience of each member of the Audit Committee, see "Directors and Executive Officers".

Pre-Approval Policies and Procedures

The Audit Committee must pre-approve all non-audit services to be provided to the Company by its external auditors.

External Fees by Audit Category

The Audit Committee has reviewed the nature and amount of the non-audit services provided by the Company's external auditors, KPMG LLP. Fees incurred with the auditors for audit and non-audit services in the last two fiscal years for audit fees are outlined in the following table.

| | Fees paid to KPMG LLP in Fiscal Year ended December 31, 2019 | Fees paid to KPMG LLP in Fiscal Year ended December 31, 2018 |
|-----------------------------------|--|---|
| Audit Fees ⁽¹⁾ | \$ 249,834 | \$ 161,000 |
| Audit-Related Fees ⁽²⁾ | \$ - | \$ - |
| Tax-Related Fees ⁽³⁾ | \$ 54,870 | \$ 13,300 |
| All Other Fees ⁽⁴⁾ | \$ - | \$ - |
| Total Fees | \$ 304,704 | \$ 174,300 |

Notes:

- (2) “Audit Fees” include fees necessary to perform the annual audit of the Company’s consolidated financial statements and fees incurred in relation to the performance of quarterly reviews. Audit Fees also includes fees for accounting consultations on matters reflected in the financial statements.
- (3) “Audit-Related Fees” include services that are traditionally performed by the auditor. These audit-related services include services required by legislation or regulation such as comfort letters, consents and reviews of securities filings, employee benefit audits, due diligence assistance, internal control reviews and audit or attest services not required by legislation or regulation.
- (4) “Tax-Related Fees” includes fees for tax compliance, tax planning and tax advice. Tax planning and tax advice includes assistance with tax audits and appeals, tax advice related to mergers and acquisitions, and requests for rulings or technical advice from tax authorities.
- (5) “All Other Fees” include all other non-audit services.

Corporate Governance

The Board believes that sound corporate governance practices are essential to the effective, efficient and prudent operation of the Company and to the enhancement of shareholder value. The Board fulfils its mandate directly and through committees at regularly scheduled meetings or as required. Frequency of meetings may be increased and the nature of the agenda items may be changed depending on the state of the Company’s affairs and in light of opportunities and risks which the Company faces. The Board is kept informed of the Company’s operations at these meetings as well as through reports and discussions with the Company’s management.

Board of Directors

The Board is comprised of seven directors, four of whom are independent as that term is defined under applicable Canadian securities laws. Pursuant to NI 52-110, an independent director is one who is free from any direct or indirect material relationship which could, in the view of the Board, be reasonably expected to interfere with a director’s independent judgment. The independent directors of the Company are Dr. Virendra Jha, Robert Radin, Andrew Abdalla and Rodney Beveridge. Michael Blank, P. Peter Pascali and Rodayna Kafal are not independent under these standards as they are executive officers of the Company.

The Board meets on a regular basis. The independent directors are encouraged to have open and frank discussions and, if felt necessary, require that the non-independent directors leave the meeting while such discussions are undertaken. P. Peter Pascali is responsible for chairing all meetings of the Board, providing leadership to the Board, managing the Board, acting as liaisons between the Board and management and representing the Company to external groups.

Board Mandate

The Board is responsible for the general supervision of the management of the business as well as for the oversight and review of the strategic planning process of the Company. The Board will discharge its responsibilities directly and through its committees, currently consisting of the Audit Committee. The full Board will be responsible for corporate governance issues. The Board meets regularly to review the business operations, corporate governance and financial results of the Company.

Orientation and Continuing Education

The Company does not have any formal orientation process for new directors. The Company considers appropriate orientation and continuing education requirements on a going-forward basis. When considered appropriate, the Company arranges site visits to its projects for all directors.

Nomination of Directors

The Board is responsible for recruiting new directors, proposing new director nominees to the Board and reviewing the performance and qualifications of existing directors. The current Board was chosen for their technical and financial expertise to ensure a high level of corporate governance. The existing directors have the knowledge and contacts necessary to search out additional directors.

Compensation

The Board is responsible for, among other things, making recommendations regarding appropriate compensation for the Company's executive officers. Management is compensated based on current competitive rates. On a going-forward basis, the Board reviews peer group practices when determining compensation for senior management.

Board Assessments

The Board reviews on an annual basis the requisite skills and characteristics of members of the Board as well as the composition of the Board as a whole. This assessment includes a member's contribution, qualification as independent, as well as consideration of diversity, age, skills and experience in the context of the needs of the Board.

RISK FACTORS

The Company has identified below certain significant risks relating to the business of the Company and the industry in which it operates. The following information is only a summary of certain risk factors and is qualified in its entirety by reference to, and must be read in conjunction with, the detailed information appearing elsewhere in this AIF. These risks and uncertainties are not the only ones facing the Company. Additional risks and uncertainties not currently known to the Company, or that the Company currently considers immaterial, may also impair the operations of the Company. If any such risks materialize into actual events or circumstances, the Company's assets, liabilities, financial condition, results of operations (including future results of operations), business and business prospects, are likely to be materially and adversely affected. There is no assurance that risk management steps taken will avoid future loss due to the uncertainties described below or other unforeseen risks. An investment in the Common Shares or other securities of the Company is highly speculative and involves a high degree of risk. Before making any investment decision, prospective investors should carefully consider all the information contained in this document including, in particular, the risk factors described below.

Risks Related to the Company's Business and Industry

Operating Losses and Negative Operating Cash Flow

The Company has not yet generated substantial revenue from its products and services. The Company had net losses and negative operating cash flow for the financial years ended December 31, 2019 and December 31, 2018 and for the six months ended June 30, 2020, resulting in an accumulated deficit of \$57,304,682 as at June 30, 2020. To the extent that the Company has net losses and negative operating cash flow in future periods, it may need to allocate a portion of its cash reserves to fund such negative cash flow. The Company may also be required to raise additional funds through the issuance of equity or debt securities. There can be no assurance that the Company will be able to generate a positive cash flow from its operations, that additional capital or other types of financing will be available when needed or that these financings will be on terms favourable to the Company.

The Company's ability to continue as a going concern is dependent upon its ability in the future to grow its revenue, achieve profitable operations, successfully developing and introducing new products and, in the meantime, to obtain the necessary financing to meet its obligations and repay its liabilities when they become due. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so in the future. External financing, predominantly by the issuance of equity and debt, will be sought to finance the operations of the Company; however, there can be no certainty that such funds will be available at terms acceptable to the Company, or at all. If the Company is unable to obtain sufficient additional financing, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations.

Actual Financial Position and Results of Operations May Differ Materially from the Expectations of the Company's Management

The Company's actual financial position and results of operations may differ materially from management's expectations. The Company has experienced some changes in its operating plans and certain delays in the timing of its plans. As a result, the Company's revenue, net income and cash flow may differ materially from the Company's projected revenue, net income and cash flow. The process for estimating the Company's revenue, net income and cash flow requires the use of judgment in determining the appropriate assumptions and estimates. These estimates and assumptions may be revised as additional information becomes available and as additional analyses are performed. In addition, the assumptions used in planning may not prove to be accurate, and other factors may affect the Company's financial condition or results of operations.

Revenue Risks

PyroGenesis may experience delays in achieving revenues, particularly with plasma gasification projects which have a long sales cycle. Revenues may be delayed or negatively impacted by issues encountered by the Company or its clients including:

- (i) unforeseen engineering and/or environmental problems;
- (ii) delays or inability to obtain required financing, licenses, permits and/or regulatory approvals;
- (iii) supply interruptions and/or labour disputes;
- (iv) foreign exchange fluctuations and/or collection risk; and
- (v) competition from other suppliers and/or alternative energy solutions that are less capital intensive.

There is no assurance that the business will perform as expected or that returns from the business will support the expenditures needed to develop it.

Technology Development and Manufacturing Capability Risks

PyroGenesis recently expanded into new areas of business and, as a result, many of the Company's products are at various stages of the development cycle. The Company may be unable to commercialise such products, or it may be unable to manufacture such products in a commercially viable manner. Whilst management is confident in both its technology and in its team of experienced engineers, scientists and technicians, it cannot know with certainty, which of its products will be commercialised, when such products will be commercialised, or whether such products will be able to be manufactured and distributed profitably.

Reliance on Third Party Suppliers, Service Providers and Distributors

The Company's suppliers, service providers and distributors may elect, at any time, to breach or otherwise cease to participate in supply, service or distribution agreements, or other relationships, on which the Company's operations rely. Loss of its suppliers, service providers or distributors could have a material adverse effect on the Company's business and operational results.

Manufacturing Facility

The vast majority of the Company's products are manufactured in its manufacturing facility located in Montreal, Quebec. Accordingly, the Company is highly dependent on the uninterrupted and efficient operation of its manufacturing facility. If for any reason the Company is required to discontinue production at its facility, it could result in significant delays in production of the Company's products and interruption of the Company's sales as it seeks to resume production. The Company may be unable to resume production on a timely basis. If operations at the facility were to be disrupted as a result of equipment failures, natural disasters, fires, accidents, work stoppages, power outages or other reasons, the Company's business, financial condition and/or results of operations could be materially adversely affected.

Sales Cycle and Fixed Price Contracts

PyroGenesis sales cycle is long and the signing of new contracts is subject to delay, over which the Company has little control. The Company also enters into sales contracts with fixed pricing, which may be impacted by changes over the period of implementation. There is no assurance that delays or problems in fulfilling contracts with clients will not adversely affect the Company's activities, operating results or financial position.

Reliance on Technology

PyroGenesis will depend upon continuous improvements in technology to meet client demands in respect of performance and cost, and to explore additional business opportunities. There can be no assurance that the Company will be successful in its efforts in this regard or that it will have the resources available to meet this demand. Whilst management anticipates that the research and development will allow the Company to explore additional business opportunities, there is no guarantee that such business opportunities will be presented or realized. The commercial advantage of the Company will depend to a significant extent on the intellectual property and proprietary technology of PyroGenesis and the ability of the Company to prevent others from copying such proprietary technologies. PyroGenesis currently relies on intellectual property rights and other contractual or proprietary rights, including (without limitation) copyright, trade secrets, confidential procedures, contractual provisions, licenses and patents, to protect its proprietary technology. PyroGenesis may have to engage in litigation in order to protect its patents or other intellectual property rights, or to determine the validity or scope of the proprietary rights of others. This type of litigation can be expensive and time consuming, regardless of whether or not the Company is successful. PyroGenesis may seek patents or other similar protections in respect of particular technology; however, there can be no assurance that any future patent applications will actually result in issued patents, or that, even if patents are issued, they will be of sufficient scope or strength to provide meaningful protection or any commercial advantage to the Company. Moreover, the process of seeking patent protection can itself be long and expensive. In the meantime, competitors may develop technologies that are similar or superior to PyroGenesis' technology or design around the patents owned by the Company, thereby adversely affecting the Company's competitive advantage in one or more of its areas of business. Despite the efforts of the Company, its intellectual property rights may be invalidated, circumvented, challenged, infringed or required to be licensed to others. It cannot be assured that any steps the Company may take to protect its intellectual property rights and other rights to such proprietary technologies that are central to the Company's operations will prevent misappropriation or infringement of its technology.

Changes to Contracts

PyroGenesis is dependent upon its ability to establish and develop new relationships and to build on existing relationships with current clients. The Company cannot provide assurance that it will be successful in maintaining or advancing its relationships with current clients or procure additional clients. In addition, PyroGenesis cannot provide assurance that the U.S. Military and/or other defense clients will continue to provide the Company with business. Sales to governments and governmental entities are subject to specific additional risks, such as delays in funding, termination of contracts or sub-contracts at the convenience of the government, termination, reduction or modification of contracts or sub-contracts in the event of changes in the government's policies or as a result of budgetary constraints and increased or unexpected costs resulting in losses or reduced profits under fixed price contracts.

Foreign Exchange Exposure

PyroGenesis' products and services are increasingly being sold in markets outside of Canada, whilst most of its operating expenses and capital expenditures are denominated in Canadian dollars. As a result, the Company is exposed to fluctuations in the foreign exchange rates between Canadian dollar and the currency in which a particular sale is transacted, which may result in foreign exchange losses that could affect earnings. Foreign sales are predominantly denominated in U.S. dollars. The Company has not to date sought to hedge the risks associated with fluctuations in foreign exchange rates.

Competition

The industry is competitive and PyroGenesis competes with a substantial number of companies which have greater technical and financial resources. There can be no assurance that such competitors will not substantially increase the resources devoted to the development and marketing of products and services that compete with those of the Company or that new or existing competitors will not enter the various markets in which PyroGenesis is active. There can be no assurance that competitors will not develop new and unknown technologies with which the Company may have difficulty competing. Furthermore, failure to remain cost competitive may result in PyroGenesis losing business to its competitors.

Management and Key Personnel

PyroGenesis depends on the skills and experience of its management team and other key employees. The Company relies heavily on its ability to attract and retain highly skilled personnel in a competitive environment. PyroGenesis may be unable to recruit, retain, and motivate highly skilled employees in order to assist the Company's business, especially activities that are essential to the success of the Company. Failure to recruit and retain highly-skilled employees may adversely affect PyroGenesis' business, financial condition and results of operations.

Implementation of a Strategic Plan

PyroGenesis' commercial strategy aims to leverage its products, consumables, and services whilst focusing on the resolution of problems within niche markets within the industries served by the Company. There can be no assurances as to the success of the Company's strategic plan, which should be considered under the risks perspective and difficulties frequently encountered by a developing business.

Adverse Decisions of Sovereign Governments

PyroGenesis conducts an increasing portion of its business internationally. There is no assurance that any sovereign government, including Canada's, will not establish laws or regulations that will not be detrimental to the Company's interests or that, as a foreign corporation, it will continue to have access to the regulatory agencies in other countries. Governments have, from time to time, established foreign exchange controls, which could have a material adverse effect on the Company's business, financial condition and results of operations.

Risks Related to International Operations

A portion of the Company's sales are made to customers outside Canada. As such, the Company may be denied access to its customers as a result of a closing of the borders of the countries in which it sells its products due to economic, legislative, political and military conditions in such countries. International operations are subject to a number of other inherent risks, and the Company's future results could be adversely affected by a number of factors, including:

- unfavorable political or economic environments;
- requirements or preferences for domestic products or solutions, which could reduce demand for the Company's products;
- differing existing or future regulatory and certification requirements;

- unexpected legal or regulatory changes;
- greater difficulty in collecting accounts receivable and longer collection periods;
- difficulties in enforcing contracts;
- an inability to effectively protect intellectual property;
- tariffs and trade barriers, export regulations and other regulatory and contractual limitations on the Company's ability to sell its products; and
- potentially adverse tax consequences, including multiple and possibly overlapping tax structures.

If the Company is unable to manage the risks inherent in its international activities, its ability to obtain future revenues may suffer and, consequently, its business, financial condition and results of operations could be materially and adversely affected.

Governmental Regulation

PyroGenesis is subject to a variety of federal, provincial, state, local and international laws and regulations relating namely to the environment, health and safety, export controls, currency exchange, labour and employment and taxation. These laws and regulations are complex, change frequently and have tended to become more stringent over time. Failure to comply with these laws and regulations may result in a variety of administrative, civil and criminal enforcement measures, including assessment of monetary penalties, imposition of remedial requirements and issuance of injunctions as to future compliance. The Company may be subject to compliance audits by regulatory authorities in the various countries in which it operates.

Government-funded Defense and Security Programs

Like most companies that supply products and services to governments, government agencies routinely audit and investigate government contractors. These agencies may review the Company's performance under its contracts, business processes, cost structure, and compliance with applicable laws, regulations and standards. The Company's incurred costs for each year are subject to audit by government agencies, which can result in payment demands related to costs they believe should be disallowed. The Company works with governments to assess the merits of claims and where appropriate reserve for amounts disputed. The Company could be required to provide repayments to governments and may have a negative effect on its results of operations. Contrary to cost-reimbursable contracts, some costs may not be reimbursed or allowed under fixed-price contracts, which may have a negative effect on the Company's results of operations if it experiences costs overruns.

Environmental Liability

PyroGenesis is subject to various environmental laws and regulations enacted in the jurisdictions in which it operates, which govern the manufacturing, processing, importation, transportation, handling and disposal of certain materials used in the Company's operations. Management believes that it has adequate procedures in place to address compliance with current environmental laws and regulations. Furthermore, management monitors the Company's practices concerning the handling of environmentally hazardous materials. However, there can be no assurance that the Company's procedures will prevent environmental damage occurring from spills of materials handled by the Company or that such damage has not already occurred. On occasion, substantial liabilities to third parties may be incurred. The Company may have the benefit of insurance maintained by it or the operator, however, the Company may become liable for damages against which it cannot adequately insure or against which it may elect not to insure because of high costs or other reasons. The Company's clients are subject to similar environmental laws and regulations, as well as limits on emissions to the air and discharges into surface and sub-surface waters. While regulatory developments that may follow in subsequent years could have the effect of reducing industry activity, the Company cannot predict the nature of the restrictions that may be imposed. The Company may be required to increase operating expenses or capital expenditures in order to comply with any new restrictions or regulations.

Product Liability and Other Lawsuits

PyroGenesis is subject to a variety of potential product liabilities claims and other lawsuits related with its operations, including liabilities and expenses associated with product defects. The Company maintains product liability and other insurance coverage that management believes is generally in accordance with the market practice in its industry, but there can be no assurance that the Company will always be adequately insured against all such potential liabilities.

A malfunction or the inadequate design of the Company's products could result in product liability or other tort claims. Accidents involving the Company's products could lead to personal injury or physical damage. Any liability for damages resulting from malfunctions could be substantial and could materially adversely affect the Company's business and results of operations. In addition, a well-publicized actual or perceived problem could adversely affect the market's perception of the Company's products. This could result in a decline in demand for the Company's products, which would materially adversely affect the Company's financial condition and results of operations.

The sale and use of products and processes developed by the Company may entail potential liability and possible warranty claims. The Company may be subject to personal injury claims for injuries resulting from use of its products. Although the Company maintains product liability insurance, there can be no assurance that such insurance will continue to be available on commercially reasonable terms or that the risks covered or coverage amounts will be sufficient to cover all claims.

Information Systems Disruptions

The Company relies on various information technology systems to manage its operations. Over the last several years, the Company has implemented, and it continues to implement, modifications and upgrades to such systems, including changes to legacy systems, replacing legacy systems with successor systems with new functionality, and acquiring new systems with new functionality. These types of activities subject the Company to inherent costs and risks associated with replacing and changing these systems, including impairment of the Company's ability to fulfill customer orders, potential disruption of its internal control structure, substantial capital expenditures, additional administration and operating expenses, retention of sufficiently skilled personnel to implement and operate the new systems, demands on management time and other risks and costs of delays or difficulties in transitioning to or integrating new systems into the Company's current systems. These implementations, modifications, and upgrades may not result in productivity improvements at a level that outweighs the costs of implementation, or at all. In addition, the difficulties with implementing new technology systems may cause disruptions in the Company's business operations and have a material adverse effect on its business, financial condition, or results of operations.

Security Breaches

As part of its day-to-day business, the Company stores its data and certain data about its customers in its global information technology system. Unauthorized access to the Company's data, including any regarding its customers, could expose the Company to a risk of loss of this information, loss of business, litigation and possible liability. These security measures may be breached by intentional misconduct by computer hackers, as a result of third-party action, employee error, malfeasance or otherwise. Additionally, third parties may attempt to fraudulently induce employees or customers into disclosing sensitive information such as usernames, passwords or other information in order to gain access to the data of the Company's customers or the Company's data, including the Company's intellectual property and other confidential business information, or the Company's information technology systems. Because the techniques used to obtain unauthorized access, or to sabotage systems, change frequently and generally are not recognized until launched against a target, the Company may be unable to anticipate these techniques or to implement adequate preventative measures. Any security breach could result in a loss of confidence by the Company's customers, damage its reputation, disrupt its business, lead to legal liability and negatively impact its future sales.

Changes to Contracts

PyroGenesis is dependent upon its ability to establish and develop new relationships and to build on existing relationships with current clients. The Company cannot provide assurance that it will be successful in maintaining or advancing its relationships with current clients or procure additional clients. In addition, PyroGenesis cannot provide assurance that the U.S. military and/or other defense clients will continue to provide the Company with business. Sales to governments and governmental entities are subject to specific additional risks, such as delays in funding, termination of contracts or sub-contracts at the convenience of the government, termination, reduction or modification of contracts or sub-contracts in the event of changes in the government's policies or as a result of budgetary constraints and increased or unexpected costs resulting in losses or reduced profits under fixed price contracts.

Public Health Crises

Public health crises, including local, regional, national or international outbreak of a contagious disease, could have an adverse effect on local economies, the global economy, and the markets in which the Company operates and markets its products, and may adversely impact the price and demand for the Company's products and the ability of the Company to operate and market its products. Subsequent to December 31, 2019, the global emergence of coronavirus (COVID-19) occurred. The impacts of COVID-19 on the Company's business are currently unknown. The Company will monitor the situation and may take actions that alter its business operations as may be required by federal, state or local authorities or that the Company determines are in the best interests of its employees, customers, partners, suppliers, shareholders and stakeholders. Any such alterations or modifications could cause substantial interruption to the Company's business, any of which could have a material adverse effect on the Company's operations or financial results, and could include temporary closures of one or more of the Company's or its partner's offices or facilities; temporary or long-term labor shortages; temporary or long-term adverse impacts on the Company's supply chain and distribution channels; the potential of increased network vulnerability and risk of data loss resulting from increased use of remote access and removal of data from the Company's facilities.

Litigation

The Company may from time to time become party to litigation in the ordinary course of business which could adversely affect its business. Should any litigation in which the Company becomes involved be determined against the Company, such a decision could adversely affect the Company's ability to continue operating and the market price for the Common Shares and could use significant resources. Even if the Company is involved in litigation and wins, litigation can redirect significant Company resources. Litigation may also create a negative perception of the Company's brand.

Trade Secrets May Be Difficult to Protect

The Company's success depends upon the skills, knowledge and experience of its scientific and technical personnel, consultants and advisors, as well as contractors. Because the Company operates in a highly competitive industry, it relies in part on trade secrets to protect its proprietary products and processes. However, trade secrets are difficult to protect. The Company generally enters into confidentiality or non-disclosure agreements with its corporate partners, employees, consultants, outside scientific collaborators, developers and other advisors. These agreements generally require that the receiving party keep confidential, and not disclose to third parties, confidential information developed by the receiving party or made known to the receiving party by the Company during the course of the receiving party's relationship with the Company. These agreements also generally provide that inventions conceived by the receiving party in the course of rendering services to the Company will be its exclusive property, and the Company enters into assignment agreements to perfect its rights.

These confidentiality, inventions and assignment agreements, where in place, may be breached and may not effectively assign intellectual property rights to the Company. The Company's trade secrets also could be independently discovered by competitors, in which case the Company would not be able to prevent the use of such trade secrets by its competitors. The enforcement of a claim alleging that a party illegally obtained and was using the Company's trade secrets could be difficult, expensive and time consuming and the outcome could be unpredictable. The failure to obtain or maintain meaningful trade secret protection could adversely affect the Company's competitive position.

Risks Related to Acquiring Companies

The Company may acquire other companies in the future and there are risks inherent in any such acquisition. Specifically, there could be unknown or undisclosed risks or liabilities of such companies for which the Company is not sufficiently indemnified. Any such unknown or undisclosed risks or liabilities could materially and adversely affect the Company's financial performance and results of operations. The Company could encounter additional transaction and integration related costs or other factors such as the failure to realize all of the benefits from such acquisitions. All of these factors could cause dilution to the Company's earnings per share or decrease or delay the anticipated accretive effect of the acquisition and cause a decrease in the market price of the Company's securities. The Company may not be able to successfully integrate and combine the operations, personnel and technology infrastructure of any such acquired company with its existing operations. If integration is not managed successfully by the Company's management, the Company may experience interruptions in its business activities, deterioration in its employee and customer relationships, increased costs of integration and harm to its reputation, all of which could have a material adverse effect on the Company's business, financial condition and results of operations. The Company may experience difficulties in combining corporate cultures, maintaining employee morale and retaining key employees. The integration of any such acquired companies may also impose substantial demands on the management. There is no assurance that these acquisitions will be successfully integrated in a timely manner.

Global Economic Uncertainty

Demand for the Company's products and services are influenced by general economic and consumer trends beyond the Company's control. There can be no assurance that the Company's business and corresponding financial performance will not be adversely affected by general economic or consumer trends. In particular, global economic conditions are still tight, and if such conditions continue, recur or worsen, there can be no assurance that they will not have a material adverse effect on the Company's business, financial condition and results of operations.

Furthermore, such economic conditions have produced downward pressure on stock prices and on the availability of credit for financial institutions and corporations. If these levels of market disruption and volatility continue, the Company might experience reductions in business activity, increased funding costs and funding pressures, as applicable, a decrease in the market price of the Common Shares, a decrease in asset values, additional write-downs and impairment charges and lower profitability.

Inability to Renew Leases

The Company may be unable to renew or maintain its leases (commercial or real property) on commercially acceptable terms or at all. An inability to renew its leases, or a renewal of its leases with a rental rate higher than the prevailing rate under the applicable lease prior to expiration, may have an adverse impact on the Company's operations, including disruption of its operations or an increase in its cost of operations. In addition, in the event of non-renewal of any of the Company's leases, the Company may be unable to locate suitable replacement properties for its facilities or it may experience delays in relocation that could lead to a disruption in its operations. Any disruption in the Company's operations could have an adverse effect on its financial condition and results of operations.

Financial Reporting and Other Public Issuer Requirements

The Company is subject to reporting and other obligations under applicable Canadian Securities Laws and rules of any stock exchange on which the Common Shares are then-listed. These reporting and other obligations will place significant demands on the management, administrative, operational and accounting resources. If the Company is unable to accomplish any such necessary objectives in a timely and effective manner, the Company's ability to comply with its financial reporting obligations and other rules applicable to reporting issuers could be impaired. Moreover, any failure to maintain effective internal controls could cause the Company to fail to satisfy its reporting obligations or result in material misstatements in its financial statements. If the Company cannot provide reliable financial reports or prevent fraud, its reputation and operating results could be materially adversely affected which could also cause investors to lose confidence in the Company's reported financial information, which could in turn result in a reduction in the trading price of the Common Shares.

The Company is a "venture issuer" as defined in NI 52-109. In contrast to the certificate required for non-venture issuers under NI 52-109, the certificates filed by the Company's officers are not required to include representations relating to the establishment and maintenance of disclosure controls and procedures ("DC&P") and ICFR, as defined in NI 52-109. In particular, the certifying officers are not be required to make any representations relating to the establishment and maintenance of (i) controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the Company in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and (ii) a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS.

Inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost-effective basis DC&P and ICFR may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.

Influence of the Significant Shareholders

To the Company's knowledge, no shareholder beneficially owns, or controls or directs, directly or indirectly, more than 10% of the voting rights attached to the Company's outstanding voting securities, except for Mr. Peter Pascali, President and Chief Executive Officer of the Company, who holds or controls, directly or indirectly, 77,038,722 Common Shares, representing in aggregate 49.94% of the total voting rights attached to the outstanding Common Shares, and options and warrants to acquire an additional 12,198,276 Common Shares (increasing the total number of Common Shares held or controlled, directly or indirectly, by him to 89,236,998 Common Shares, or 53.61% of the Common Shares, on a fully diluted basis). In addition, from time to time, the Company may have other shareholders who have the ability to exercise significant influence over matters submitted to the shareholders of the Company for approval, whether subject to approval by a majority of the shareholders of the Company or subject to a class vote or special resolution.

Limited Control Over the Company's Operations

Holders of the Common Shares have limited control over changes in the Company's policies and operations, which increases the uncertainty and risks of an investment in the Company. The Board determines major policies, including policies regarding financing, growth, debt capitalization and any future dividends to shareholders of the Company. Generally, the Board may amend or revise these and other policies without a vote of the holders of the Common Shares. The Board's broad discretion in setting policies and the limited ability of holders of the Common Shares to exert control over those policies increases the uncertainty and risks of an investment in the Company.

Change in Tax Laws

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to the Company. These enactments and events could require the Company to pay additional tax amounts on a prospective or retroactive basis, thereby substantially increasing the amount of taxes the Company is liable to pay in the relevant tax jurisdictions. Accordingly, these events could decrease the capital that the Company has available to operate its business. Any or all of these events could harm the business and financial performance of the Company.

Forward-Looking Information

The forward-looking information included in this AIF relating to, among other things, the Company's future results, performance, achievements, prospects, targets, intentions or opportunities or the markets in which it operates (including, in particular, the information contained under "Business of the Company", and the other statements listed in "Forward-Looking Statements") is based on opinions, assumptions and estimates made by the Company's management in light of its experience and perception of historical trends, current conditions and expected future developments, as well as other factors that the Company believes are appropriate and reasonable in the circumstances. However, there can be no assurance that such estimates and assumptions will prove to be correct. The Company's actual results in the future may vary significantly from the historical and estimated results and those variations may be material. The Company makes no representation that its actual results in the future will be the same, in whole or in part, as those included in this AIF. See "Forward-Looking Statements".

Credit Facilities

The Company's credit facilities and financing agreements mature on various dates. There can be no assurance that such credit facilities or financing agreements will be renewed or refinanced, or if renewed or refinanced, that the renewal or refinancing will occur on equally favourable terms to the Company. The Company's ability to continue operating may be adversely affected if the Company is not able to renew its credit facilities or arrange refinancing, or if such renewal or refinancing, as the case may be, occurs on terms materially less favorable to the Company than at present. The Company's current credit facilities and financing agreements impose covenants and obligations on the Company. There is a risk that such loans may go into default if there is a breach in complying with such covenants and obligations, which could result in the lenders realizing on their security and causing our shareholders to lose some or all of their investment.

Risks Related to the Company's Securities

Potential Volatility of Common Share Price

The market price of the Common Shares could be subject to significant fluctuations. Some of the factors that may cause the market price of the Common Shares to fluctuate include:

- (i) the public's reaction to the Company's press releases, announcements and filings with regulatory authorities and those of its competitors;
- (ii) fluctuations in broader stock market prices and volumes;
- (iii) changes in market valuations of similar companies;
- (iv) investor perception of the Company, its prospects or the industry in general;
- (v) additions or departures of key personnel;
- (vi) commencement of or involvement in litigation;
- (vii) announcements by the Company or its competitors of strategic alliances, significant contracts, new technologies, acquisitions, commercial relationships, joint ventures or capital commitments;
- (viii) variations in the Company's quarterly results of operations or cash flows or those of other comparable companies;
- (ix) revenues and operating results failing to meet the expectations of securities analysts or investors in particular quarter;
- (x) changes in the Company's pricing policies or the pricing policies of its competitors;
- (xi) future issuances and sales of Common Shares;
- (xii) sales of Common Shares by insiders of the Company;
- (xiii) third party disclosure of significant short positions;
- (xiv) demand for and trading volume of Common Shares;
- (xv) changes in securities analysts' recommendations and their estimates of the Company's financial performance;

- (xvi) short-term fluctuation in stock price caused by changes in general conditions in the domestic and worldwide economies or financial markets; and
- (xvii) the other risk factors described under this heading of the AIF.

The realization of any of these risks and other factors beyond the Company's control could cause the market price of the Common Shares to decline significantly.

In addition, broad market and industry factors may harm the market price of the Common Shares. Hence, the price of the Common Shares could fluctuate based upon factors that have little or nothing to do with the Company, and these fluctuations could materially reduce the price of the Common Shares regardless of the Company's operating performance. In the past, following a significant decline in the market price of a company's securities, there have been instances of securities class action litigation having been instituted against that company. If the Company were involved in any similar litigation, it could incur substantial costs, management's attention and resources could be diverted and it could harm the Company's business, operating results and financial condition.

Market Liquidity

The market price for the Common Shares could be subject to wide fluctuations. Factors such as the announcement of significant contracts, technological innovations, new commercial products, patents, a change in regulations, quarterly financial results, future sales of Common Shares by the Company or current shareholders, and many other factors could have considerable repercussions on the price of the Common Shares. In addition, the financial markets may experience significant price and value fluctuations that affect the market prices of equity securities of companies that sometimes are unrelated to the operating performance of these companies. Broad market fluctuations, as well as economic conditions generally may adversely affect the market price of the Common Shares.

Dividends to Shareholders

The Company does not anticipate paying cash dividends on the Common Shares in the foreseeable future. The Company currently intends to retain all future earnings to fund the development and growth of its business. Any payment of future dividends will be at the discretion of the directors and will depend on, among other things, the Company's earnings, financial condition, capital requirements, level of indebtedness, statutory and contractual restrictions applying to the payment of dividends, and other considerations that the directors deems relevant.

Impact of Future Sales by Existing Shareholders

If the Company's shareholders sell substantial amounts of the Common Shares in the public market, the market price of the Common Shares could decrease. The perception among investors that these sales will occur could also produce this effect. All currently outstanding Common Shares other than those subject to lock-up agreements executed by certain existing shareholders will, subject to applicable securities laws, generally be immediately available for resale in the public markets.

Subject to compliance with applicable securities laws, the Company's officers, directors and their affiliates may sell some or all of their Common Shares in the future. No prediction can be made as to the effect, if any, such future sales of Common Shares will have on the market price of the Common Shares prevailing from time to time. However, the future sale of a substantial number of Common Shares by the Company's officers, directors and their affiliates, or the perception that such sales could occur, could materially adversely affect prevailing market prices for the Common Shares.

Additional Common Shares issuable upon the exercise of stock options may also be available for sale in the public market, which may also cause the market price of the Common Shares to fall. Accordingly, if substantial amounts of Common Shares are sold in the public market, the market price could fall.

Working Capital and Future Issuances

The Company may issue additional Common Shares in the future which may dilute a shareholder's holdings in the Company. The Articles permit the issuance of an unlimited number of Common Shares, and shareholders of the Company will have no pre-emptive rights in connection with any further issuances. The directors of the Company have the discretion to determine the provisions attaching to the Common Shares and the price and the terms of issue of further Common Shares.

Additional equity financing may be dilutive to holders of Common Shares. Debt financing may involve restrictions on the Company's financing and operating activities. Debt financing may be convertible into other securities of the Company which may result in immediate or resulting dilution. In either case, additional financing may not be available to the Company on acceptable terms or at all. If the Company is unable to raise additional funds as needed, the scope of its operations or growth may be reduced and, as a result, the Company may be unable to fulfil its long-term goals. In this case, investors may lose all or part of their investment. Any default under such debt instruments could have a material adverse effect on the Company, its business or the results of operations.

Securities or Industry Analysts

The trading market for Common Shares could be influenced by the research and reports that industry and/or securities analysts may publish about the Company, its business, the market or competitors. If any of the analysts who may cover the Company's business change their recommendation regarding the Common Shares adversely, or provide more favourable relative recommendations about its competitors, the share price would likely decline. If any analyst who may cover the Company's business were to cease coverage or fail to regularly publish reports on the Company, it could lose visibility in the financial markets, which in turn could cause the share price or trading volume to decline.

LEGAL PROCEEDINGS

The Company may be, from time to time, involved in legal proceedings of a nature considered normal to its business. The Company is not involved in any legal proceedings which individually or in the aggregate would be material to the Company's consolidated financial condition or results of operations.

INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

Other than as described elsewhere in this AIF and as described below, there is no material interest, direct or indirect, of: (i) any director or executive officer of the Company; (ii) any person or company that beneficially owns, or controls or directs, directly or indirectly, more than 10% of the Company's outstanding voting securities; or (iii) an associate or any affiliate of any persons or companies referred to above in (i) or (ii), in any transaction within the three years before the date of this AIF that has materially affected or is reasonably expected to materially affect the Company.

Settlement of Claim

In October 2018, the Company and a company (the "**Claimant**") owned by Mr. Peter Photis Pascali, the father of Peter Pascali, the controlling shareholder and Chief Executive Officer of the Company, which entity is under common control of Peter Pascali, entered into a settlement agreement to resolve a claim in the amount of \$5,531,928 (the "**Claim Settlement**"). The Claimant had previously filed a motion to institute proceedings before the courts on or about April 5, 2018, in connection with a share-for-debt conversion transaction between the parties that took place in 2014 pursuant to which the Company has issued 7,500,000 Common Shares. The Claim Settlement provided for a payment by the Company to the Claimant of \$3,700,000 and for the issuance of units by the Company having a fair value of \$3,327,571 to the Claimant, as follows: (i) in February and March 2018, the issuance of an aggregate of 1,899,999 units at a value of \$0.70 per unit with each unit consisting of one Common Share and one Common Share purchase warrant which entitles the holder to purchase one Common Share at a price of \$1.25 until August 9, 2019, and (ii) on April 30, 2018, the issuance of 3,385,718 units at a value of \$0.59 per unit with each unit consisting of one Common Share of the Company and one Common Share purchase warrant which entitles the holder to purchase one Common Share at a price of \$0.85 until April 19, 2020. The April 19, 2020 Warrants were issued on October 25, 2018.

TRANSFER AGENT AND REGISTRAR

The transfer agent and registrar of the Company's Common Shares is AST Trust Company (Canada) having an office at 2001, Robert-Bourassa Boulevard, Suite 1600, Montréal, Québec, H3A 2A6.

AUDITORS

The auditors of the Company are KPMG LLP at its office located at 600 de Maisonneuve Boulevard West, Suite 1500, KPMG Tower, Montréal, Québec. KPMG LLP has informed the Company that it is independent with respect to the Company within the meaning of the relevant rules and related interpretations prescribed by the relevant professional bodies in Canada.

MATERIAL CONTRACTS

This AIF includes a summary description of certain material contracts. Each summary description discloses all material attributes of the applicable contract but is not complete and is qualified by reference to the terms of the material contracts, which are available under the Company's SEDAR profile at www.sedar.com. The following are the Company's only material contracts, other than those contracts entered into in the ordinary course of business, which have been entered into since the beginning of its last financial year, or entered into prior to such date, but which are still in effect and which are required to be filed with Canadian securities regulatory authorities:

- (a) contract between PyroGenesis and HPQ Silicon Resources dated July 29, 2016 whereby HPQ purchased certain intellectual property and the Company contracted to build a PUREVAP system for C\$7,070,000, which contract refers to certain terms in a development contract between HPQ (f/k/a Uragold Bay Resources Inc.) dated February 26, 2015, as amended from time to time, as described under the "Business of the Company - Development of Processes for the Production of High Purity Silicon Metals, Nano Powders and Nanowires"; and
- (b) contract between PyroGenesis and HPQ NANO Silicon Powders dated August 18, 2020 whereby HPQ NANO, a subsidiary of HPQ purchased certain intellectual property and the Company contracted to transform silicon into spherical silicon nanopowders and nanowires for use in lithium-ion batteries for \$3,000,000, as described under "General Development of the Business - Recent Developments - Contracts and Milestones".

ADDITIONAL INFORMATION

Additional information, including with respect to directors' and executive officers' remuneration and indebtedness, principal holders of the Company's securities, and securities authorized for issuance under equity compensation plans, is contained in the Company's management information circular for its most recent annual meeting of shareholders that involved the election of directors which is available under the Company's SEDAR profile at www.sedar.com. Additional financial information is contained in the Company's consolidated financial statements and management's discussion and analysis for the year ended December 31, 2019. Further information about the Company, filed with Canadian securities regulators, is available online under the Company's SEDAR profile at www.sedar.com.

GLOSSARY OF TERMS

“**2018 Convertible Debenture**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**2018 SR&ED Loan**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**2019 RISE Agreement**” has the meaning given to such term under “Year Ended December 31, 2019 - Contracts and Milestones”.

“**2019 SR&ED Loan**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**2020 Convertible Loan**” has the meaning given to such term under “Recent Developments - Financings”.

“**AIF**” means this annual information form.

“**Articles**” has the meaning given to such term under “Corporate Structure”.

“**Audit Committee**” means the Company’s audit committee.

“**Board**” or “**Board of Directors**” means the board of directors of the Company.

“**business day**” means a day other than a Saturday, Sunday or a day on which the principal chartered banks located at Toronto are not open for business.

“**Canadian Securities Laws**” means the securities legislation or ordinance and regulations thereunder of each province of Canada and the rules, instruments, policies and orders of each Canadian securities regulator made thereunder.

“**CFC**” means chlorofluorocarbons.

“**Claim Settlement**” has the meaning given to such term under “Interest of Management and Others in Material Transactions - Settlement of Claim”

“**Common Share**” means a common share in the capital of the Company, as described under “Description of Capital Structure - Authorized Share Capital”.

“**Company**” means PyroGenesis Canada Inc., a Canadian corporation.

“**DC&P**” disclosure controls and procedures.

“**December 18, 2020 Warrants**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**December 2018 First Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**December 2018 Second Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**diluted basis**” means the number of Common Shares outstanding assuming the exercise of all outstanding Options and other rights to acquire Common Shares.

“**Drosrite International Exclusive Agreement**” has the meaning given to such term under “Year Ended December 31, 2019 - Contracts and Milestones”.

“**Drosrite International**” means Drosrite International LLC, a US-based private company.

“**February 13, 2021 Creditor Warrants**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**February 13, 2021 First Private Placement Warrants**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**February 13, 2021 Second Private Placement Warrants**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**forward-looking statements**” has the meaning given to such term under “Forward-Looking Statements”. “**HCFC**” means hydrochlorofluorocarbons.

“**HFC**” means hydrofluorocarbons.

“**HPQ**” means HPQ Silicon Resources Inc., a corporation listed for trading on the TSX-V.

“**IASB**” means the International Accounting Standards Board.

“**IFRS**” means International Financial Reporting Standards as issued by the IASB, as adopted by the Canadian Accounting Standards Board.

“**ISO**” means International Organization for Standardization.

“**June 19, 2021 Warrants**” has the meaning given to such term under “Description of Capital Structure - Stock Options and Warrants”.

“**January 25, 2021 Warrants**” has the meaning given to such term under “Description of Capital Structure - Stock Options and Warrants”.

“**March 2018 First Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**March 2018 Second Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**May 15, 2021 Warrants**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**May 2019 First Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**May 2019 Second Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**May 28, 2021 Warrants**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”. “**NI 52-109**” means National Instrument 52-109 — *Certification of Disclosure in Issuers’ Annual and Interim Filings*. “**NI 52-110**” means National Instrument 52-110 — *Audit Committees*.

“**October 2018 First Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**October 2018 Second Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**Option**” means an option to acquire a Common Share granted pursuant to the Company’s option plan.

“**PACWADS**” means the Company’s Plasma Arc Chemical Warfare Agent Destruction System.

“**PAGV**” means plasma arc gasification and vitrification.

“**Pascali Trust**” means the Fiducie de Crédit Mellon Trust whose beneficiary is the Company’s controlling shareholder and Chief Executive Officer, Peter Pascali.

“**PAWDS**” means the Company’s Plasma Arc Waste Destruction System.

“**PRRS**” means the Company’s Plasma Resource Recovery System.

“**R&D**” means research and development.

“**SEDAR**” means the System for Electronic Document Analysis and Retrieval.

“**SPARC**” means Steam Plasma Arc Refrigerant Cracking.

“**SR&ED**” means Scientific Research and Experimental Development.

“**SR&ED Tax Credits**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**TSX-V**” means the TSX Venture Exchange.

“**United States**” and “**U.S.**” mean the United States of America, its territories and possessions, including the District of Columbia.

SCHEDULE “A” CHARTER OF THE AUDIT COMMITTEE

PYROGENESIS CANADA INC.

AUDIT COMMITTEE CHARTER

Approved by the Board of Directors
and effective as of October 25th, 2011

PREAMBLE

The Audit Committee’s (the “Committee”) Charter clarifies its responsibilities delegated by the Board of Directors (the “Board”). The Charter is used by the Committee to guide the planning and the performance of its work. The Charter also clarifies the understanding the Committee has with the Company’s auditors and with management about the nature of their involvement with the Committee and its work.

OVERALL MANDATE

Generally, the Committee promotes and ensures a high standard of financial reporting, risk management and ethical behavior for the Company and in doing so shall carry out the duties and responsibilities as set out in this Charter.

COMPOSITION

The Committee shall consist of at least three Directors appointed by the Board who will serve at the pleasure of the Board and, in any event, only so long as he/she shall be a Board member. The Committee will have an appropriate representation of independent directors as required by law. The composition of the Committee shall comply with the rules and regulations of the stock exchange on which the shares of the Company are listed as well as the Canadian Securities Administrators “Instruments”. The Board may fill vacancies in the Committee by election from their number. The Board shall elect the Chairperson of the Committee. In the absence of the Chairperson, the members of the Committee shall appoint an Acting Chairperson. The President of the Company shall not be an ex-officio member of the Committee, but the Chairperson of the Board may, at his/her discretion, attend meetings as an ex-officio member. An ex-officio member shall be vested with all the rights and powers of appointed members.

To ensure the Committee’s effectiveness, each member will be financially literate and be prepared to spend the time necessary to address complex issues and to challenge both management and the auditors, where necessary.

A quorum of the Committee shall consist of at least two members of the Committee (for this purpose the Committee shall be deemed to consist of at least three members, two being appointed by the Board as aforesaid and one being an ex-officio member as aforesaid). Notwithstanding any vacancy on the Committee, a quorum may exercise all the powers of the Committee.

The Secretary shall be selected from its members or shall be the Corporate Secretary. The Secretary of the Committee shall ensure that minutes of meetings are prepared for distribution to Committee members.

DUTIES AND RESPONSIBILITIES

The Committee shall have the following duties and responsibilities:

OVERSEEING STANDARDS OF INTEGRITY AND BEHAVIOUR

Management is responsible for the Company's standards of behavior. The Committee assists the Board in obtaining assurances that management is operating the Company in an ethical manner and encourages management to demonstrate a strong commitment to integrity.

The Committee requests that management report periodically on how the Company's systems, practices and controls encourage, monitor and provide assurance of compliance with laws, regulations and standards of ethical conduct, including the control of expenses such as perquisites, expense accounts and out-of-pocket expenses for officers and directors.

The Committee seeks the views of the auditors about the Company's standards of behavior. It discusses with the auditors the adequacy of the systems and controls, and the details of any practices or transactions identified by the auditors as being in potential violation of the legal authorities, as well as the details of any "other matters" they consider bringing to the attention of the Board. The committee seeks the views of auditors on remedies to curtail inappropriate practices and behaviors, as well as alternative remedies to rectify those matters that are not in the Company's best interest.

The Committee values financial integrity and credibility. It actively promotes an overall corporate "tone" for quality financial reporting, sound business risk practices, and ethical behavior.

OVERSEEING FINANCIAL REPORTING

Management is responsible for the Company's financial reporting. This includes preparation of accurate, fair and complete financial reports, the selection of the most appropriate accounting principles and practices, formulation of accounting judgments and estimates, and preparation of the annual report including its management's discussion and analysis (MD&A), budgets and other such reports.

The Committee shall provide assistance to the Board in fulfilling its financial reporting and control responsibilities to the shareholders of the Company and to the investment community. The Committee's primary duties and responsibilities in this regard are to:

- (a) oversee the accounting and financial reporting processes of the Company and the audit of its financial statements including:
 - i. the integrity of the Company's financial statements;
 - ii. the compliance with legal and regulatory requirements; and,
 - iii. the independent auditor's qualifications and independence;
- (b) serve as an independent and objective party to monitor the Company's financial reporting process and internal control systems;
- (c) review and appraise the audit activities of the Company's independent auditors;
- (d) provide open lines of communication among the independent auditors, financial and senior management and the Board for financial reporting and control matters and meet periodically with management and with the independent auditors.

The Committee assesses the relevance and the reliability of the financial reports to ensure that they portray, in the clearest light possible, the underlying economic circumstances and financial performance of the Company.

The Committee promotes accuracy, truthfulness, integrity and credibility in financial reporting.

The Committee discusses with management and auditors the inherent fairness, accuracy and completeness of financial disclosures as well as the Company's compliance with legal and regulatory requirements and may request attestation to this effect from them.

The Committee reviews the key accounting principles and the significant judgments and estimates with management and auditors. It seeks their views with respect to the appropriateness and consistency of the accounting principles and practices, not just their acceptability, and the degree of aggressiveness or conservatism in determining estimates.

As integral components of its financial review processes, the Committee reviews the operating and capital budgets, the borrowing plan, summaries of the corporate plan and budgets, the annual and quarterly financial statements, including the MD&A sections, and any other financial information which will be distributed to the public and requiring approval of the Board.

The Committee assesses how well the Company's financial information reporting package meets the Board's needs by reviewing its form, content and level of details.

OVERSEEING MANAGEMENT CONTROL PRACTICES

Management is responsible for maintaining records and financial management and control systems that provide reasonable assurance that assets are safeguarded and maintained, that Intellectual Property (IP) is identified, protected and secured, that transactions are in accordance with regulations and any government directives issued and that financial, human and physical resources are managed economically and efficiently and that operations are carried out effectively.

Management is responsible for identifying the principal business risks facing the Company and formulating the Company's risk tolerance levels and risk management policies for consideration and approval by the Board. The Committee assists the Board in this function, focusing on the financial risks.

The Committee holds management accountable for the design and functioning of the Company's control framework in order to monitor, assess and mitigate the Company's business risks and uncertainty, as well as legal, environmental, social responsibility and ethical compliance. Periodically, the Committee requests that management provides it with an assessment of the effectiveness of the internal control structure and procedures, and, if warranted, with plans for improving its effectiveness.

The Committee reviews with the auditors (internal, external and special examiners when applicable) their assessments of the design and functioning of the control framework and the systems in place for ensuring that the business risks are identified, monitored, controlled and within the Company's limit of tolerance, and their views on management's plans for improvements.

OVERSEEING WORK OF AUDITORS

The Committee recognizes that the Company's auditors possess substantial expertise and have significant professional responsibilities. It holds the auditors accountable for fulfilling their respective responsibilities.

The Internal auditor (when established) will be accountable to the Committee, in its capacity as a committee of the Board.

The Committee demands independent and objective assessments of the Company's standards of behavior, its compliance with authorities, its financial reporting, and its business risks systems, practices and controls from the auditors.

The Committee oversees audit activities with respect to the following two (2) types of audits:

- (a) the annual audit deals with the fairness of the statements, compliance of transactions with specified legal authorities, and any other matter identified by the external auditor as important,

- (b) the internal audit (when established), which is a part of management's system of internal control, deals with matters similar to those of the annual audit.

The Committee reviews and follows the five (5) generic phases of each of the two (2) types of audits:

- (a) establishing the purpose and terms of reference for the audit;
- (b) selection and organization of a team of experienced professionals to plan and conduct the audit;
- (c) conduct of the audit; and
- (d) reviews all the audit results and findings, and reports to the Board.

The Committee shall review management's plans to correct any significant problems raised by the internal and external auditors. It shall monitor and review management's progress in implementing its response plan.

The Committee ensures that management has not placed any inappropriate restrictions on the audits and confirms that the external auditor is independent and able to maintain its objectivity.

The Committee approves the mandate of the internal audit function, monitors the long term internal audit plan and ensures that the internal auditor has adequate resources to perform its responsibilities and has direct and open communication with the Committee. It reviews the reporting relationship of the internal auditor to ensure that an appropriate segregation of duties is maintained and that the internal auditor has an obligation to report directly to the Committee on matters affecting its duties, irrespective of his or her reporting relationships.

The Committee evaluates the work of each of the auditors with a view to determining the level of assurance that can be derived from their work.

Periodically, the Committee evaluates the performance of each auditor.

The Committee shall establish effective communication processes with management and the Company's auditors, to assist it in monitoring objectively the quality and effectiveness of the relationship among the auditors, management and the Audit Committee. It shall be responsible for the resolution of disagreements between management and auditors.

OPERATIONAL RESPONSIBILITIES

Each new member will receive an orientation about the Committee's work and responsibilities and all members are encouraged to keep current about accounting, auditing and financial reporting standards and practices. In recognition of the importance of the financial literacy skills of its members, the Committee relies on the full support of the Board in acquiring and in developing an approach to improve the necessary skills, when required.

Annually, the Committee reviews the Charter setting out the scope of its responsibilities, and, where in the opinion of the Committee, amendments to the Charter are required, may propose such amendments to the Board for consideration and approval.

Annually, the Committee will consider the appropriateness of preparing a report to the Board describing its work.

OTHER RESPONSIBILITIES

Periodically, in consultation with the Chief Financial Officer and the auditors, the Committee seeks reasonable assurance of the quality and sufficiency of the Company's accounting and financial personnel and other resources.

The Committee shall discuss or review in advance the appointment of the Chief Financial Officer.

The Committee shall review procedures established by management for dealing with complaints from employees related to financial reporting, controls and corporate conduct.

The Committee may investigate any matters that, at the Committee's discretion, fall within its duties.

The Committee shall perform such other functions as are assigned to it by law or by the Board.

The Committee shall review with the general counsel, legal and regulatory matters that, in the opinion of management, may have a material impact on the financial statements, related organization compliance policies, and program and reports received from regulators.

OPERATING PROCEDURES

The Committee shall meet quarterly, or more frequently as appropriate, in advance of regularly scheduled Board meetings. Committee meetings shall be called by the Committee Chair or requested by any Committee member or by the Board Chair.

Notice of each meeting of the Committee shall be given to each member of the Committee (including the Chair of the Board as an ex-officio member of the Committee), and except in the case of an in-camera meeting, also to the Auditors, the Chief Executive Officer and the Chief Financial Officer of the Company. Notice of the meeting shall be given either orally or by electronic mail, not less than 48 hours before the time fixed for the meeting. Members may waive notice of a meeting.

Meeting discussions may take place face to face, by teleconference or through a reciprocal interchange of emails.

The agenda for each meeting will be established by the Chair of the Committee.

Any decision made by the Committee shall be determined by a majority vote of the members of the Committee present. A member will be deemed to have consented to any resolution passed or action taken at a meeting of the Committee unless the member dissents.

The Chief Executive Officer and the Chief Financial Officer of the Company shall attend all Audit Committee meetings, with the exception of in-camera meetings.

A matter put to vote at a meeting of the Committee shall be decided by a majority of the votes cast, and in the event of an equality of votes, the Chair has a deciding vote.

The Secretary of the Committee shall ensure that minutes of meetings are prepared for distribution to Committee members, and, except for in-camera meetings, to the Auditors, the Chief Executive Officer and the Chief Financial Officer of the Company.

The Chair of the Committee will report to the Board on proceedings and deliberations of the Committee, either orally or in writing, at the first subsequent meeting of the Board or at such earlier time as the Committee in its discretion may consider advisable.

The Committee may retain at the Company's expense, with prior Board approval, independent consultants and such other persons as the Committee shall determine necessary to fulfill its duties and responsibilities.

LIMITATION ON THE COMMITTEE'S DUTIES

In contributing to the Committee's discharging of its duties under this Charter, each member of the Committee shall be obliged only to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Nothing in this mandate is intended, or may be construed, to impose on any member of the Committee a standard of care or diligence that is in any way more onerous or extensive than the standard to which all Board members are subject. The essence of the Committee's purpose is to monitor, review and when appropriate, recommend changes to financial and corporate operating standards as they are practiced by the Company's management to gain reasonable assurance (but not to ensure) about fundamental activities of the Company.

**FORM 52-109FV1
CERTIFICATION OF ANNUAL FILINGS
VENTURE ISSUER BASIC CERTIFICATE**

I, P. Peter Pascali, Chief Executive Officer of PyroGenesis Canada Inc., certify the following:

1. **Review:** I have reviewed the AIF, if any, annual financial statements and annual MD&A, including, for greater certainty, all documents and information that are incorporated by reference in the AIF (together, the “annual filings”) of **PyroGenesis Canada Inc.** (the “issuer”) for the financial year ended **December 31st, 2019.**
2. **No misrepresentations:** Based on my knowledge, having exercised reasonable diligence, the annual filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, for the period covered by the annual filings.
3. **Fair presentation:** Based on my knowledge, having exercised reasonable diligence, the annual financial statements together with the other financial information included in the annual filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date of and for the periods presented in the annual filings.

Date: June 15th, 2020

/s/ P. Peter Pascali
P. Peter Pascali
Chief Executive Officer

NOTE TO READER

In contrast to the certificate required for non-venture issuers under National Instrument 52-109 *Certification of Disclosure in Issuers Annual and Interim Filings* (NI 52-109), this Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures (DC&P) and internal control over financial reporting (ICFR), as defined in NI 52-109. In particular, the certifying officers filing this certificate are not making any representations relating to the establishment and maintenance of

- i. controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the issuer in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and

- ii. a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer's GAAP.

The issuer's certifying officers are responsible for ensuring that processes are in place to provide them with sufficient knowledge to support the representations they are making in this certificate. Investors should be aware that inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost effective basis DC&P and ICFR as defined in NI52-109 may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.

**FORM 52-109FV1
CERTIFICATION OF ANNUAL FILINGS
VENTURE ISSUER BASIC CERTIFICATE**

I, Michael Blank, Chief Financial Officer of PyroGenesis Canada Inc., certify the following:

1. **Review:** I have reviewed the AIF, if any, annual financial statements and annual MD&A, including, for greater certainty, all documents and information that are incorporated by reference in the AIF (together, the “annual filings”) of **PyroGenesis Canada Inc.** (the “issuer”) for the financial year ended **December 31st, 2019.**
2. **No misrepresentations:** Based on my knowledge, having exercised reasonable diligence, the annual filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, for the period covered by the annual filings.
3. **Fair presentation:** Based on my knowledge, having exercised reasonable diligence, the annual financial statements together with the other financial information included in the annual filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date of and for the periods presented in the annual filings.

Date: **June 15th, 2020**

/s/ Michael Blank

Michael Blank
Chief Financial Officer

NOTE TO READER

In contrast to the certificate required for non-venture issuers under National Instrument 52-109 *Certification of Disclosure in Issuers' Annual and Interim Filings* (NI 52-109), this Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures (DC&P) and internal control over financial reporting (ICFR), as defined in NI 52-109. In particular, the certifying officers filing this certificate are not making any representations relating to the establishment and maintenance of

- i. controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the issuer in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and

- ii. a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer's GAAP.

The issuer's certifying officers are responsible for ensuring that processes are in place to provide them with sufficient knowledge to support the representations they are making in this certificate. Investors should be aware that inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost effective basis DC&P and ICFR as defined in NI 52-109 may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.



PyroGenesis Provides Update on its Iron Ore Pelletization Torch Business

MONTREAL, Quebec (GlobeNewswire – July 2nd, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to provide today, further to recent press releases, an update on its iron ore pelletization torch business.

Client A

On April 30th, 2020 the Company announced the successful completion of the first phase of a torch modeling contract with Client A which successfully demonstrated that replacing fossil fuel burners with PyroGenesis' proprietary plasma torch (i) had absolutely no ancillary detrimental effects anywhere in the process or with their furnaces, (ii) resulted in significant greenhouse gas reduction while at the same time, (iii) projecting significant additional benefits. The subsequent phases were to be completed by June 30th, 2020 and were geared to further quantify the benefits of transitioning to plasma torches. These phases have been extended for up to six weeks with this additional data being incorporated into an ideal plasma torch configuration for this client.

Equipment purchase discussions are expected to be completed by the end of August, and incorporate the ideal plasma torch configuration identified during the modelling process, with the ultimate goal being to eliminate GHG emissions from all their plants.

Client B

On June 11th, 2020 the Company announced that it had signed a second multi-phase torch modelling contract with Client B, aimed at evaluating the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing existing fossil fuel burners with PyroGenesis' plasma torches. The first phase, as expected, is to be completed by mid-August.

During the first phase, which is progressing as expected, Client B has already entered into active equipment purchase discussions with PyroGenesis.

New Development – Client C

A new potential client ("Client C"), who is not only a significant player in the iron ore pelletization industry but is also a major player in the steel industry, has entered into active equipment purchase discussions with the Company. There seems to be a high probability that Client C may bypass the modelling phase altogether, however it is PyroGenesis' preference to incorporate a modeling phase if at all practical.

“Once again, although there is no certainty that any of these relationships will result in anything substantial, we are extremely pleased with the responses and the speed at which things are moving with this offering,” said Mr. Peter Pascali, CEO and President of PyroGenesis. “As would be prudent under the circumstances, PyroGenesis has taken steps to ensure that any reasonable requests from our clients can be met in a timely fashion, and to their full satisfaction. Barring any unforeseen events, we believe that it is entirely reasonable that initial torch equipment purchases will be placed in Q3 2020.”

Pelletization is the process in which iron ore is concentrated before shipment, thus significantly reducing the cost of transportation. In conventional technologies, the process heat is provided by fuel oil or natural gas burners (both environmentally damaging). The combustion, in the burners, of fossil fuels results in the production of greenhouse gases, mainly CO₂. Plasma torches, by contrast, utilize renewable electricity and as such offer an environmentally attractive alternative to fossil fuel burners.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcm Markets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Provides Update on Extension of
Q1 Filings Due to Delays Caused by COVID-19**

MONTREAL, Quebec (GlobeNewswire – July 2, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems announces today that, further to its press releases dated April 27, 2020 and June 2, 2020, it is required by the Autorité des Marchés Financiers to provide the following update on a monthly basis.

On March 23, 2020 the TMX Group exchanges, the Toronto Stock Exchange ("TSX") and the TSX Venture Exchange ("TSXV"), announced temporary blanket relief measures for listed issuers during the Coronavirus (COVID-19) pandemic. These included the allowance to delay the filing of certain continuous disclosure documents by up to 45 days, given the administrative burden on public companies and accounting firms during the current crisis, and to provide greater flexibility in dealing with market volatility.

The Company will continue to rely on a temporary blanket relief provided by the Canadian Securities Regulatory Authorities for the filing of their Financial Statements and Management's Discussion and Analysis ("MD&A"), for the period ended March 31, 2020 ("Q1 2020 Filings"). As a result, PyroGenesis expects to file its Q1 2020 Filings on or before July 16, 2020.

During the period that the required filings remain outstanding, PyroGenesis' management and other insiders are subject to a trading black-out policy that reflects the principles in section 9 of National Policy 11-207 – Failure to File Cease Trade Orders and Revocations in Multiple Jurisdictions. The Company further confirms that since the press release dated June 2, 2020, there have been no material events that have not been publicly disclosed.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

Classified as Highly Confidential

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SOURCE PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>

Classified as Highly Confidential



**PyroGenesis Comments on Recent Trading Activity;
Provides Military Update.**

MONTREAL, Quebec (GlobeNewswire – July 9th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, issues this press release in response to recent trading activity in its shares, and sudden decline in its stock price.

The Company does not usually opine on stock price and trading activity, however, given the recent decline, and inquiries from investors, the Company confirms the following:

Everything material has been disclosed by the Company in either its press releases or financial reports. PyroGenesis further confirms that none of the contracts press released are at risk. Last but not least, the Company wishes to reassure PyroGenesis' shareholders that we remain on track with our current and prospective projects.

Of note, further to previous announcements, the Company is pleased to confirm that all terms and conditions for two PyroGenesis waste destruction systems, for the US Navy's two-ship build, have been agreed to for approx. \$11.5M. The formal agreement is expected to be signed within the next 2-3 weeks, and includes a first payment ("Down Payment") of approx. \$4M. This project should be completed within 18 months. With this additional contract in hand, the resulting backlog is expected to be in excess of \$40M.

"Investors can take comfort from the fact that PyroGenesis has never been on more solid ground," said Mr. P. Peter Pascali, CEO and President of PyroGenesis. "The backlog is increasing to record levels, the pipeline is growing exponentially, and our balance sheet has been cleaned up with unexpected cash flow being generated from the early conversion of warrants. In fact, since April, PyroGenesis has been an active purchaser of over one million of its shares in the market. There is nothing, with respect to PyroGenesis' business, that has changed to justify the sudden decline in the stock price over the past 24 hours. In short, investors can rest assured that the future has never looked better."

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

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Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Announces Q1 2020 Results:
Revenues of \$736K, Gross Margin of 37%, Current Backlog \$30MM,
Provides Q2 2020 and Year End Guidance**

MONTREAL, QUEBEC (GlobeNewswire – July 14th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today its financial and operational results for the first quarter ended March 31st, 2020.

“Percent complete revenue recognition in our major projects, which is the revenue recognition method we are mandated to follow by GAAP, is such that it is not linear, but exponential, and as such Q1 2020 may not have reflected the results one might have expected given recent announcements. However, using this same revenue recognition method we can safely provide the following guidance for Q2 2020, and for the year ending December 31st, 2020 as follows: We expect that Q2 2020 and the six months ending June 30, 2020 will be profitable as will year end results. As such, management has modified several notes in the financials, for the first time since inception, to reflect this outlook,” said P. Peter Pascali, CEO and President of PyroGenesis. “To date, in 2020 we have not only received significant payments under existing contracts, but have retired the \$3MM convertible debenture in full, bought back approximately 1.2 million shares, increased our investment in HPQ, and further benefited from early conversions of warrants maturing in 2021 of over \$3MM. Of note, as of December 31st, 2019 we have approximately \$10MM of in-the-money warrants and options expiring in 2020 and 2021 alone. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial tax regimes) which is not reflected as an asset on the balance sheet. Given recent events, and the structuring that took place in 2019, the Company is undeniably well positioned to execute on, and build upon, the backlog of signed contracts which currently stands in excess of \$30MM. With the eagerly anticipated US Navy contract in hand backlog of signed contracts will be in excess of \$40MM. All in all, 2020 can now be described as the year that we have been expecting for some time.”

Q1 2020 results reflect the following highlights:

- Revenues of \$718,908, a decrease from \$736,443 posted in Q1 2019,
 - Gross margin of 37% an increase of 25% over the same period in Q1 2019,
 - Cash on hand on March 31, 2020 was \$1,139,416 (December 31, 2019: \$34,431),
 - Backlog of signed contracts as of the date of this writing is \$30MM.
-

Management Guidance for Q2 2020

- Revenues of \$2-2.25MM are expected in Q2 2020,
- Management expects that Q2 2020 and the six months ending June 30, 2020 will be profitable,

Management Guidance for the remainder of 2020:

- Overall, Management expects significant revenue growth in 2020,
- Management expects that the year ending December 31st, 2020 will also be profitable.

OUTLOOK

Percent complete revenue recognition in our major projects, which is the revenue recognition method we are mandated to follow by GAAP, is such that it is not linear, but exponential, and as such Q1 may not have reflected the results one might have expected given recent announcements. However, using this same revenue recognition method we can safely provide guidance for Q2 2020, and for the year ending December 31st, 2020: We expect that Q2 and the six months ending June 30, 2020 will be profitable as will year end results. As such, management has modified several notes in the financials, for the first time since inception, to reflect this outlook.

Any discussion regarding the OUTLOOK of the company would be remiss if it did not address the continued increase in the Company's market capitalization and the implications that has for the future.

Without a doubt the Company's market capitalization suffered, as did many other companies, in the general Covid-19 market meltdown at the end of March 2020. However, PyroGenesis soon broke from the pack with the issuance of a material press release on March 24th, 2020.

Management believes that its breaking from the ranks caught the attention of investors, fund managers, and money managers who all now had the time during the Covid-19 lockdown to fully analyze the complicated story that is PyroGenesis. Management does not see any reason why this interest would abate anytime soon. To the contrary, Management has reason to believe that interest in the Company will only increase over the foreseeable future. As such, Management has decided that several strategies that have been articulated in the past (up listings, spinoffs) can now be accelerated as many of the impediments to moving quickly have been removed and have taken steps to do so.

Having a larger market capitalization has also helped in discussions with potential customers who take comfort from the possibility that a higher market capitalization may translate into easier access to capital. For the record, there is no intention at this time to raise capital for working capital purposes.

If 2018 was the year in which PyroGenesis successfully positioned each of its commercial business lines by strategically partnering with multi-billion-dollar entities, and 2019 was the year that saw the appropriate personnel and infrastructure being put in place while building upon the success of 2018, then 2020 is without a doubt the year that the long awaited breakout, which began in the second half of 2019, takes place; it is in fact already upon us:

To date during 2020 PyroGenesis has:

- 1) received significant payments under the \$22MM contract with DROSRITE™ International thereby validating announcements made during 2019,
- 2) established a relationship with a US based tunneling company (contracts and payments ongoing),
- 3) Established itself in the iron ore pelletization industry as a potential supplier of torches geared to replacing existing burners and thereby reducing GHGs. Interest is also spilling over into other industries with GHG reduction targets,
- 4) Established a relationship with an OEM in North America with the intent to eventually supply powders for their 3D printing needs. This augments our relationship with Aubert & Duval, while at the same time de-risking our dependence on them,
- 5) retired the \$3MM convertible debenture in full,
- 6) bought back approximately 1.2 Million shares under the existing Normal Course Issuer Bid,
- 7) increased Company's investment in HPQ, who has subsequently also experienced a significant increase in market capitalization,
- 8) further benefited from early conversions of warrants maturing in 2021 of over \$3MM.

The Company has booked a significant backlog of signed contracts (in excess of \$30MM; 2019 Revenues approx. \$5MM) which, when taking the eagerly awaited US Navy contract into account, will increase to over \$40MM. This provides a solid cornerstone upon which PyroGenesis can:

- a) continue to build on the recent successes with the Company's DROSRITE™ offering
- b) Leverage off of the recent successes with the Company's torch offerings to (i) the iron ore pelletization industry, and (ii) a tunneling client.
- c) Accelerate activities with Aubert & Duval in the Additive Manufacturing sector as well as HPQ in the Mining and Metallurgical sector, both of which did not progress as fast as management would have liked in 2019. Significant attention will be placed on both these activities in 2020.

Specifically, with Aubert & Duval the goal will be to complete the integration of the cutting-edge advances PyroGenesis has made to the powder production process.

With respect to HPQ, the goal would be to accelerate the game changing PUREVAP™ family of processes which we are developing for HPQ, namely:

- The PUREVAP™ "Quartz Reduction Reactors" (QRR), an innovative process (patent pending), which will permit the one step transformation of quartz (SiO₂) into high purity silicon (Si) at reduced costs, energy input, and carbon footprint that will propagate its considerable renewable energy potential; and
 - The PUREVAP™ Nano Silicon Reactor (NSiR), a new proprietary process that use PUREVAP™ QRR silicon (Si) as feedstock, to make spherical silicon nanopowders and nanowires;
-

As at April 1st, 2020, the Company has approximately \$10MM of in-the-money warrants and options expiring in 2020 and 2021. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial obligations) which is not reflected as an asset on the balance sheet.

All in all, 2020 can now be described as the year that we have been expecting for some time.

Financial Summary

Revenues

PyroGenesis recorded revenue of \$718,908 in the first quarter of 2020 (“Q1, 2020”), representing a decrease of 2% compared with \$736,443 recorded in the first quarter of 2019 (“Q1, 2019”).

Revenues recorded in the first quarter of 2020 were generated primarily from:

- (i) DROSRITE™ related sales of \$474,432 (2019 Q1 - \$58,559)
- (ii) PUREVAP™ related sales of \$17,965 (2019 Q1 - \$94,077)
- (iii) torch related sales of \$87,944 (2019 Q1 - \$139,813)
- (iv) support services related to PAWDS-Marine systems supplied to the US Navy \$23,896 (2019 Q1 - \$210,667)

Cost of Sales and Services and Gross Margins

Cost of sales and services before amortization of intangible assets was \$444,681 in Q1 2020, representing a decrease of 30% compared with \$639,506 in Q1 2019, primarily due to lower employee compensation and direct materials in Q1 2020.

In Q1 2020, employee compensation, subcontracting, direct materials and manufacturing overhead decreased to \$391,305 (Q1 2019 - \$662,379). The gross margin for Q1 2020 was \$267,414 or 37.2% of revenue compared to a gross margin of \$92,158 or 12.5% of revenue for Q1 2019. As a result of the type of contracts being executed, the nature of the project activity, as well as the composition of the cost of sales and services, as the mix between labor, materials and subcontracts may be significantly different. Of note, the Company received an amount of \$127,842 from Revenue Canada under the CWES program. From this amount, \$26,388 was applied to employee compensation under cost of sales and services.

Investment tax credits recorded against cost of sales are related to projects that qualify for tax credits from the provincial government of Quebec. Qualifying tax credits decreased to \$20,630 in Q1 2020, compared with \$36,071 in Q1 2019. This represents a decrease of 43% year-over-year. In total, the Company earned refundable investment tax credits of \$70,313 in Q1 2020. The Company continues to make investments in research and development projects involving strategic partners and government bodies.

The amortization of intangible assets of \$6,813 in Q1 2020 and \$4,779 for Q1 2019 relates to patents and deferred development costs. Of note, these expenses are non-cash items and will be amortized over the duration of the patent lives.

Selling, General and Administrative Expenses

Included within Selling, General and Administrative expenses (“SG&A”) are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for Q1 2020 excluding the costs associated with share-based compensation (a non-cash item in which options vest principally over a four-year period), were \$1,205,726 representing a decrease of 7% compared with \$1,295,521 reported for Q1 2019.

The increase in SG&A expenses in Q1 2020 over the same period in 2019 is mainly attributable to the net effect of:

- an increase of 11% in employee compensation due primarily to additional head count, off set by the government aid received from Revenue Canada under the CEWS program,
- a decrease of 67% for professional fees, primarily due to a decrease in accounting fees,
- an increase of 23% in office and general expenses, is due to an increase in insurance and computer software expenses,
- travel costs decreased by 45%, due to a decrease in travel abroad,
- depreciation on property and equipment decreased by 79% due to lower amounts of property and equipment being depreciated,
- depreciation on right of use assets decreased by 19% due to lower amounts of right of use assets being depreciated,
- Investment tax credits increased by 1% due to an increase in qualifying projects,
- government grants decreased by 43% due to lower levels of activities supported by such grants,
- other expenses decreased by 7%, primarily due to a decrease in cost of freight and shipping.

Separately, share based payments increased by 106% in Q1 2020 over the same period in 2019 as a result of the vesting structure of the stock option plan including the stock options granted on January 2nd, 2020.

Research and Development (“R&D”) Costs

The Company incurred \$23,088 of R&D costs, net of government grants, on internal projects in Q1 2020, a decrease of 76% as compared with \$95,774 in Q1 2019. The decrease in Q1 2020 is primarily related to an increase in government grants recognized.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and Experimental Development (“SR&ED”) tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see “Cost of Sales” above).

Net Finance Costs

Finance costs for Q1 2020 totaled \$232,736 as compared with \$251,498 for Q1 2019, representing a decrease of 7% year-over-year. The decrease in finance costs in Q1 2020, is primarily attributable to interest on lower amounts of debt.

Strategic Investments

| | Three months ended Mar 31, | | % Change |
|--|-----------------------------------|--------------|-------------------|
| | 2020 | 2019 | 2020vs2019 |
| Changes to the fair value of strategic investments | \$ 492,024 | \$ (706,196) | 170% |

The adjustment to the fair market value of strategic investments for Q1 2020 resulted in a loss of \$492,024 compared to a gain in the amount of \$706,196 in Q1 2019.

Net Comprehensive Loss

The net comprehensive loss for Q1 2020 of \$1,757,027 compared to a loss of \$878,923, in Q1 2019, represents an increase of 100% year-over-year. The increased loss of \$878,104 in the comprehensive loss in Q1 2020 is primarily attributable to the factors described above, which have been summarized as follows:

- (i) a decrease in product and service-related revenue of \$17,535 arising in Q1 2020,
 - (ii) a decrease in cost of sales and services totaling \$192,791, primarily due to a decrease in employee compensation, subcontracting, direct materials, manufacturing overhead & other, and an increase in foreign exchange, investment tax credits, and amortization of intangible assets,
-

- (iii) a decrease in SG&A expenses of \$53,412 arising in Q1 2020 primarily due to a decrease in professional fees, in travel, in depreciation on property and equipment, in depreciation ROU assets, and in other expenses and an increase in employee compensation, in office and general, in government grants and in share based payments,
- (iv) a decrease in R&D expenses of \$72,685 primarily due to an increase in government grants,
- (v) a decrease in net finance costs of \$18,762 in Q1 2020 primarily due to interest on lower amounts of debt,
- (vi) a decrease in fair value adjustment of strategic investments of \$1,198,220 in Q1 2020.

EBITDA

The EBITDA loss in Q1 2020 was \$1,418,057 compared with an EBITDA loss of \$464,825 for Q1 2019, representing an increase of 205% year-over-year. The \$953,232 increase in the EBITDA loss in Q1 2020 compared with Q1 2019 is due to the increase in comprehensive loss of \$878,104, offset by a decrease in depreciation on property and equipment of \$38,093, a decrease in depreciation of right of use assets of \$20,307, an increase in amortization of intangible assets of \$2,034 and a decrease in finance charges of \$18,762.

Adjusted EBITDA loss in Q1 2020 was \$1,347,190 compared with an Adjusted EBITDA loss of \$430,341 for Q1 2019. The increase of \$916,849 in the Adjusted EBITDA loss in Q1 2020 is attributable to an increase in EBITDA loss of \$953,232, offset by an increase of \$36,383 in share-based payments.

The Modified EBITDA loss in Q1 2020 was \$855,166 compared with a Modified EBITDA loss of \$1,136,537 for Q1 2019, representing a decrease of 25%. The decrease in the Modified EBITDA loss in Q1 2020 is attributable to the increase as mentioned above in the Adjusted EBITDA of \$916,849 and a decrease in the change of fair value of strategic investments of \$1,198,222.

Liquidity

The Company has incurred, in the last several years, operating losses and negative cash flows from operations, resulting in an accumulated deficit of \$61,994,683 and a negative working capital of \$11,157,110 as at Q1 2020, (December 31, 2019 - \$60,237,656 and \$10,492,102 respectively). Furthermore, as at Q1 2020, the Company's current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$1,139,416 (December 31, 2019 - \$34,431). The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.

Separately, PyroGenesis is pleased to announce today that Me Sara-Catherine Tolszczuk has joined the Company as Legal Counsel and Corporate Secretary of the Board of Directors effective July 2nd, 2020. Before joining PyroGenesis, Me Tolszczuk was part of the corporate law group of the leading independent law firm in the province of Québec. Her work was focused on developing strategies for the protection, commercialization and enforcement of intellectual property assets. She also acquired experience in litigation files and participated in the due diligence phase of mergers and acquisitions. She holds a Bachelor's Degree in Law and a Master's Degree in Biology. The Company also announces the departure, effective July 2nd, 2020, of Me Ilario Gualtieri. We thank Me Gualtieri for his contributions and wish him well in his future endeavors.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws.

Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>

PyroGenesis Canada Inc.

**Condensed
Interim Financial Statements**
Three months ended March 31, 2020 and 2019

(Unaudited)

CONDENSED INTERIM FINANCIAL STATEMENTS

The accompanying unaudited financial statements of PyroGenesis Canada Inc. have been prepared by and are the responsibility of the Company's management. The Company's independent auditor has not performed a review of these unaudited condensed interim financial statements for the period ended March 31, 2020

PyroGenesis Canada Inc.

Condensed Interim Statements of Financial Position
(unaudited)

| | March 31, 2020 | December 31, 2019 |
|---|--------------------|--------------------|
| | \$ | \$ |
| Assets | | |
| <i>Current assets</i> | | |
| Cash | 1,139,416 | 34,431 |
| Accounts receivable [note 5] | 210,498 | 210,540 |
| Costs and profits in excess of billings on uncompleted contracts and projects [note 6] | 167,905 | 122,980 |
| Investment tax credits and government wage subsidy receivable [note 7] | 907,550 | 709,395 |
| Deposits | 451,416 | 150,322 |
| Prepaid expenses | 70,505 | 96,886 |
| Total current assets | 2,947,290 | 1,324,554 |
| <i>Non-current assets</i> | | |
| Inventories | 10,068 | 10,068 |
| Deposits | 187,655 | 178,105 |
| Strategic investments [note 8] | 1,117,330 | 1,609,354 |
| Property and equipment | 2,069,496 | 1,977,481 |
| Right of use assets | 3,653,404 | 3,742,769 |
| Intangible assets | 811,675 | 736,898 |
| Total assets | 10,796,918 | 9,579,229 |
| Liabilities | | |
| <i>Current liabilities</i> | | |
| Accounts payable and accrued liabilities [note 9] | 5,278,093 | 4,913,155 |
| Billings in excess of costs and profits on uncompleted contracts and projects [note 10] | 4,575,979 | 3,084,657 |
| Term loans [note 11] | 528,667 | 496,000 |
| Current portion of long-term debt | 295,000 | 284,956 |
| Current portion of lease liabilities | 141,990 | 139,529 |
| Convertible debentures [note 11] | 3,284,671 | 2,898,358 |
| Total current liabilities | 14,104,400 | 11,816,655 |
| <i>Non-current liabilities</i> | | |
| Long-term debt | - | - |
| Lease Liabilities | 3,808,419 | 3,845,497 |
| Convertible debentures [note 12] | 108,360 | - |
| Total liabilities | 18,021,179 | 15,662,152 |
| Shareholders' deficiency [note 13] | | |
| Common shares and warrants | 47,820,219 | 47,073,243 |
| Contributed surplus | 6,450,021 | 6,679,730 |
| Equity portion of convertible debentures [note 12] | 500,182 | 401,760 |
| Deficit | (61,994,683) | (60,237,656) |
| Total shareholders' deficiency | (7,224,261) | (6,082,923) |
| Total liabilities and shareholders' deficiency | 10,796,918 | 9,579,229 |

Going concern disclosure, related party transactions, contingent liabilities, subsequent events [notes 1(b), 17, 19, 22]

Approved on behalf of the Board:

[Signed by P. Peter Pascali], P. Peter Pascali

[Signed by Michael Blank] Michael Blank

PyroGenesis Canada Inc.

Condensed interim Statements of Comprehensive Loss
(unaudited)

| | Three months ended March 31, | |
|--|-------------------------------------|--------------------|
| | 2020 | 2019 |
| | \$ | \$ |
| Revenues [note 4] | 718,908 | 736,443 |
| Cost of sales and services [note 15] | 451,494 | 644,285 |
| Gross Profit | 267,414 | 92,158 |
| Expenses (income) | | |
| Selling, general and administrative [note 15] | 1,276,593 | 1,330,005 |
| Research and development | 23,088 | 95,774 |
| Net finance costs [note 16] | 232,736 | 251,498 |
| | 1,532,417 | 1,677,277 |
| Net loss from operations | (1,265,003) | (1,585,119) |
| Changes in fair market value of strategic investments | 492,024 | (706,196) |
| Net loss and comprehensive loss | (1,752,027) | (878,923) |
| Basic and diluted loss per share | (0.01) | (0.01) |
| Weighted average number of common shares - basic and diluted | 142,285,283 | 133,595,204 |

The accompanying notes form an integral part of the condensed interim financial statements.

PyroGenesis Canada Inc.

Condensed Interim Statements of Changes in Shareholders' (Deficiency) Equity
(unaudited)

| | Number of Class A common shares | Class A common shares and warrants \$ | Contributed Surplus \$ | Equity portion of convertible debentures \$ | Deficit \$ | Total \$ |
|---|------------------------------------|--|------------------------------|--|---------------------|--------------------|
| Balance - December 31, 2019 | 141,303,451 | 47,073,243 | 6,679,730, | 401,760 | (60,237,656) | (6,082,923) |
| Share issued on exercise of stock options | 1,488,000 | 746,976 | (300,576) | - | - | 466,400 |
| Share-based payments | - | - | 70,867 | - | - | 70,867 |
| Equity component of convertible debentures issued | - | - | - | 98,422 | - | 98,422 |
| Net loss and comprehensive loss | - | - | - | - | (1,757,027) | (1,757,027) |
| Balance – March 31, 2020 | 142,791,451 | 47,820,219 | 6,450,021 | 500,182 | (61,994,683) | (7,224,261) |
| Balance - December 31, 2018 | 133,501,051 | 42,863,456 | 6,795,274 | 401,760 | (51,066,540) | (1,006,050) |
| Private placement | 97,400 | 62,292 | - | - | - | 62,292 |
| Share-based payments | - | - | 34,484 | - | - | 34,484 |
| Net loss and comprehensive loss | - | - | - | - | (878,923) | (878,923) |
| Balance – March 31, 2019 | 133,598,451 | 42,925,748 | 6,829,758 | 401,760 | (51,945,463) | (1,788,197) |

The accompanying notes form an integral part of the condensed interim financial statements.

PyroGenesis Canada Inc.

Condensed Interim Statements of Cash Flows
(unaudited)

| | Three months ended March 31, | |
|---|-------------------------------------|-----------------------|
| | 2020 | 2019 |
| | \$ | \$ |
| Cash flows provided by (used in) | | |
| Operating activities | | |
| Net loss | (1,757,027) | (878,923) |
| Adjustments for: | | |
| Share-based payments | 70,867 | 34,484 |
| Depreciation on property and equipment | 10,056 | 48,149 |
| Depreciation of right-of-use assets | 89,365 | 109,672 |
| Amortization of intangibles assets | 6,813 | 4,779 |
| Finance costs | 232,736 | 251,498 |
| Change in fair value of investments | 492,024 | (706,196) |
| | <u>(855,166)</u> | <u>(1,136,537)</u> |
| Net change in non-cash operating working capital items [note 15] | 1,122,234 | 1,154,794 |
| | <u>267,068</u> | <u>18,257</u> |
| Investing activities | | |
| Additions to inventories | - | (18,767) |
| Purchase of property and equipment | - | (115,909) |
| Variation of deposits | (9,550) | 6,259 |
| | <u>(9,550)</u> | <u>(128,417)</u> |
| Financing activities | | |
| Repayment of R&D loans [note 10] | - | (247,200) |
| Repayment of convertible debenture [note 11] | (354,000) | - |
| Repayment of lease liabilities | (34,618) | (52,494) |
| Proceeds from convertible loan [note 11] | 903,000 | - |
| Proceeds from issuance of shares – Private placement [note 12] | - | 62,292 |
| Proceeds from issuance of shares upon exercise of stock options [note 12] | 446,400 | - |
| Interest paid | (113,315) | (155,569) |
| | <u>847,467</u> | <u>(392,971)</u> |
| Net increase (decrease) in cash | 1,104,985 | (503,131) |
| Cash - beginning of period | 34,431 | 644,981 |
| Cash - end of period | <u>1,139,416</u> | <u>141,850</u> |
| Supplemental cash flow disclosure | | |
| Non-cash transactions: | | |
| Purchase of property and equipment included in accounts payables | 102,071 | 39,277 |
| Purchase of intangibles assets included in accounts payables | 81,591 | 46,509 |
| Interest included in accounts payable | 32,614 | - |

The accompanying notes form an integral part of the condensed interim financial statements

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

1. Nature of operations and going concern disclosure

(a) Nature of operations

PyroGenesis Canada Inc. (the "Company"), incorporated under the laws of the Canada Business Corporations Act, was formed on July 11, 2011. The Company owns patents of advanced waste treatment systems technology and designs, develops, manufactures and commercialises advanced plasma processes and systems. The Company is domiciled at 1744 William Street, Suite 200, Montreal, Quebec. The Company is publicly traded on the TSX Venture Exchange under the Symbol "PYR". During 2015, the Company received approval to trade on the OTCQB in the USA under the symbol "PYRNF".

(b) Going concern

These condensed interim financial statements have been prepared on the going concern basis, which presumes that the Company will be able to realize its assets and discharge its liabilities in the normal course of business for the foreseeable future.

2. Basis of preparation

(a) Statement of compliance

These condensed interim financial statements have been prepared in accordance with International Financial Reporting Standard ("IFRS") as issued by the International Accounting Standards Board ("IASB"). These condensed interim financial statements do not include all of the necessary information required for full annual financial statements in accordance with IFRS and should be read in conjunction with the Company's audited financial statements for the year ended December 31, 2019.

These condensed interim financial statements were approved and authorized for issuance by the Board of Directors on July 16, 2020.

(b) Functional and presentation currency

These condensed interim financial statements are presented in Canadian dollars, which is the Company's functional currency.

(c) Basis of measurement

These condensed interim financial statements have been prepared on the historical cost basis except for the investments which are accounted for at fair value.

3. Significant accounting judgments, estimates and assumptions

The significant judgments, estimates and assumptions applied by the Company's in these condensed interim financial statements are the same as those applied by the Company in its audited annual financial statements as at and for the year ended December 31, 2019.

PyroGenesis Canada Inc.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

4. Revenues

The Company's revenues from long-term contracts and sales of goods are generated primarily from DROSRITE™ related sales of \$474,432 (2019 - \$58,559), PUREVAP™ related sales of \$17,965 (2019 - \$94,077), Torch related sales of \$87,944 (2019 - \$139,813), and the development and support related to systems supplied to the U.S. Military \$23,896 (2019 - \$210,667).

Refer to note 20 for sales by geographic area and by product line.

Transaction price allocated to remaining performance obligations

As at March 31, 2020, revenue expected to be recognized in the future related to performance obligations that are unsatisfied (or partially satisfied) at the reporting date is \$28,405,077. Revenue will be recognized as the Company satisfies its performance obligations under long-term contracts, which is expected to occur over the next 3 years.

5. Accounts receivable

Details of accounts receivable were as follows:

| | March 31, 2019 | December 31, 2019 |
|---------------------------------|-------------------|----------------------|
| | \$ | \$ |
| 1 – 30 days | 55,640 | 71,423 |
| 31 – 60 days | 25,311 | 9,483 |
| 61 – 90 days | 6,485 | 17,753 |
| Greater than 90 days | 30,376 | 5,469 |
| Total trade accounts receivable | 117,812 | 104,128 |
| Other receivables | 220,528 | 106,412 |
| | <u>338,340</u> | <u>210,540</u> |

There is no allowance for expected credit losses recorded as at March 31, 2020 and December 31, 2019.

6. Costs and profits in excess of billings on uncompleted contracts and projects

As at March 31, 2020, the Company had three uncompleted contracts and projects with total billings of \$155,441 which were less than total costs incurred and had recognized cumulative revenue of \$323,346 since those contracts and projects began. This compares with five contracts with total billings of \$89,256 which were less than total costs incurred and had recognized cumulative revenue of \$212,236 as at December 31, 2019.

Changes in costs and profits in excess of billings on uncompleted contracts during the three months ended March 31, 2020 are explained by \$21,211 recognized at the beginning of the year being transferred to accounts receivable, and \$66,136 resulting from changes in the measure of progress.

PyroGenesis Canada Inc.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

7. Investment tax credits and government wage subsidy

As at March 31, 2020 investment tax credits related to qualifying projects from the provincial government were \$70,313 (2019 - \$709,395). The Company also recorded during the three months ended March 31, 2020 an amount of \$127,842 (2019 - \$Nil) as a government subsidy from Revenue Canada under the CEWS program.

8. Strategic investments

| | March 31, 2020 | December 31, 2019 |
|---|---------------------------|----------------------|
| | <u>\$</u> | <u>\$</u> |
| Beauce Gold Fields (“BGF”) shares – level 1 | 102,579 | 133,354 |
| HPQ Silicon Resources Inc. (“HPQ”) shares - level 1 | 1,014,750 | 1,476,000 |
| HPQ warrants – level 3 | - | - |
| | <u>1,117,329</u> | <u>1,609,354</u> |

Investments in HPQ (TSXV: HPQ) comprise 18,450,000 common shares (18,450,000 - 2019) and 17,750,000 warrants (17,750,000 - 2019). 1,500,000 warrants have an exercise price of \$0.25 with an expiry date of November 21, 2020 and the remaining 16,250,000 warrants have an exercise price of \$0.17 with an expiry date of August 21, 2021.

Investment in BGF (TSXV: BGF) consists of 1,025,794 of common shares. The 1,025,794 common shares of BGF were received in December 2018 as dividend in kind from a spinoff of HPQ.

16,250,000 common shares of HPQ and 16,250,000 warrants of HPQ were purchased in cash (\$1,950,000) in 2018. 2,500,000 common shares and 2,500,000 warrants were received in 2017 in lieu of payment of services rendered by the Company to HPQ. At the transaction dates, these non-monetary transactions were measured based on the fair value of the common shares and warrants received for a total amount of \$320,000. A gain from initial recognition of the warrants of \$24,017 (\$62,214 – 2017) has been deferred off balance sheet until realised.

| | (“BGF”) shares – level 1 | | HPQ shares – level 1 | | (“HPQ”) Warrants - level 3 | |
|----------------------------|--------------------------|----------------|----------------------|------------------|----------------------------|-----------|
| | Quantity | \$ | Quantity | \$ | Quantity | \$ |
| Balance, December 31, 2018 | 1,025,794 | 102,579 | 21,350,000 | 1,281,000 | 18,750,000 | 310,537 |
| Disposals | - | - | (2,900,000) | (261,000) | - | - |
| Expired warrants | - | - | - | - | (1,000,000) | - |
| Change in the fair value | - | 30,775 | - | 456,000 | - | (310,537) |
| Balance, December 31, 2019 | 1,025,794 | 133,354 | 18,450,000 | 1,476,000 | 17,750,000 | - |
| Change in the fair value | - | (30,775) | - | (461,250) | - | - |
| Balance, March 31, 2020 | <u>1,025,794</u> | <u>102,579</u> | <u>18,450,000</u> | <u>1,014,750</u> | <u>17,750,000</u> | <u>-</u> |

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

9. Accounts payable and accrued liabilities

| | <u>March 31, 2020</u> | <u>December 31, 2019</u> |
|---|-----------------------|--------------------------|
| | \$ | \$ |
| Accounts payable | 3,159,356 | 2,780,628 |
| Accrued liabilities | 1,954,663 | 1,866,822 |
| Accounts payable to the controlling shareholder | 164,074 | 214,470 |
| Accounts payable to a trust beneficially owned by the controlling shareholder | - | 51,234 |
| | <u>5,278,093</u> | <u>4,913,155</u> |

10. Billings in excess of costs and profits on uncompleted contracts

The amount to date of costs incurred and recognized profits less recognized losses for construction projects in progress amounted to \$5,126,249 (2019 - \$4,612,082).

Payments to date received were \$7,752,228 and \$1,950,000 of deposits on contract in progress (2019 - \$5,746,739 in cash and \$1,950,000 of other assets).

Changes in billings in excess of costs and profits on uncompleted contracts during the three months ended March 31, 2020 are explained by \$19,475 recognized as revenue, and an increase of \$1,510,797 resulting from cash received excluding amounts recognized as revenue.

11. Term loans

| | Other Term Loans ¹ | 2019 SR&ED Tax Credit loan ² | 2018 SR&ED Tax Credit loan ³ | 2017 SR&ED Tax Credit loan ⁴ | Total |
|----------------------------|----------------------------------|--|--|--|----------------|
| | \$ | \$ | \$ | \$ | \$ |
| Balance, December 31, 2018 | - | - | - | 247,200 | 247,200 |
| Additions | 115,200 | 247,500 | 214,000 | - | 576,700 |
| Conversion option | (12,800) | - | - | - | (12,800) |
| Financing costs | - | (63,558) | (54,955) | - | (118,513) |
| Accretion | 8,533 | 1,389 | 40,691 | - | 50,613 |
| Repayment | - | - | - | (247,200) | (247,200) |
| Balance, December 31, 2019 | 110,933 | 185,331 | 199,736 | - | 496,000 |
| Accretion | 3,200 | 15,803 | 13,664 | - | 32,667 |
| Balance, March 31, 2020 | <u>114,133</u> | <u>201,134</u> | <u>213,400</u> | <u>-</u> | <u>528,667</u> |

¹ maturing May 1, 2020 bearing interest rate of 8% per annum payable at the maturity date.

² maturing December 23, 2020 bearing interest rate of 16.68% payable at the issuance.

³ maturing April 3, 2020 bearing interest rate of 16.68% payable at the issuance.

⁴ matured September 30, 2018 bearing interest rate of 18% (effective interest rate 23%), repaid February 2019.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

11. Term loans (continued)

On December 23, 2019, the Company entered into a SR&ED tax credit loan of \$247,500 bearing interest at a rate of 16.68% and fees totaling \$22,375 paid at the issuance of the loan. The loan was discounted using the effective interest method. The effective interest rate on the loan is 25.68%. The loan is secured by the 2019 investment tax credit receivable and is repayable on December 22, 2020.

On March 25, 2019, the Company entered into a SR&ED tax credit loan of \$214,000 bearing interest at a rate of 16.68% and fees totaling \$19,260 paid at the issuance of the loan. The loan was discounted using the effective interest method. The effective interest rate on the loan is 25.68%. The loan is secured by the 2018 investment tax credit receivable and is repayable on April 2, 2020.

The SR&ED tax credit loans are financing, in the form of loans, with respect to the Company's scientific research and experimental development tax credits ("SR&ED Tax Credits"). The principal of the loans is subject to holdback to be disbursed upon reception of notice of assessment. The principal of the loans is subject to repayment at the earlier of (a) receipt of the SR&ED Tax Credits refund or (b) the maturity date. The SR&ED Tax Credits loans agreement provides for automatic renewal of twelve months if loan is not paid at maturity. As at March 31, 2020, the amount available under the term loan financing agreement totals \$461,500 (2019 – \$461,500).

Pursuant to each financing, the Company granted the lender a security interest and movable hypothec on all of its assets excluding its intellectual property but including a first rank claim on the refundable portion of its SR&ED Tax Credits for each of the fiscal years ended December 31, 2018, of \$274,921 and 2019 of \$434,474.

In Q1-2020, the Company recorded investment tax credits receivable of \$70,313 (Q1-2019 - \$67,895), of which an amount of \$30 (Q1-2019 - \$Nil) was recorded against property and equipment, \$20,629 (Q1–2019 - \$36,071) was recorded against cost of sales and services, \$42,154 (Q1-2019 - \$24,324) against research and development expenses and \$7,500 (Q1-2019 - \$7,500) against selling general and administrative expenses..

On May 1, 2019 the Company entered into loan agreements with unrelated individuals totaling \$115,200 bearing interest at the annual rate of 8% payable at maturity, on May 1, 2020. The other term loans are unsecured and are convertible, at 10% discount, for a variable amount, of shares into any future private placement until maturity. The fair value of the debt instrument at inception was determined using the estimated cash flows discounted using a market rate of 20%. The residual amount of the non derivative liability of \$12,800 associated with the conversion feature has been recorded in accounts payable and accrued liabilities.

PyroGenesis Canada Inc.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

12. Convertible debentures

| | <u>March 31, 2020</u> | <u>December 31, 2019</u> |
|----------------------------|-----------------------|--------------------------|
| 2018 Convertible debenture | 2,586,963 | 2,898,358 |
| Convertible loan | 806,068 | - |
| | 3,393,031 | 2,898,358 |
| Current portion | 3,284,671 | 2,898,358 |
| Long-term portion | 108,360 | - |

Convertible loan

On March 18, 2020, the Company closed a \$903,000 non-brokered secured convertible loan at 12% per annum, with a trust whose beneficiary is the controlling shareholder and CEO of the Company. The Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis in arrears and matures September 17, 2021. The convertible debentures may be converted before maturity, in whole at anytime or in part from time to time at a conversion price of \$0.25 at the option of the lender. The is secured by a deed of hypothec charging on the universalities of movable assets.

The Convertible loan is a compound financial instrument and the total proceeds of the issuance was allocated between a liability for the debenture and an equity component for the conversion feature. The fair value of the debt liability component at inception was determined using estimated future cash flows discounted using a market interest rate of 20%. The effective interest rate of the liability component is 21.55%. The residual amount representing the value of the conversion option equity component was classified in the shareholders' (Deficiency) Equity.

At the issuance date, the Convertible loan was recorded as follows:

| | |
|---|-----------------------|
| | \$ |
| Liability component | 804,578 |
| Conversion option recognized in equity, net of transaction cost of \$47,338 | 98,422 |
| Net proceeds | 903,000 |
| | March 31, 2020 |
| | Total |
| | \$ |
| Liability component at issuance | 804,578 |
| Effective interest accretion | 1,490 |
| Balance, end of period | 806,068 |

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

12. Convertible debentures (continued)

Convertible debenture

On April 2, 2018, the Company completed a \$3,000,000 non-brokered private placement of 9.5% secured convertible debentures (the “2018 Convertible Debenture”). The 2018 convertible debentures bear interest at the rate of 9.5% per annum, with interest payable in cash on a quarterly basis, and mature on March 29, 2020. Each Debenture is convertible into common shares of the Company at a conversion price of \$0.80 per common share. The 2018 convertible debentures may be redeemed before maturity, in whole at anytime or in part from time to time at the option of the Company. In the event the Company elects to redeem the debentures before the maturity date, the Company shall be required to pay all interest that otherwise would have accrued on the debentures up to the maturity date. The 2018 convertible debentures are secured by a hypothec on the universality of all of the property, rights and assets of the Company, present and future, movable and immovable, corporeal and incorporeal.

The 2018 Convertible Debenture is a compound financial instrument and the total proceeds of the issuance was allocated between a liability for the debenture and an equity component for the conversion feature. The fair value of the debt liability component at inception was determined using estimated future cash flows discounted using a market interest rate of 20%. The residual amount representing the value of the conversion option equity component was classified in the shareholders’ (Deficiency) Equity.

In connection with the convertible debenture, the Company paid finder fees in the amount of \$180,000 to the agent. Total transaction costs amount to \$315,702 and have been allocated between the liability and equity components. The effective interest rate of the liability component is 20.23%.

At the issuance date, the 2018 Convertible Debenture was recorded as follows:

| | |
|---|------------------|
| | \$ |
| Debt component, net of transactions cost of \$268,364 | 2,282,538 |
| Conversion option recognized in equity, net of transaction cost of \$47,338 | 401,760 |
| Net proceeds | <u>2,684,298</u> |

On March 30, 2020, the Company reached an agreement to extend the maturity date of its \$3,000,000 convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company redeemed \$300,000 (representing 10% of the principal amount), paid a onetime accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. The conversion features have not changed. The gain in the amount of \$59,037 resulting from the revised amortised cost of the convertible debenture was recognised in loss presented against the accretion expense.

PyroGenesis Canada Inc.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

12. Convertible debentures (continued)

| | March 31, 2020 | December 31, 2019 |
|---|-------------------------|----------------------|
| | <u>Total</u> | |
| | \$ | \$ |
| Balance, beginning of period | 2,898,358 | 2,527,241 |
| Effective interest accretion | 101,642 | 371,117 |
| | 3,000,000 | 2,898,358 |
| Repayment of 2018 Convertible Debenture in cash | (300,000) | - |
| Finance fees | (54,000) | - |
| Gain on refinancing | (59,037) | - |
| Balance, end of period | <u>2,586,963</u> | <u>2,898,358</u> |

13. Shareholders' deficiency

Common shares and warrants

Authorized:

The Company is authorized to issue an unlimited number of Class A common shares without par value.

Issuance of shares

The following table sets out the activity in stock options during the three months ended March 31, 2020:

| | Number of options | Weighted average exercise price |
|-----------------------------|------------------------------|--|
| | | \$ |
| Balance – December 31, 2019 | 8,438,000 | 0.37 |
| Granted | 100,000 | 0.45 |
| Exercised | 1,488,000 | 0.30 |
| Balance, March 31, 2020 | <u>7,050,000</u> | <u>0.33</u> |

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

13. Shareholders' deficiency (continued)

As at March 31, 2020, the outstanding options, as issued under the stock option plan to directors, officers, employees and consultants for the purchases of one common share per option, are as follows:

| | Number of stock options March 31, 2020 | Exercise price per option (1) | Expiry date |
|--------------------|---|--|--------------------|
| | | \$ | |
| September 25, 2016 | 3,000,000 | 0.18 | Sep 25, 2021 |
| October 25, 2016 | 100,000 | 0.19 | Oct 25, 2021 |
| November 3, 2017 | 2,600,000 | 0.58 | Nov 3, 2022 |
| February 9, 2018 | 200,000 | 0.60 | Feb 9, 2023 |
| May 10, 2018 | 250,000 | 0.52 | May 10, 2023 |
| July 3, 2018 | 300,000 | 0.51 | July 3, 2023 |
| October 29, 2018 | 100,000 | 0.52 | Oct 29, 2023 |
| September 29, 2019 | 400,000 | 0.51 | Sep 29, 2024 |
| January 2, 2020 | 100,000 | 0.45 | Jan 02, 2025 |
| | <u>7,050,000</u> | <u>0.33</u> | |

On January 2, 2020, the Company granted 100,000 stock options to a director of the Company. The stock options have an exercise price of \$0.45 per common share, 100% vested at grant date and are exercisable over a period of 5 years. The fair value of the stock options was estimated at \$0.34 per option by applying the Black-Sholes option pricing model.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

13. Shareholders' deficiency (continued)

Share purchase warrants

The following table reflects the activity in warrants for the three months ended March 31, 2020 and the number of issued and outstanding share purchase warrants at December 31, 2019:

| | Number of warrants December 31, 2019 | Issued | Exercised | Number of warrants March 31, 2020 | Price per warrant \$ | Expiry date |
|--|---|--------|-----------|--|-------------------------------|-----------------|
| Issuance of units – April 19, 2018 | 3,108,333 | - | - | 3,108,333 | 0.85 | Apr 19, 2020 |
| Issuance of broker warrants – April 19, 2018 | 74,000 | - | - | 74,000 | 0.85 | Apr 19, 2020 |
| Issuance of units – April 20, 2018 | 3,385,715 | - | - | 3,385,715 | 0.85 | Apr 20, 2020 |
| Issuance of units – September 28, 2018 | 3,448,276 | - | - | 3,448,276 | 0.58 | Jan 28, 2021 |
| Issuance of units – October 19, 2018 | 1,500,750 | - | - | 1,500,750 | 0.58 | Feb 13, 2021 |
| Issuance of units – December 17, 2018 | 2,244,367 | - | - | 2,244,367 | 0.85 | Dec 18, 2020 |
| Issuance of units – May 15, 2019 | 2,996,500 | - | - | 2,996,500 | 0.85 | May 15, 2021 |
| Issuance of units – May 24, 2019 | 2,024,500 | - | - | 2,024,500 | 0.85 | May 24, 2021 |
| Issuance of units – June 19, 2019 | 1,000,000 | - | - | 1,000,000 | 0.85 | Jun 19, 2021 |
| Issuance of units – October 25, 2019 | 225,000 | - | - | 225,000 | 0.75 | Oct 25, 2021 |
| | <u>20,007,441</u> | | | <u>20,007,441</u> | <u>0.78</u> | |

14. Supplemental disclosure of cash flow information

Net changes in non-cash components of operating working capital

| | 2020 \$ | 2019 \$ |
|--|------------------|------------------|
| Decrease (increase) in: | | |
| Accounts receivable | (127,800) | 420,612 |
| Costs and profits in excess of billings on uncompleted contracts | (44,925) | 184,852 |
| Investment tax credits receivable | (70,313) | 4,099 |
| Deposits | (301,094) | 434,324 |
| Prepaid expenses | 26,381 | (30,564) |
| Increase (decrease) in: | | |
| Accounts payable and accrued liabilities | 148,663 | 2,103,997 |
| Billings in excess of costs and profits on uncompleted contracts | 1,491,322 | (1,267,753) |
| | <u>1,122,234</u> | <u>1,849,567</u> |

PyroGenesis Canada Inc.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
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15. Other information

The aggregate amortization of intangible assets expense for the three months ended March 31, 2020 was \$6,813 (2019 - \$20,133) and was recorded in cost of sales and services.

Depreciation on property and equipment amounted to \$10,056 and depreciation on right of use assets amounted to \$89,365 for the three months ended March 31, 2020 (2019 \$48,419 and \$109,672 respectively) and is recorded in selling, general and administrative. Employee benefits totaled \$1,492,034 in the three months ended March 31, 2020 (2019 - \$1,463,634) and include share-based compensation of \$70,867 (2019 - \$34,484).

The Company has been awarded various grants during the three months period, which were recognized when they became receivable. The grants, received in Q1, 2020, are unconditional and amounted to \$218,636 (2019 - \$132,014). An amount of \$206,136 (2019 - \$109,976) was recorded as a reduction to the related expenses in research and development and an amount of \$12,500 (2019 - \$22,038) was recorded as a reduction to the related expenses in selling, general and administrative.

16. Net finance costs:

| | Three months ended March 31, | |
|--|------------------------------|----------------|
| | 2020 | 2019 |
| | \$ | \$ |
| Finance costs | | |
| Interest and fees on convertible debentures | 75,120 | 71,250 |
| Interest accretion of convertible debentures | 44,096 | 89,798 |
| Interest on term loans | 34,965 | 73,224 |
| Interest on lease liabilities | 63,235 | 8,132 |
| Interest accretion on promissory notes | 14,458 | |
| Other interest expenses | 862 | 9,094 |
| Net finance costs | <u>232,736</u> | <u>251,498</u> |

17. Related party transactions

During the three months ended March 31, 2020, the Company concluded the following transactions with related parties:

The Company entered into a lease agreement for rent of a property with a trust whose beneficiary is the controlling shareholder and CEO of the Company. As at March 31, 2020 the carrying amount of the right-of-use asset and lease liabilities are \$1,141,649 and \$1,184,669, respectively.

An amount of \$68,047 was charged by a trust whose beneficiary is the controlling shareholder and CEO for rent and property taxes (rent and property taxes of \$66,679 was charged in 2019). A balance due of \$Nil (2018 - \$51,134) is included in accounts payable and accrued liabilities.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
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17. Related party transactions (continued)

An amount of \$115,581 was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company (December 31, 2019 – \$Nil), of this amount \$100,527 is included in deposits.

A balance due to the controlling shareholder and CEO of the Company amounted to \$164,074 (December 31, 2019 - \$214,470) for expense report, salary and vacation payables and is included in accounts payable and accrued liabilities as at March 31, 2019.

As at March 31, 2020, an amount of \$4,413 (December 31, 2019 - \$7,427), of interest payable and an accretion amount of \$10,045 (December 31, 2019 - \$12,946), were accrued on the loan of \$295,000 from the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

As at March 31, 2020, an amount of \$3,870 (December 31, 2019 - \$Nil), of interest payable and an accretion amount of \$5,360 (December 31, 2019 - \$Nil), were accrued on a convertible loan of \$903,000 from a trust whose beneficiary is the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

The key management personnel of the Company are the members of the Board of Directors and certain officers. Total compensation to key management consisted of the following:

| | <u>2020</u> | <u>2019</u> |
|---|-----------------------|-----------------------|
| | \$ | \$ |
| Salaries –officers | 262,670 | 102,000 |
| Pension contributions | 2,769 | 2,040 |
| Fees – Board of Directors | 44,000 | 24,000 |
| Share - based compensation - officers | 2,122 | - |
| Share – based compensation – Board of Directors | 62,241 | - |
| Other benefits – officers | 5,387 | 4,391 |
| Total compensation | <u>379,189</u> | <u>132,431</u> |

The Company has added three employees in key management amounts in 2020. A balance of \$78,524 of key management compensation, of the amounts noted above, is included in accounts payable and accrued liabilities as at March 31, 2020 (December 31, 2019 - \$130,604).

18. Financial instruments

As part of its operations, the Company carries a number of financial instruments. It is management's opinion that the Company is not exposed to significant interest, currency or credit risks arising from these financial instruments except as otherwise disclosed. The Company's overall risk management program focuses on the unpredictability of the financial market and seeks to minimize potential adverse effects on the Company's financial performance. The Company does not use derivative financial instruments to hedge these risks.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
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18. Financial instruments (continued)

Foreign currency risk

The Company enters into transactions denominated in US dollars for which the related revenues, expenses, accounts receivable and accounts payable and accrued liabilities balances are subject to exchange rate fluctuations.

As at March 31, 2020 the following items are denominated in US dollars:

| | March 31, 2020 | December 31, 2019 |
|--|-----------------------|-------------------|
| | CDN | CDN |
| | <u>\$</u> | <u>\$</u> |
| Cash | 470,133 | 74,749 |
| Accounts receivable | 52,066 | 28,704 |
| Accounts payable and accrued liabilities | (147,095) | (403,273) |
| Total | <u>375,104</u> | <u>(299,820)</u> |

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.

Sensitivity analysis

At March 31, 2020, if the US Dollar changes by 10% against the Canadian dollar with all other variables held constant, the impact on pre-tax gain or loss for the year ended March 31, 2020 would have been \$37,000 (December 31, 2019 – \$(29,000)).

Credit risk

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The maximum credit risk to which the Company is exposed as at March 31, 2020 represents the carrying amount of cash, accounts receivable and deposits.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
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18. Financial instruments (continued)

Credit concentration

During the year ended March 31, 2020, two customers accounted for 78% (March 31, 2019 – three customers for 61%) of revenues from operations.

| | Three months ended March 31, 2020 | | Three months ended March 31, 2019 | |
|--------------|--|----------------------------|-----------------------------------|---------------------|
| | Revenues | % of total revenues | Revenues | % of total revenues |
| | \$ | % | \$ | % |
| Customer 1 | 474,432 | 66 | 210,667 | 29 |
| Customer 2 | 87,945 | 12 | 139,813 | 19 |
| Customer 3 | - | - | 94,077 | 13 |
| Total | 562,377 | 78 | 444,557 | 61 |

Three customers accounted for 51% (December 31, 2019 – one customer for 93%) of trade accounts receivable with amounts owing to the Company of \$103,556 (2019 - \$96,874), representing the Company's major credit risk exposure. Credit concentration is determined based on customers representing 10% or more of total revenues and/or total accounts receivable. The Company believes that there is no unusual exposure associated with the collection of these receivables. The Company manages its credit risk by performing credit assessments of its customers and provides allowances for potentially uncollectible accounts receivable. The Company does not generally require collateral or other security from customers on accounts receivable.

Fair value of financial instruments

Financial instruments are comprised of cash, accounts receivable, investments, deposits, accounts payable and accrued liabilities, term loans, long-term debt and convertible debentures. There are three levels of fair value that reflect the significance of inputs used in determining fair values of financial instruments:

- Level 1 — quoted prices (unadjusted) in active markets for identical assets or liabilities.
- Level 2 — inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices).
- Level 3 — inputs for the asset or liability that are not based on observable market data.

Investments in BGF shares are valued as at March 31, 2020 at quoted market prices and are classified as Level 1. Investments in BGF shares were valued as at December 31, 2018 based on a valuation technique that estimates a business' value based on a recent round of financing and were classified as Level 3.

Investments in HPQ shares are valued at quoted market prices and are classified as Level 1.

Investments in HPQ warrants are valued using the Black-Scholes pricing model and are classified as Level 3.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
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18. Financial instruments (continued)

Fair value of financial instruments - continued

The fair values of cash, accounts receivable, accounts payable and accrued liabilities, and term loans approximate their carrying amounts due to their short-term maturities.

The fair value of the long-term debt and of the 2018 Convertible Debenture approximates their carrying amounts due to their recent issuance.

Interest rate risk

Interest rate risk is the risk that the value of a financial instrument might be adversely affected by a change in interest rates. Changes in market interest rates may have an effect on the cash flows associated with some financial assets and liabilities, known as cash flow risk, and on the fair value of other financial assets or liabilities, known as price risk, and on the fair value of investments or liabilities, known as price risks. The Company is exposed to a risk of fair value on the term loans and convertible debentures as those financial instruments bear interest at fixed rates.

Price risk

Price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market price (other than those arising from foreign currency risk and interest risk), whether those changes are caused by factors specific to the individual financial instrument or its issuers or factors affecting all similar financial instruments traded in the market. The most significant exposure to the price risk for the Company arises from its investments in shares of public companies quoted on the TSXV Exchange. If equity prices had increased or decreased by 15% as at March 31, 2020, with all other variables held constant, the Company's investments would have increased or decreased respectively, by approximately \$168,000 (December 31, 2019 - \$241,000).

Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivery of cash or another financial asset. The Company's ability to continue as a going concern is dependent on management's ability to raise required funding through future equity and / or debt issuances and to generate positive cash flows from operations (see note 1 (b)). The Company manages its liquidity risk by forecasting cash flows from operations and anticipating any investing and financing activities. Management and the Board of Directors are actively involved in the review, planning and approval of significant expenditures and commitments.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
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18. Financial instruments (continued)

Liquidity risk - continued

The following table summarizes the contractual maturities of financial liabilities as at March 31, 2020:

| | <u>Carrying value</u> | <u>Total contractual amount</u> | <u>6 months or less</u> | <u>6 to 12 months</u> |
|--|-----------------------|---------------------------------|-------------------------|-----------------------|
| | \$ | \$ | \$ | \$ |
| Accounts payable and accrued liabilities | 5,278,093 | 5,278,093 | - | - |
| Promissory notes | 295,000 | 295,000 | - | - |
| Term loans | 577,468 | 329,968 | 247,500 | - |
| Convertible debentures | 3,774,356 | 2,785,571 | 42,893 | 945,892 |
| | <u>9,924,917</u> | <u>8,688,632</u> | <u>290,393</u> | <u>945,892</u> |

19. Contingent liabilities

The Company is currently a party to various legal proceedings and a tax authorities' review. If management believes that a loss arising from these matters is probable and can reasonably be estimated, that amount of the loss is recorded. As additional information becomes available, any potential liability related to these matters is assessed and the estimates are revised, if necessary. Based on currently available information, management believes that the ultimate outcome of these matters, individually and in aggregate, will not have a material adverse effect on the Company's financial position or overall trends in results of operations.

The Company had received a government grant in prior years of approximately \$800,000 to assist with the development of a new system of advanced waste treatment systems technology. The grant is potentially repayable at the rate of 3% of any consideration received as a result of the project, for which funding has been received, to a maximum of the actual grant received. This repayment provision will remain in effect until May 30, 2024. The Company abandoned the project in 2011 and accordingly, no amount is expected to be repaid.

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
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20. Capital management

The Company's objectives in managing capital are:

- a) To ensure sufficient liquidity to support its current operations and execute its business plan; and
- b) To provide adequate return to the shareholders

The Company's primary objectives when managing capital is to ensure the entity continues as a going concern as well as to maintain optimal returns to shareholders and benefits for other stakeholders.

The Company currently funds these requirements from cash flows from operations and with financing arrangements with third parties and shareholders. The Company is not subject to any externally imposed capital requirements.

The management of capital includes common shares, warrants reserve, contributed surplus and equity portion of convertible debentures for a total amount of \$54,770,422 (December 31, 2019 - \$54,154,733) and debt of \$4,358,688, (December 31, 2019 - \$3,679,323). The Company monitors its working capital in order to meet its financial obligations. As at March 31, 2020, the Company's working capital deficiency was \$11,157,110 (December 31, 2019 – deficiency of \$10,492,101).

There were no changes in the Company's approach during the three months ended March 31, 2020.

21. Segment information

The Company operates in one segment, based on financial information that is available and evaluated by the Company's Board of Directors.

The Company's head office is located in Montreal, Quebec. The operation of the Company is located in one geographic area: Canada. The following is a summary of the Company's geographic information:

| | Three months ended March, 31 | |
|---------------------------------|------------------------------|----------------|
| | 2020 | 2019 |
| | \$ | \$ |
| Revenue from external customers | | |
| Canada | 121,232 | 113,166 |
| United States | 33,713 | 336,320 |
| Europe | 962 | 215,932 |
| Mexico | - | 32,643 |
| Asia | 475,057 | 38,382 |
| South America | 87,944 | - |
| | <u>718,908</u> | <u>736,443</u> |

Notes to the Condensed Interim Financial Statements

For the periods ended March 31, 2020 and 2019
(unaudited)

21. Segment information (continued)

The following is a summary of the Company's revenue by product line:

| | Three months ended March 31, | |
|--|------------------------------|----------------|
| | <u>2020</u> | <u>2019</u> |
| | \$ | \$ |
| Sales of goods under long-term contracts | 637,950 | 719,125 |
| Sales of goods in point of time | 59,995 | 12,466 |
| Other revenues | 20,963 | 4,852 |
| | <u>718,908</u> | <u>736,443</u> |

The Company has entered into long-term leases for premises, computer software, photocopier equipment and automobile. The minimum lease payments due over the next five years are as follows:

22. Subsequent events

The global pandemic due to the novel coronavirus (COVID-19) is a situation that is constantly evolving, and the measures put in place are having multiple impacts on provincial, national and global economies. The overall effect of these events on the Company and its operations is too uncertain to be estimated at this time. The impacts will be accounted for when they are known and may be assessed.

The Company received under the exclusivity contract with DROSRITE International approximately US\$3,545,572 between April and July 14, 2020.

The Company received under the exclusivity contract with a US tunneling corporation approximately US\$324,917 in April 2020.

On May 26, 2020, the Company completed a share debt transaction with HPQ to settle outstanding trade accounts receivable in the amount of \$395,514, for which an amount of \$30,002 was included in trade accounts receivable as at December 31, 2019, whereby the Company received 4,394,600 units at a price of \$0.09 per unit. Each unit is comprised of one common share and one common share purchase warrant. Each warrant will allow its holder to subscribe to one common share at the price of \$0.10 for a period of 36 months from the date of closing. Each share issued pursuant to the debt settlement will have a mandatory four month and one day holding period from the date of closing. This settlement is subject to the approval of the TSX Venture.

In May 2020, the Company issued 120,000 common shares upon the exercise of 120,000 stock options with an exercise price of \$0.58, and in June 2020, the Company issued 120,000 common shares upon the exercise of 120,000 stock options with an exercise price of \$0.60.

In June 2020, the Company issued 4,045,300 common shares upon the exercise of 3,745,300 share purchase warrants for total proceeds of \$3,173,419, and in July 2020, the Company issued 186,000 common shares upon the exercise of 186,000 share purchase warrants for total proceeds of \$131,100.

Between April 7, 2020 and June 30, 2020, the Company redeemed 1,285,000 of its common shares for an amount of \$964,391.

In June 2020, holders of the outstanding \$2,700,000 convertible debenture requested to convert an amount of \$2,695,500 into common shares of the Company. The remaining balance of \$4,500 was repaid on June 30, 2020.



PYROGENESIS CANADA INC.**MANAGEMENT'S DISCUSSION AND ANALYSIS**

This management's discussion and analysis ("MD&A") is intended to assist readers in understanding the business environment, strategies, performance and risk factors of PyroGenesis Canada Inc. ("PyroGenesis", or the "Company"). The MD&A provides the reader with a view and analysis, from the perspective of management, of the Company's financial results for the three months ended March 31, 2020. The MD&A has been prepared in accordance with National Instrument 51-102, Continuous Disclosure Requirements, and should be read in conjunction with the audited financial statements and related notes thereto of the Company for the year ended December 31, 2019.

The financial statements and MD&A have been reviewed by PyroGenesis' Audit Committee and were approved by its Board of Directors on July 14, 2020. The Board of Directors is responsible for ensuring that the Company fulfills its responsibilities for financial reporting and is ultimately responsible for reviewing and approving the MD&A. The Board of Directors carries out this responsibility principally through its Audit Committee. The Audit Committee is appointed by the Board of Directors and is comprised of independent directors. The Audit Committee reports its findings to the Board of Directors for its consideration when it approves the MD&A and financial statements for issuance to shareholders.

The following information takes into account all material events that took place up until July 14, 2020, the date on which the Company's Board of Directors approved this MD&A. Unless otherwise indicated, all amounts are presented in Canadian dollars. The Company's functional and reporting currency is the Canadian dollar.

Additional information regarding PyroGenesis is available on SEDAR (www.sedar.com), OTC Markets (www.otcmarkets.com) and on the Company's website at www.pyrogenesis.com.

FORWARD-LOOKING STATEMENTS

This MD&A contains forward-looking statements. All statements other than statements of historical fact contained in this MD&A are forward-looking statements, including, without limitation, the Company's statements regarding its products and services; relations with suppliers and clients; future financial position; business strategies; potential acquisitions; potential business partnering; litigation; and plans and objectives. In certain cases, forward-looking statements can be identified by the use of words such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved" and similar words or the negative thereof. Although management of the Company believes that the expectations represented in such forward-looking statements are reasonable, there can be no assurance that such expectations will prove to be correct.



In particular, this MD&A contains forward-looking statements that relate, but are not limited, to:

- the Company's business strategies, strategic objectives and growth strategy;
- the Company's current and future capital resources and the need for additional financing;
- the Company's ability to increase sales, including the results of the successful completion of the Company's current projects;
- management's expectation that the Company will achieve sustained annual growth and profitability, and that gross margins will increase resulting in a decrease in cost of sales as a percentage of revenue; and
- the Company's overall financial performance.

By their nature, forward-looking statements require assumptions and are subject to inherent risks and uncertainties including those discussed herein. In particular, forward-looking statements relating to future sales, growth and profitability are based on the assumption that current projects will be completed, and the Company will be awarded certain anticipated contracts pursuant to recent negotiations with, and statements made by, third parties. There is significant risk that predictions and other forward-looking statements will not prove to be accurate. Readers are cautioned to not place undue reliance on forward-looking statements made herein because a number of factors could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.

The future outcomes that relate to forward-looking statements may be influenced by many factors, including, but not limited to, the strength of the Canadian, US and Asian economies; operational, funding, and liquidity risks; unforeseen engineering and environmental problems; delays or inability to obtain required financing and/or anticipated contracts; risks associated with licenses, permits and regulatory approvals; supply interruptions or labour disputes; foreign exchange fluctuations and collection risk; competition from other suppliers, or alternative, less capital intensive, energy solutions; and risk factors described elsewhere in this document under the heading "Risk Factors". We caution that the foregoing list of factors is not exhaustive, and that, when relying on forward-looking statements to make decisions with respect to the Company, investors and others should carefully consider these factors, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements.

Although the Company has attempted to identify significant factors that could cause actions, events or results to differ materially from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. Forward-looking statements are provided as of the date of this MD&A, and the Company assumes no obligation to update or revise such forward-looking statements to reflect new events or circumstances except as required under applicable securities laws.

The forward-looking statements contained herein are expressly qualified in their entirety by this cautionary statement. The forward-looking statements included in this MD&A are made as of the date of this MD&A or such other date specified herein.



OVERVIEW

PyroGenesis Canada Inc. is a world leader in the design, development, manufacturing and commercialization of advanced plasma processes. The Company provides engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working from its Montreal office and its 3,800m² production facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. PyroGenesis' core competencies allow the Company to be a leader in providing innovative plasma torches, plasma waste processes, plasma atomisation processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis is a publicly traded Canadian company on the TSX Venture Exchange (Ticker symbol: PYR.V), on the OTCQB in the United States (Ticker symbol: PYRNF) and on the Frankfurt Stock Exchange (FSX) under the symbol "8PY".

SELECTED FINANCIAL INFORMATION

| | Three months ended Mar 31, | | % Change |
|---|----------------------------|----------------|--------------|
| | 2020 | 2019 | 2020 vs 2019 |
| Revenues | \$ 718,908 | \$ 736,443 | -2% |
| Cost of sales and services | 451,494 | 644,285 | -30% |
| Gross margin | 267,414 | 92,158 | 190% |
| Expenses | | | |
| Selling, general and administrative | 1,276,593 | 1,330,005 | -4% |
| Research and development | 23,088 | 95,774 | -76% |
| Net finance costs | 232,737 | 251,498 | -7% |
| | 1,532,417 | 1,677,277 | -9% |
| Net loss from operations | (1,265,003) | (1,585,119) | -20% |
| Changes in fair market value of strategic investments | 492,024 | (706,196) | 170% |
| Comprehensive loss | \$ (1,757,027) | \$ (878,923) | 100% |
| Basic and diluted loss per share | \$ (0.01) | \$ (0.01) | |
| Modified EBITDA (loss) | \$ (855,166) | \$ (1,136,538) | -23% |

Modified EBITDA (loss) is not a performance measure defined under IFRS and it is not considered an alternative to Income (Loss) from operations or Comprehensive Earnings (Loss) in the context of measuring a Company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of their results and related trends, and as such increases transparency and clarity. Modified EBITDA (loss) is an important measure of operating performance because it allows management, investors and others to evaluate and compare the Company's core operating results, including our return on capital and operating efficiencies, from period to period, by removing the impact of its capital structure (interest expense to service outstanding debt), asset base (depreciation and amortization), tax consequences, and other non-operating items not requiring cash outlays including share-based compensation and change in fair value of investment. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation.

We have included definitions of this and other non-IFRS financial measures in the "Reconciliation of non-IFRS Measures (EBITDA, Adjusted and Modified)" section of this MD&A.



Extract from Statement of Financial Position at:

| | Mar 31 2020 | Dec 31, 2019 |
|--------------------------|-----------------------|-----------------------|
| Current assets | 2,947,290 | 1,324,554 |
| Non-current assets | 7,849,628 | 8,254,675 |
| Total assets | \$ 10,796,918 | \$ 9,579,229 |
| Current liabilities | 14,104,400 | 11,816,655 |
| Non-current liabilities | 3,916,779 | 3,845,497 |
| Total liabilities | \$ 18,021,178 | \$ 15,662,152 |
| Shareholders' deficiency | \$ (7,224,261) | \$ (6,082,923) |

RESULTS OF OPERATIONS

Revenues

PyroGenesis recorded revenue of \$718,908 in the first quarter of 2020 ("Q1, 2020"), representing a decrease of 2% compared with \$736,443 recorded in the first quarter of 2019 ("Q1, 2019").

Revenues recorded in the first quarter of 2020 were generated primarily from:

- (i) DROSRITE™ related sales of \$474,432 (2019 Q1 - \$58,559)
- (ii) PUREVAP™ related sales of \$17,965 (2019 Q1 - \$94,077)
- (iii) torch related sales of \$87,944 (2019 Q1 - \$139,813)
- (iv) support services related to PAWDS-Marine systems supplied to the US Navy \$23,896 (2019 Q1 - \$210,667)

Cost of Sales and Services and Gross Margin

| | Three months ended Mar 31, | | % Change |
|--|----------------------------|-------------------|--------------|
| | 2020 | 2019 | 2020 vs 2019 |
| Employee compensation | \$ 272,927 | \$ 428,362 | -36% |
| Subcontracting | 525 | 5,722 | -91% |
| Direct materials | 61,057 | 163,871 | -63% |
| Manufacturing overhead & other | 56,796 | 64,424 | -12% |
| Foreign exchange loss | 74,006 | 13,198 | 461% |
| Investment tax credits | (20,630) | (36,071) | -43% |
| Cost of Sales and Services before Amortization of Intangible Assets | \$ 444,681 | \$ 639,506 | -30% |
| Amortization of intangible assets | 6,813 | 4,779 | 43% |
| Total Cost of Sales and Services | \$ 451,494 | \$ 644,285 | -30% |

Gross Margin

| | Three months ended Mar 31, | |
|----------------------------|----------------------------|------------|
| | 2020 | 2019 |
| Revenues | \$ 718,908 | \$ 736,443 |
| Cost of Sales and Services | 451,494 | 644,285 |
| Gross Margin | \$ 267,414 | \$ 92,158 |
| Gross Margin % | 37.2% | 12.5% |



Cost of sales and services before amortization of intangible assets is not a performance measure defined under IFRS and it is not considered an alternative to gross margin in the context of measuring the Company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of its results and related trends, and increases transparency and clarity. Gross margin before amortization of intangible assets is an important measure of operating performance because it allows management, investors and others to evaluate and compare the Company's core operating results, including its return on capital and operating efficiencies, from period to period, by removing the impact of non-operating items not requiring cash outlays. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation or a substitute for financial measures prepared in accordance with IFRS.

Cost of sales and services before amortization of intangible assets was \$444,681 in Q1 2020, representing a decrease of 30% compared with \$639,506 in Q1 2019, primarily due to lower employee compensation and direct materials in Q1 2020.

In Q1 2020, employee compensation, subcontracting, direct materials and manufacturing overhead decreased to \$391,305 (Q1 2019 - \$662,379). The gross margin for Q1 2020 was \$267,414 or 37.2% of revenue compared to a gross margin of \$92,158 or 12.5% of revenue for Q1 2019. As a result of the type of contracts being executed, the nature of the project activity, as well as the composition of the cost of sales and services, as the mix between labour, materials and subcontracts may be significantly different. Of note, the Company received an amount of \$127,842 from Revenue Canada under the CEWS program. From this amount, \$26,388 was applied to employee compensation under cost of sales and services.

Investment tax credits recorded against cost of sales are related to projects that qualify for tax credits from the provincial government of Quebec. Qualifying tax credits decreased to \$20,630 in Q1 2020, compared with \$36,071 in Q1 2019. This represents a decrease of 43% year-over-year. In total, the Company earned refundable investment tax credits of \$70,313 in Q1 2020. The Company continues to make investments in research and development projects involving strategic partners and government bodies.

The amortization of intangible assets of \$6,813 in Q1 2020 and \$4,779 for Q1 2019 relates to patents and deferred development costs. Of note, these expenses are non-cash items and will be amortized over the duration of the patent lives.



Selling, General and Administrative Expenses

| | Three months ended Mar 31, | | % Change |
|--|----------------------------|---------------------|--------------|
| | 2020 | 2019 | 2020 vs 2019 |
| Employee compensation | \$ 899,576 | \$ 812,673 | 11% |
| Professional fees | 51,923 | 155,166 | -67% |
| Office and general | 74,720 | 60,770 | 23% |
| Travel | 41,616 | 76,002 | -45% |
| Depreciation on property and equipment | 10,056 | 48,149 | -79% |
| Depreciation rou assets | 89,365 | 109,672 | -19% |
| Investment tax credits | (7,500) | (7,413) | 1% |
| Government grants | (12,500) | (22,038) | -43% |
| Other expenses | 58,470 | 62,540 | -7% |
| Sub-total before Share-based payments | \$ 1,205,726 | \$ 1,295,521 | -7% |
| Share-based payments | 70,867 | 34,484 | 106% |
| Total selling, general and administrative | \$ 1,276,593 | \$ 1,330,005 | -4% |

Included within Selling, General and Administrative expenses (“SG&A”) are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for Q1 2020 excluding the costs associated with share-based compensation (a non-cash item in which options vest principally over a four-year period), were \$1,205,726 representing a decrease of 7% compared with \$1,295,521 reported for Q1 2019.

The increase in SG&A expenses in Q1 2020 over the same period in 2019 is mainly attributable to the net effect of:

- i) an increase of 11% in employee compensation due primarily to additional head count, off set by the government aid received from Revenue Canada under the CEWS program,
- ii) a decrease of 67% for professional fees, primarily due to a decrease in accounting fees,
- iii) an increase of 23% in office and general expenses, is due to an increase in insurance and computer software expenses,
- iv) travel costs decreased by 45%, due to a decrease in travel abroad,
- v) depreciation on property and equipment decreased by 79% due to lower amounts of property and equipment being depreciated,
- vi) depreciation on right of use assets decreased by 19% due to lower amounts of right of use assets being depreciated,
- vii) Investment tax credits increased by 1% due to an increase in qualifying projects,
- viii) government grants decreased by 43% due to lower levels of activities supported by such grants,
- ix) other expenses decreased by 7%, primarily due to a decrease in cost of freight and shipping.



Separately, share based payments increased by 106% in Q1 2020 over the same period in 2019 as a result of the vesting structure of the stock option plan including the stock options granted on January 2, 2020.

Depreciation on Property and Equipment

| | Three months ended Mar 31, | | % Change |
|---|----------------------------|------------------|-------------|
| | 2020 | 2019 | 2020vs2019 |
| Depreciation on property and equipment | \$ 10,056 | \$ 48,149 | -79% |

The depreciation on property and equipment decreased to \$10,056 in Q1 2020, compared with \$48,149 in Q1 2019. The 79% decrease is primarily due to a \$1,981,410 write off, of equipment in December 2019.

Research and Development (“R&D”) Costs

| | Three months ended Mar 31, | | % Change |
|---|----------------------------|-------------------|-------------|
| | 2020 | 2019 | 2020vs2019 |
| Employee compensation | \$ 248,664 | \$ 190,115 | 31% |
| Investment tax credits | (42,154) | (24,324) | 73% |
| Subcontracting | 11,575 | - | 100% |
| Materials and equipment | 10,578 | 37,395 | -72% |
| Other expenses | 561 | 2,564 | -78% |
| Sub-total before government grants | \$ 229,224 | \$ 205,750 | 11% |
| Government grants | (206,136) | (109,976) | 87% |
| Total net R&D costs | \$ 23,088 | \$ 95,774 | -76% |

The Company incurred \$23,088 of R&D costs, net of government grants, on internal projects in Q1 2020, a decrease of 76% as compared with \$95,774 in Q1 2019. The decrease in Q1 2020 is primarily related to an increase in government grants recognized.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and Experimental Development (“SR&ED”) tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see “Cost of Sales” above).



Net Finance Costs

| | Three months ended Mar 31, 2020 | 2019 | % Change 2020vs2019 |
|------------------|------------------------------------|---------|------------------------|
| Finance expenses | 232,736 | 251,498 | -7% |

Finance costs for Q1 2020 totaled \$232,736 as compared with \$251,498 for Q1 2019, representing a decrease of 7% year-over-year. The decrease in finance costs in Q1 2020, is primarily attributable to interest on lower amounts of debt.

Strategic Investments

| | Three months ended Mar 31, 2020 | 2019 | % Change 2020vs2019 |
|--|------------------------------------|--------------|------------------------|
| Changes to the fair value of strategic investments | \$ 492,024 | \$ (706,196) | 170% |

The adjustment to the fair market value of strategic investments for Q1 2020 resulted in a loss of \$492,024 compared to a gain in the amount of \$706,196 in Q1 2019.

Net comprehensive loss

| | Three months ended Mar 31, 2020 | 2019 | % Change 2020vs2019 |
|-------------------------------|------------------------------------|---------------------|------------------------|
| Net comprehensive loss | \$ (1,757,027) | \$ (878,923) | 100% |

The net comprehensive loss for Q1 2020 of \$1,757,027 compared to a loss of \$878,923, in Q1 2019, represents an increase of 100% year-over-year. The increased loss of \$878,104 in the comprehensive loss in Q1 2020 is primarily attributable to the factors described above, which have been summarized as follows:

- (i) a decrease in product and service-related revenue of \$17,535 arising in Q1 2020,
- (ii) a decrease in cost of sales and services totaling \$192,791, primarily due to a decrease in employee compensation, subcontracting, direct materials, manufacturing overhead & other, and an increase in foreign exchange, investment tax credits, and amortization of intangible assets,
- (iii) a decrease in SG&A expenses of \$53,412 arising in Q1 2020 primarily due to a decrease in professional fees, in travel, in depreciation on property and equipment, in depreciation ROU assets, and in other expenses and an increase in employee compensation, in office and general, in government grants and in share based payments,



- (iv) a decrease in R&D expenses of \$72,685 primarily due to an increase in government grants,
- (v) a decrease in net finance costs of \$18,762 in Q1 2020 primarily due to interest on lower amounts of debt,
- (vi) a decrease in fair value adjustment of strategic investments of \$1,198,220 in Q1 2020.

Reconciliation of Non-IFRS measures (EBITDA, Adjusted and Modified)

| | Three months ended Mar 31. | | % Change |
|--|----------------------------|----------------|------------|
| | 2020 | 2019 | 2020vs2019 |
| Comprehensive loss | \$ (1,757,027) | \$ (878,923) | 100% |
| Depreciation on property and equipment | 10,056 | 48,149 | -79% |
| Depreciation rou assets | 89,365 | 109,672 | -19% |
| Amortization of intangible assets | 6,813 | 4,779 | 43% |
| Financing charges | 232,736 | 251,498 | -7% |
| EBITDA (loss) | \$ (1,418,057) | \$ (464,825) | 205% |
| Other non-cash items: | | | |
| Share-based payments | 70,867 | 34,484 | 106% |
| Adjusted EBITDA (loss) | \$ (1,347,190) | \$ (430,341) | 213% |
| Change in fair value of investments | 492,024 | (706,196) | -170% |
| Modified EBITDA (loss) | \$ (855,166) | \$ (1,136,537) | -25% |

EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation and Amortization, Adjusted EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation, Amortization and other non-cash items including share-based payment costs, and Modified EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation, Amortization and other non-cash items including share-based payment costs and change in fair value of investments.

EBITDA, Adjusted EBITDA and Modified EBITDA are not performance measures defined under IFRS and they are not considered an alternative to income or loss from operations, or to comprehensive earnings or loss, in the context of measuring a company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of its results and related trends and increases transparency and clarity. Management believes that EBITDA, Adjusted EBITDA and Modified EBITDA are important measures of operating performance because it allows management, investors and others to evaluate and compare the Company's operating results, including its return on capital and operating efficiencies, from period-to-period by removing the impact of the Company's capital structure (interest expense to service outstanding debt), asset base (depreciation and amortization), tax consequences, and other non-operating items not requiring cash outlays including the adjustment to the fair value of investments and share-based compensation. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation.

The EBITDA loss in Q1 2020 was \$1,418,057 compared with an EBITDA loss of \$464,825 for Q1 2019, representing an increase of 205% year-over-year. The \$953,232 increase in the EBITDA loss in Q1 2020 compared with Q1 2019 is due to the increase in comprehensive loss of \$878,104, offset by a decrease in depreciation on property and equipment of \$38,093, a decrease in depreciation of right of use assets of \$20,307, an increase in amortization of intangible assets of \$2,034 and a decrease in finance charges of \$18,762.

Adjusted EBITDA loss in Q1 2020 was \$1,347,190 compared with an Adjusted EBITDA loss of \$430,341 for Q1 2019. The increase of \$916,849 in the Adjusted EBITDA loss in Q1 2020 is attributable to an increase in EBITDA loss of \$953,232, offset by an increase of \$36,383 in share-based payments.



The Modified EBITDA loss in Q1 2020 was \$855,166 compared with a Modified EBITDA loss of \$1,136,537 for Q1 2019, representing a decrease of 25%. The decrease in the Modified EBITDA loss in Q1 2020 is attributable to the increase as mentioned above in the Adjusted EBITDA of \$916,849 and a decrease in the change of fair value of strategic investments of \$1,198,222.

SUMMARY OF QUARTERLY RESULTS

| | 2020 | | 2019 | | | | 2018 | | |
|--|-------------|--------------|--------------|-------------|------------|-------------|--------------|--------------|--|
| | Q1 | Q4 | Q3 | Q2 | Q1 | Q4 | Q3 | Q2 | |
| Revenues | \$ 718,288 | \$ 1,066,309 | \$ 1,087,437 | \$ 818,768 | \$ 788,443 | \$ 482,438 | \$ 1,027,728 | \$ 1,421,892 | |
| Gross margin | 267,414 | 33,800 | 547,090 | 102,948 | 78,771 | (513,185) | 282,180 | 436,898 | |
| Gross margin % | 37.2% | 3.1% | 49.7% | 12.5% | 10.0% | (106.4%) | 27.4% | 30.7% | |
| Depreciation loss | (1,757,827) | (873,771) | (888,091) | (2,209,850) | (876,825) | (1,823,288) | (1,753,021) | (1,534,690) | |
| Net loss per share - basic and diluted | (3.97) | (3.04) | (3.01) | (3.52) | (3.51) | (8.90) | (8.60) | (6.00) | |

The majority of PyroGenesis' revenue is recognised from long-term contracts over time and is dependent on the timing of project initiation and execution, including project engineering, manufacturing, and testing. In Q1 2020 the Company has adopted IFRS 15 dealing with revenue from contracts with customers.

LIQUIDITY AND CAPITAL RESOURCES

The following table summarizes the contractual maturities of financial liabilities as at March 31, 2020.

| | Carrying value | Total contractual amount | 6 months or less | 6 to 12 months |
|--|------------------|--------------------------|------------------|----------------|
| | \$ | \$ | \$ | \$ |
| Accounts payable and accrued liabilities | 5,278,093 | 5,278,093 | - | - |
| Promissory notes | 295,000 | 295,000 | - | - |
| Term loans | 577,468 | 329,968 | 247,500 | - |
| Convertible debentures | 3,774,356 | 2,785,571 | 42,893 | 945,892 |
| | 9,924,917 | 8,688,632 | 290,393 | 945,892 |



The Company has incurred, in the last several years, operating losses and negative cash flows from operations, resulting in an accumulated deficit of \$61,994,683 and a negative working capital of \$11,157,110 as at Q1 2020, (December 31, 2019 - \$60,237,656 and \$10,492,102 respectively). Furthermore, as at Q1 2020, the Company's current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$1,139,416 (December 31, 2019 - \$34,431). The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.

Revenue generated from active projects does not yet produce sufficient positive cash flow to fund operations. However, the Company has a strong backlog from signed contracts totaling \$30MM, and a pipeline of prospective new projects resulting in the Company's business plan becoming less dependent on raising additional funds to finance operations within and beyond the next 12 months. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so, should it need to, in the future. If the Company is unable to obtain sufficient additional financing when needed, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations. Until such financing is secured, there exists a material uncertainty that may cast significant doubt about the Company's ability to continue operating as a going concern and realize its assets and settle its liabilities and commitments in the normal course of business. See note 1(b) to the financial statements.

SUMMARY OF CASH FLOWS

| | Three months ended Mar 31. | |
|---|-----------------------------------|-------------|
| | 2020 | 2019 |
| Cash provided by (used in) operating activities | \$ 267,068 | \$ 18,257 |
| Cash provided by (used in) investing activities | (9,550) | (128,417) |
| Cash provided by (used in) financing activities | 847,467 | (392,971) |
| Increase (decrease) in cash | 1,104,985 | (503,131) |
| Cash - end of period | 1,139,416 | 141,850 |

During the three months ended March 31, 2020, cash flows generated by operating activities was \$267,068 compared to cash flows used of \$18,257 for the same period in the prior year.

The use of cash during Q1, 2020 consists of the comprehensive loss of \$1,757,027 (2019 - \$878,923) plus adjustments for operating activities of \$901,861 (2019 - \$257,614), plus a net change in non-cash operating working capital items of \$1,122,234 (2019 - \$1,154,794).

Investing activities resulted in a use of cash of \$9,550 in 2020, compared to a use of cash of \$128,417 in 2019 resulting from the purchase of inventories, property and equipment and reimbursement of deposits.



Financing activities in Q1, 2020 generated funds of \$847,867, compared with a net use of funds of \$392,971 for the same periods in 2019. In Q1, 2020, the Company repaid a portion of the convertible debenture including modification costs of \$354,000, made payment of lease liabilities of \$34,618 and received proceeds from the issuance of a convertible loan of \$903,000. Stock options were exercised for total proceeds of \$446,400. Interest paid was \$113,315 in Q1 2020 compared to \$155,569 in Q1 2019. In 2019, the use of funds mainly resulted from repayment of R&D loan in the amount of \$247,200, the repayment of lease liabilities of \$52,494 and the interest paid as mentioned above. Net proceeds of \$62,292 was received from the issuance of common shares.

The net cash position of the Company increased by \$847,467 for Q1, 2020 compared to a net decrease of \$503,131 for Q1, 2019.

CAPITAL STOCK INFORMATION

The authorized share capital of the Company consists of an unlimited number of Class A common shares (the “Common Shares”). As at July 15, 2020 PyroGenesis had 149,332,125 on shares, 9,223,093 share purchase warrants, 6,810,000 outstanding stock options issued, and 6,160,000 exercisable options issued.

GOING CONCERN

The Company presumes it will be able to realize its assets and discharge its liabilities in the normal course of business for the foreseeable future. The Company’s management has reviewed the Company’s projected cashflows and backlog and is of the opinion that the Company will generate sufficient positive cash flows and profits from operations and strategic investments to meet current and future cash requirements. Management expects that the investments currently being made in accelerating projects under development for various clients, together with executing on the \$30MM backlog at July 15 2020, (750% of 2019 revenues) which is primarily related to the Company’s successful diversification into niche markets of the additive manufacturing (including 3D printing), and metals & mining industries, will continue to improve the Company’s cash position.

The December 31, 2019 financial statements have been prepared using International Financial Reporting Standards (“IFRS”) applicable to a going concern, which contemplates the realization of assets and settlement of liabilities in the normal course of business as they become due. If the going concern assumption were not appropriate for these financial statements then adjustments would be necessary to the carrying value of assets and liabilities, the reported expenses and the statements of financial position classifications used. The impact on the financial statements could be material.

RELATED PARTY TRANSACTIONS

During the three months ended March 31, 2020, the Company concluded the following transactions with related parties:



The Company entered into a lease agreement for rent of a property with a trust whose beneficiary is the controlling shareholder and CEO of the Company. As at March 31, 2020 the carrying amount of the right-of-use asset and lease liabilities are \$1,141,649 and \$1,184,669, respectively.

An amount of \$68,047 was charged by a trust whose beneficiary is the controlling shareholder and CEO for rent and property taxes (rent and property taxes of \$66,679 was charged in 2019). A balance due of \$Nil (2018 - \$51,134) is included in accounts payable and accrued liabilities.

An amount of \$115,581 was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company (December 31, 2019 – \$Nil), of this amount \$100,527 is included in prepaids.

A balance due to the controlling shareholder and CEO of the Company amounted to \$164,074 (December 31, 2019 - \$214,470) for expense report, salary and vacation payables and is included in accounts payable and accrued liabilities as at March 31, 2019.

As at March 31, 2020, an amount of \$4,413 (December 31, 2019 - \$7,427), of interest payable and an accretion amount of \$10,045 (December 31, 2019 - \$12,946), were accrued on the loan of \$295,000 from the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

As at March 31, 2020, an amount of \$3,870 (December 31, 2019 - \$Nil), of interest payable and an accretion amount of \$5,360 (December 31, 2019 - \$Nil), were accrued on a convertible loan of \$903,000 from a trust whose beneficiary is the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

The key management personnel of the Company are the members of the Board of Directors and certain officers. Total compensation to key management consisted of the following:

| | <u>2020</u> | <u>2019</u> |
|---|-----------------------|-----------------------|
| | \$ | \$ |
| Salaries –officers | 262,670 | 102,000 |
| Pension contributions | 2,769 | 2,040 |
| Fees – Board of Directors | 44,000 | 24,000 |
| Share-based compensation - officers | 2,122 | - |
| Share – based compensation – Board of Directors | 62,241 | - |
| Other benefits – officers | 5,387 | 4,391 |
| Total compensation | <u>379,189</u> | <u>132,431</u> |

The Company has added three employees in key management amounts in 2019 A balance of \$78,524 of key management compensation, of the amounts noted above, is included in accounts payable and accrued liabilities as at March 31, 2020 (December 31, 2019 - \$130,604).



SUBSEQUENT EVENTS

The Company discusses the novel coronavirus (COVID-19) under risk factors in the March 31, 2020 MD & A.

The Company received under the exclusivity contract with Drosrite International approximately US\$3,545,520 between April and July 15, 2020.

The Company received under the exclusivity contract with a US tunneling corporation approximately \$324,917 in April 2020.

On May 26, 2020, the Company completed a share debt transaction with HPQ to settle outstanding trade accounts receivable in the amount of \$395,514, for which an amount of \$30,002 was included in trade accounts receivable as at December 31, 2019, whereby the Company received 4,394,600 units at a price of \$0.09 per unit. Each unit is comprised of one common share and one common share purchase warrant. Each warrant will allow its holder to subscribe to one common share at the price of \$0.10 for a period of 36 months from the date of closing. Each share issued pursuant to the debt settlement will have a mandatory four month and one day holding period from the date of closing. This settlement is subject to the approval of the TSX Venture.

In May 2020, the Company issued 120,000 common shares upon the exercise of 120,000 stock options with an exercise price of \$0.58, and in June 2020, the Company issued 120,000 common shares upon the exercise of 120,000 stock options with an exercise price of \$0.60.

In June 2020, the Company issued 4,045,300 common shares upon the exercise of 3,745,300 share purchase warrants for total proceeds of \$3,173,419, and in July 2020, the Company issued 186,000 common shares upon the exercise of 186,000 share purchase warrants for total proceeds of \$131,100.

Between April 7, 2020 and June 30, 2020, the Company redeemed 1,285,000 of its common shares for an amount of \$964,391.

In June 2020, holders of the outstanding \$2,700,000 convertible debenture converted an amount of \$2,695,500 into common shares of the Company. The remaining balance of \$4,500 was repaid on June 30, 2020.

CRITICAL ACCOUNTING ESTIMATES, NEW AND FUTURE ACCOUNTING POLICIES AND FINANCIAL INSTRUMENTS

For a discussion of significant accounting policies, significant accounting judgments, estimates and assumptions, and financial instruments, please refer to notes 3, 4, and 24 of the annual 2019 Financial Statements.

RISK FACTORS

The global pandemic due to the novel coronavirus (COVID-19) is a situation that is constantly evolving, and the measures put in place are having multiple impacts on provincial, national and global economies. The overall effect of these events on the Company and its operations is too uncertain to be estimated at this time. The impacts will be accounted for when they are known and may be assessed.



PyroGenesis is subject to a number of risks and uncertainties that could significantly affect the Company's financial condition and performance. This list of risk factors may not be exhaustive as the Company operates in a rapidly changing business environment and new risk factors emerge from time to time. The Company cannot predict such risk factors, nor can the Company assess the impact, if any, of such risk factors or uncertainties on its business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those projected in any forward-looking statements. Accordingly, neither shareholders of the Company nor purchasers of securities of the Company should rely on forward-looking statements as a prediction of actual results. If any of these risks actually occur, the Company's business, results of operations, financial position and cash flows could be adversely affected. In any such case, the market price of the Company's common shares could decline, and investors may lose all or part of their investment.

Revenue Risks

PyroGenesis may experience delays in achieving revenues, particularly with plasma gasification projects which have a long sales cycle. Revenues may be delayed or negatively impacted by issues encountered by the Company or its clients including:

- (a) unforeseen engineering and/or environmental problems;
- (b) delays or inability to obtain required financing, licenses, permits and/or regulatory approvals;
- (c) supply interruptions and/or labour disputes;
- (d) foreign exchange fluctuations and/or collection risk; and
- (e) competition from other suppliers and/or alternative energy solutions that are less capital intensive.

There is no assurance that the business will perform as expected or that returns from the business will support the expenditures needed to develop it.

Technology Development and Manufacturing Capability Risks

PyroGenesis recently expanded into new areas of business and, as a result, many of the Company's products are at various stages of the development cycle. The Company may be unable to commercialise such products, or it may be unable to manufacture such products in a commercially viable manner. Whilst management is confident in both its technology and in its team of experienced engineers, scientists and technicians, it cannot know with certainty, which of its products will be commercialised, when such products will be commercialised, or whether such products will be able to be manufactured and distributed profitably.

Lack of Product Revenues/History of Losses

PyroGenesis has incurred losses in the majority of years since its inception. The Company's operations have not generated sufficient earnings and cash flows to date to result in consistent profitability or positive cash flow.



Additional financing and dilution

PyroGenesis may require additional financing. There can be no assurance that additional financing will be available to the Company when needed, or on terms acceptable to the Company. PyroGenesis' inability to raise financing to support ongoing operations or to fund capital expenditures could limit the Company's growth and may have a material adverse effect upon the Company.

The Company does not exclude raising additional funds by equity financing. In addition, at July 14, 2020, 6,810,000 stock options are currently issued and outstanding, together with 9,223,093 share purchase warrants and a \$903,000 convertible loan. The exercise of stock options and/or warrants, together with the conversion of the loan, as well as any new equity financings, represents dilution factors for present and future shareholders.

Sales Cycle and Fixed Price Contracts

PyroGenesis sales cycle is long and the signing of new contracts is subject to delay, over which the Company has little control. The Company also enters into sales contracts with fixed pricing, which may be impacted by changes over the period of implementation. There is no assurance that delays or problems in fulfilling contracts with clients will not adversely affect the Company's activities, operating results or financial position.

Reliance on Technology

PyroGenesis will depend upon continuous improvements in technology to meet client demands in respect of performance and cost, and to explore additional business opportunities. There can be no assurance that the Company will be successful in its efforts in this regard or that it will have the resources available to meet this demand. Whilst management anticipates that the research and development will allow the Company to explore additional business opportunities, there is no guarantee that such business opportunities will be presented or realised. The commercial advantage of the Company will depend to a significant extent on the intellectual property and proprietary technology of PyroGenesis and the ability of the Company to prevent others from copying such proprietary technologies. PyroGenesis currently relies on intellectual property rights and other contractual or proprietary rights, including (without limitation) copyright, trade secrets, confidential procedures, contractual provisions, licenses and patents, to protect its proprietary technology. PyroGenesis may have to engage in litigation in order to protect its patents or other intellectual property rights, or to determine the validity or scope of the proprietary rights of others. This type of litigation can be expensive and time consuming, regardless of whether or not the Company is successful. PyroGenesis may seek patents or other similar protections in respect of particular technology; however, there can be no assurance that any future patent applications will actually result in issued patents, or that, even if patents are issued, they will be of sufficient scope or strength to provide meaningful protection or any commercial advantage to the Company. Moreover, the process of seeking patent protection can itself be long and expensive. In the meantime, competitors may develop technologies that are similar or superior to PyroGenesis' technology or design around the patents owned by the Company, thereby adversely affecting the Company's competitive advantage in one or more of its areas of business. Despite the efforts of the Company, its intellectual property rights may be invalidated, circumvented, challenged, infringed or required to be licensed to others. It cannot be assured that any steps the Company may take to protect its intellectual property rights and other rights to such proprietary technologies that are central to the Company's operations will prevent misappropriation or infringement of its technology.



Changes to Contracts

PyroGenesis is dependent upon its ability to establish and develop new relationships and to build on existing relationships with current clients. The Company cannot provide assurance that it will be successful in maintaining or advancing its relationships with current clients or procure additional clients. In addition, PyroGenesis cannot provide assurance that the U.S. Military and/or other military clients will continue to provide the Company with business. Sales to governments and governmental entities are subject to specific additional risks, such as delays in funding, termination of contracts or sub-contracts at the convenience of the government, termination, reduction or modification of contracts or sub-contracts in the event of changes in the government's policies or as a result of budgetary constraints and increased or unexpected costs resulting in losses or reduced profits under fixed price contracts.

Foreign Exchange Exposure

PyroGenesis' products and services are increasingly being sold in markets outside of Canada, whilst most of its operating expenses and capital expenditures are denominated in Canadian dollars. As a result, the Company is exposed to fluctuations in the foreign exchange rates between Canadian dollar and the currency in which a particular sale is transacted, which may result in foreign exchange losses that could affect earnings.

Competition

The industry is competitive and PyroGenesis competes with a substantial number of companies which have greater technical and financial resources. There can be no assurance that such competitors will not substantially increase the resources devoted to the development and marketing of products and services that compete with those of the Company or that new or existing competitors will not enter the various markets in which PyroGenesis is active. There can be no assurance that competitors will not develop new and unknown technologies with which the Company may have difficulty competing. Furthermore, failure to remain cost competitive may result in PyroGenesis losing business to its competitors.

Management and Key Personnel

PyroGenesis depends on the skills and experience of its management team and other key employees. The Company relies heavily on its ability to attract and retain highly-skilled personnel in a competitive environment. PyroGenesis may be unable to recruit, retain, and motivate highly-skilled employees in order to assist the Company's business, especially activities that are essential to the success of the Company. Failure to recruit and retain highly-skilled employees may adversely affect PyroGenesis' business, financial condition and results of operations.

Implementation of a strategic plan

PyroGenesis' commercial strategy aims to leverage its products, consumables, and services whilst focusing on the resolution of problems within niche markets within the industries served by the Company. There can be no assurances as to the success of the Company's strategic plan, which should be considered under the risks perspective and difficulties frequently encountered by a developing business.



Adverse Decisions of Sovereign Governments

PyroGenesis conducts an increasing portion of its business internationally. There is no assurance that any sovereign government, including Canada's, will not establish laws or regulations that will not be detrimental to the Company's interests or that, as a foreign corporation, it will continue to have access to the regulatory agencies in other countries. Governments have, from time to time, established foreign exchange controls, which could have a material adverse effect on the Company's business, financial condition and results of operations.

Governmental Regulation

PyroGenesis is subject to a variety of federal, provincial, state, local and international laws and regulations relating namely to the environment, health and safety, export controls, currency exchange, labour and employment and taxation. These laws and regulations are complex, change frequently and have tended to become more stringent over time. Failure to comply with these laws and regulations may result in a variety of administrative, civil and criminal enforcement measures, including assessment of monetary penalties, imposition of remedial requirements and issuance of injunctions as to future compliance. The Company may be subject to compliance audits by regulatory authorities in the various countries in which it operates.

Environmental Liability

PyroGenesis is subject to various environmental laws and regulations enacted in the jurisdictions in which it operates, which govern the manufacturing, processing, importation, transportation, handling and disposal of certain materials used in the Company's operations. Management believes that it has adequate procedures in place to address compliance with current environmental laws and regulations. Furthermore, management monitors the Company's practices concerning the handling of environmentally hazardous materials. However, there can be no assurance that the Company's procedures will prevent environmental damage occurring from spills of materials handled by the Company or that such damage has not already occurred. On occasion, substantial liabilities to third parties may be incurred. The Company may have the benefit of insurance maintained by it or the operator, however, the Company may become liable for damages against which it cannot adequately insure or against which it may elect not to insure because of high costs or other reasons. The Company's clients are subject to similar environmental laws and regulations, as well as limits on emissions to the air and discharges into surface and sub-surface waters. While regulatory developments that may follow in subsequent years could have the effect of reducing industry activity, the Company cannot predict the nature of the restrictions that may be imposed. The Company may be required to increase operating expenses or capital expenditures in order to comply with any new restrictions or regulations.

Product Liability and Other Lawsuits

PyroGenesis is subject to a variety of potential product liabilities claims and other lawsuits related with its operations, including liabilities and expenses associated with product defects. The Company maintains product liability and other insurance coverage that management believes is generally in accordance with the market practice in its industry, but there can be no assurance that the Company will always be adequately insured against all such potential liabilities.



Market Liquidity

The market price for the common shares of the Company could be subject to wide fluctuations. Factors such as the announcement of significant contracts, technological innovations, new commercial products, patents, a change in regulations, quarterly financial results, future sales of common shares by the Company or current shareholders, and many other factors could have considerable repercussions on the price of the Company's common shares. In addition, the financial markets may experience significant price and value fluctuations that affect the market prices of equity securities of companies that sometimes are unrelated to the operating performance of these companies. Broad market fluctuations, as well as economic conditions generally may adversely affect the market price of the Company's common shares.

Information systems disruptions

The Company's business depends on the efficient and uninterrupted operation of its computer and communications software, hardware systems, and its other information technology. If such systems were to fail, or the Company was unable to successfully expand the capacity of these systems or integrate new technologies into its existing systems, its operations and financial results could be adversely affected.

OUTLOOK

Percent complete revenue recognition in our major projects, which is the revenue recognition method we are mandated to follow by GAAP, is such that it is not linear, but exponential, and as such Q1 may not have reflected the results one might have expected given recent announcements. However, using this same revenue recognition method we can safely provide guidance for Q2 2020, and for the year ending December 31st, 2020: We expect that Q2 and the six months ending June 30, 2020 will be profitable as will year end results. As such, management has modified several notes in the financials, for the first time since inception, to reflect this outlook.

Any discussion regarding the OUTLOOK of the company would be remiss if it did not address the continued increase in the Company's market capitalization and the implications that has for the future.

Without a doubt the Company's market capitalization suffered, as did many other companies, in the general Covid-19 market meltdown at the end of March 2020. However, PyroGenesis soon broke from the pack with the issuance of a material press release on March 24th, 2020.

Management believes that its breaking from the ranks caught the attention of investors, fund managers, and money managers who all now had the time during the Covid-19 lockdown to fully analyze the complicated story that is PyroGenesis. Management does not see any reason why this interest would abate anytime soon. To the contrary, Management has reason to believe that interest in the Company will only increase over the foreseeable future. As such, Management has decided that several strategies that have been articulated in the past (up listings, spinoffs) can now be accelerated as many of the impediments to moving quickly have been removed, and have taken steps to do so.



Having a larger market capitalization has also helped in discussions with potential customers who take comfort from the possibility that a higher market capitalization may translate into easier access to capital. For the record, there is no intention at this time to raise capital for working capital purposes.

If 2018 was the year in which PyroGenesis successfully positioned each of its commercial business lines by strategically partnering with multi-billion-dollar entities, and 2019 was the year that saw the appropriate personnel and infrastructure being put in place while building upon the success of 2018, then 2020 is without a doubt the year that the long awaited breakout, which began in the second half of 2019, takes place; it is in fact already upon us:

To date during 2020 PyroGenesis has:

- 1) received significant payments under the \$22MM contract with DROSRITE™ International thereby validating announcements made during 2019,
- 2) established a relationship with a US based tunneling company (contracts and payments ongoing),
- 3) Established itself in the iron ore pelletization industry as a potential supplier of torches geared to replacing existing burners and thereby reducing GHGs. Interest is also spilling over into other industries with GHG reduction targets,
- 4) Established a relationship with an OEM in North America with the intent to eventually supply powders for their 3D printing needs. This augments our relationship with Aubert & Duval, while at the same time de-risking our dependence on them,
- 5) retired the \$3MM convertible debenture in full,
- 6) bought back approximately 1.2 Million shares under the existing Normal Course Issuer Bid,
- 7) increased Company's investment in HPQ, who has subsequently also experienced a significant increase in market capitalization,
- 8) further benefited from early conversions of warrants maturing in 2021 of over \$3MM.

The Company has booked a significant backlog of signed contracts (in excess of \$30MM; 2019 Revenues approx. \$5MM) which, when taking the eagerly awaited US Navy contract into account, will increase to over \$40MM. This provides a solid cornerstone upon which PyroGenesis can:

- a) continue to build on the recent successes with the Company's DROSRITE™ offering
- b) Leverage off of the recent successes with the Company's torch offerings to (i) the iron ore pelletization industry, and (ii) a tunneling client.



- c) Accelerate activities with Aubert & Duval in the Additive Manufacturing sector as well as HPQ in the Mining and Metallurgical sector, both of which did not progress as fast as management would have liked in 2019. Significant attention will be placed on both these activities in 2020.

Specifically, with Aubert & Duval the goal will be to complete the integration of the cutting-edge advances PyroGenesis has made to the powder production process.

With respect to HPQ, the goal would be to accelerate the game changing PUREVAP™ family of processes which we are developing for HPQ, namely:

- The PUREVAP™ “Quartz Reduction Reactors” (QRR), an innovative process (patent pending), which will permit the one step transformation of quartz (SiO₂) into high purity silicon (Si) at reduced costs, energy input, and carbon footprint that will propagate its considerable renewable energy potential; and
- The PUREVAP™ Nano Silicon Reactor (NSiR), a new proprietary process that use PUREVAP™ QRR silicon (Si) as feedstock, to make spherical silicon nanopowders and nanowires;

As at April 1st, 2020, the Company has approximately \$10MM of in-the-money warrants and options expiring in 2020 and 2021. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial obligations) which is not reflected as an asset on the balance sheet.

All in all, 2020 can now be described as the year that we have been expecting for some time.

**FORM 52-109FV2
CERTIFICATION OF INTERIM FILINGS
VENTURE ISSUER BASIC CERTIFICATE**

I, P. Peter Pascali, President and CEO of PyroGenesis Canada Inc., certify the following:

1. **Review:** I have reviewed the interim financial statements and interim MD&A (together, the “interim filings”) of PyroGenesis Canada Inc. (the “issuer”) for the interim period ended March 31st, 2020.
2. **No misrepresentations:** Based on my knowledge, having exercised reasonable diligence, the interim filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, with respect to the period covered by the interim filings.
3. **Fair presentation:** Based on my knowledge, having exercised reasonable diligence, the interim financial statements together with the other financial information included in the interim filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date of and for the periods presented in the interim filings.

Date: **July 14th, 2020**

/s/ P. Peter Pascali

P. Peter Pascali

President and Chief Executive Officer

NOTE TO READER

In contrast to the certificate required for non-venture issuers under National Instrument 52-109 Certification of Disclosure in Issuers’ Annual and Interim Filings (NI 52-109), this Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures (DC&P) and internal control over financial reporting (ICFR), as defined in NI 52-109. In particular, the certifying officers filing this certificate are not making any representations relating to the establishment and maintenance of

- i. controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the issuer in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and
- ii. a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer’s GAAP.

The issuer’s certifying officers are responsible for ensuring that processes are in place to provide them with sufficient knowledge to support the representations they are making in this certificate. Investors should be aware that inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost effective basis DC&P and ICFR as defined in NI 52-109 may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.

**FORM 52-109FV2
CERTIFICATION OF INTERIM FILINGS
VENTURE ISSUER BASIC CERTIFICATE**

I, Michael Blank, Chief Financial Officer of PyroGenesis Canada Inc., certify the following:

1. **Review:** I have reviewed the interim financial statements and interim MD&A (together, the “interim filings”) of PyroGenesis Canada Inc. (the “issuer”) for the interim period ended March 31st, 2020.
2. **No misrepresentations:** Based on my knowledge, having exercised reasonable diligence, the interim filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, with respect to the period covered by the interim filings.
3. **Fair presentation:** Based on my knowledge, having exercised reasonable diligence, the interim financial statements together with the other financial information included in the interim filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date of and for the periods presented in the interim filings.

Date: **July 14th, 2020**

/s/ **Michael Blank**

Michael Blank
Chief Financial Officer

NOTE TO READER

In contrast to the certificate required for non-venture issuers under National Instrument 52-109 Certification of Disclosure in Issuers’ Annual and Interim Filings (NI 52-109), this Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures (DC&P) and internal control over financial reporting (ICFR), as defined in NI 52-109. In particular, the certifying officers filing this certificate are not making any representations relating to the establishment and maintenance of

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PyroGenesis Announces Grants of Incentive Stock Options

MONTREAL, Quebec (GlobeNewswire – July 16th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, announced today that as a result of the Company's annual compensation review, its Board of Directors has approved the grant of up to 2,460,000 incentive stock options (each an "Option") to the directors and employees of the Company.

PyroGenesis has granted on July 16th, 2020, an aggregate of 1,700,000 Options to its directors entitling them to purchase an aggregate of 1,700,000 Common Shares of the Corporation, at a price of \$4.41 per common share. The 1,700,000 Options will vest as follows: 25 percent at the date of the grant, 25 percent at the first anniversary of the date of grant, 25 percent at the second anniversary of the date of grant, and 25 percent at the third anniversary of the date of grant.

PyroGenesis has also granted an aggregate of 760,000 Options to employees entitling them to purchase an aggregate of 760,000 Common Shares of the Corporation, at a price of \$4.41 per common share. Of these Options, 660,000 will vest as follows: 50 percent as of the date of grant and 50 percent at the first anniversary of the date of grant. The remaining 100,000 will vest as follows: 25 percent as of the date of grant, 25 percent at the first anniversary of the date of grant, 25 percent at the second anniversary of the date of grant and 25 percent at the third anniversary of the date of grant.

All Option grants disclosed above are exercisable for a period of five years and have been granted in accordance with the Company's Stock Option Plan. The grant remains subject to regulatory and Exchange approval.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace (Ticker Symbol: PYRNF). For more information, please visit www.pyrogenesis.com.

Classified as Highly Confidential

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development,

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>

Classified as Highly Confidential



**PyroGenesis Confirms Total Receipts of over \$7.5MM in Payments
Under \$25M+ DROSRITE™ Contract**

MONTREAL, QUEBEC (GlobeNewswire – July 23rd, 2020) - PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to confirm today that, in response to additional inquiries with respect to the subject matter, payments totaling over \$7.5MM have been received to date under the exclusive contract with Drosrite International LLC ("DI").

"We decided to, once again, confirm the total payments received to date under the \$25MM+ DROSRITE™ contract due to a large number of inquiries received from shareholders and investors," said Mr. P. Peter Pascali, President and CEO of PyroGenesis. "It should also be noted that an additional payment of over \$2.5MM is expected in the next few weeks. All these payments are being made based on previously agreed to milestones and all are being paid on time. In fact, none of our contracts have been materially affected by COVID-19 and are all progressing as expected."

About Drosrite International LLC

DI is a US based private company duly constituted and existing under the laws of the State of Delaware, providing state-of-the-art waste management technologies to the aluminum industry. DI is duly licensed by PyroGenesis to manufacture, market, sell and distribute DROSRITE™ systems and technology to the Kingdom of Saudi Arabia, and certain other countries in the Middle East, on an exclusive basis. All DROSRITE™ systems supplied by DI are manufactured in the USA.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

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Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>

PyroGenesis Canada Inc.

**Condensed
Interim Financial Statements**
Three and the six months ended June 30, 2020 and 2019

(Unaudited)

CONDENSED INTERIM FINANCIAL STATEMENTS

The accompanying unaudited financial statements of PyroGenesis Canada Inc. have been prepared by and are the responsibility of the Company's management. The Company's independent auditor has not performed a review of these unaudited condensed interim financial statements for the period ended June 30, 2020

PyroGenesis Canada Inc.

Condensed Interim Statements of Financial Position
(unaudited)

| | June 30, 2020 | December 31, 2019 |
|--|-------------------|--------------------|
| | \$ | \$ |
| Assets | | |
| <i>Current assets</i> | | |
| Cash | 1,567,777 | 34,431 |
| Accounts receivable [note 5] | 367,169 | 210,540 |
| Costs and profits in excess of billings on uncompleted contracts and projects [note 6] | 205,985 | 122,980 |
| Investment tax credits and government wage subsidy [note 7] | 875,757 | 709,395 |
| Deposits | 456,117 | 150,322 |
| Prepaid expenses | 45,555 | 96,886 |
| Total current assets | 3,518,360 | 1,324,554 |
| <i>Non-current assets</i> | | |
| Inventories | 19,313 | 10,068 |
| Deposits | 181,870 | 178,105 |
| Strategic investments [note 8] | 7,472,309 | 1,609,354 |
| Property and equipment [note 9] | 2,148,785 | 1,977,481 |
| Right of use Assets | 3,565,199 | 3,742,769 |
| Intangible assets | 907,410 | 736,898 |
| Total assets | 17,813,246 | 9,579,229 |
| Liabilities | | |
| <i>Current liabilities</i> | | |
| Accounts payable and accrued liabilities [note 10] | 4,116,398 | 4,913,155 |
| Billings in excess of costs and profits on uncompleted contracts [note 11] | 5,570,612 | 3,084,657 |
| Term loans [note 12] | 332,137 | 496,000 |
| Promissory notes payable to the controlling shareholder and CEO | - | 284,956 |
| Current portion of lease liabilities | 146,014 | 139,529 |
| Convertible debentures [note 13] | 816,569 | 2,898,358 |
| Total current liabilities | 10,981,730 | 11,816,655 |
| <i>Non-current liabilities</i> | | |
| Long-term debt | - | - |
| Lease Liabilities | 3,770,740 | 3,845,497 |
| Convertible debentures | - | - |
| Total liabilities | 14,752,470 | 15,662,152 |
| Shareholders' deficiency [note 14] | | |
| Common shares and warrants | 53,839,058 | 47,073,243 |
| Contributed surplus | 6,427,978 | 6,679,730 |
| Equity portion of convertible debentures [note 13] | 98,422 | 401,760 |
| Deficit | (57,304,682) | (60,237,656) |
| Total shareholders' equity (deficiency) | 3,060,776 | (6,082,923) |
| Total liabilities and shareholders' deficiency | 17,813,246 | 9,579,229 |

Going concern disclosure, related party transactions, contingent liabilities, subsequent events [notes 1(b), 19, 21, 24] Approved on behalf of the Board:

[Signed by P. Peter Pascali], P. Peter Pascali

[Signed by Michael Blank] Michael Blank

PyroGenesis Canada Inc.

Condensed interim Statements of Comprehensive Income (Loss)
(unaudited)

| | Three months ended June 30, | | Six months ended June 30, | |
|---|------------------------------------|-------------|----------------------------------|-------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Revenues [note 4] | 2,128,454 | 913,769 | 2,847,362 | 1,650,212 |
| Cost of sales and services [note 16] | 861,862 | 728,420 | 1,313,356 | 1,388,191 |
| Gross Profit | 1,266,592 | 185,349 | 1,534,006 | 262,021 |
| Expenses (income) | | | | |
| Selling, general and administrative [note 16] | 1,664,976 | 1,611,363 | 2,941,566 | 2,925,882 |
| Research and development | (3,867) | 212,645 | 19,221 | 308,420 |
| Net finance costs [note 17] | 276,928 | 275,419 | 509,665 | 526,916 |
| | 1,938,037 | 2,099,427 | 3,470,452 | 3,761,218 |
| Net loss from operations | (671,445) | (1,914,078) | (1,936,446) | (3,499,197) |
| Changes in fair market value of strategic investments | 5,899,465 | (339,312) | 5,407,441 | 366,883 |
| Net comprehensive income (loss) | 5,228,020 | (2,253,390) | 3,470,995 | (3,132,314) |
| Earnings (loss) per share [note 18] | | | | |
| Basic | 0.04 | (0.02) | 0.02 | (0.02) |
| Diluted | 0.03 | (0.02) | 0.02 | (0.02) |

The accompanying notes form an integral part of the condensed interim financial statements.

Condensed Interim Statements of Changes in Shareholders' Equity (Deficiency)
 (unaudited)

| | Number of Class A common shares | Class A common shares and warrants | Contributed Surplus | Equity portion of convertible debentures | Deficit | Total |
|---|------------------------------------|--|------------------------|--|---------------------|--------------------|
| | | \$ | \$ | \$ | \$ | \$ |
| Balance - December 31, 2019 | 141,303,451 | 47,073,243 | 6,679,730 | 401,760 | (60,237,656) | (6,082,923) |
| Shares issued upon exercise of stock options | 1,728,000 | 975,035 | (387,035) | - | - | 588,000 |
| Shares issued upon exercise of share purchase warrants | 4,030,300 | 3,160,669 | - | - | - | 3,160,669 |
| Conversion of debentures into shares | 3,369,375 | 3,056,481 | - | (360,981) | - | 2,695,500 |
| Shares purchased for cancellation | (1,285,000) | (426,370) | - | - | (538,021) | (964,391) |
| Equity component of convertible debentures [note 17] | - | - | 40,779 | (40,779) | - | - |
| Share-based payments | - | - | 94,504 | - | - | 94,504 |
| Equity component of convertible debentures issued | - | - | - | 98,422 | - | 98,422 |
| Net income and comprehensive income | - | - | - | - | 3,470,995 | 3,470,995 |
| Balance – June 30, 2020 | 149,146,126 | 53,839,058 | 6,427,978 | 98,422 | (57,304,682) | 3,060,776 |
| Balance - December 31, 2018 | 133,501,050 | 42,863,456 | 6,795,274 | 401,760 | (51,066,540) | (1,006,050) |
| Cash received on private placement, net of issuance costs | 6,118,400 | 3,465,477 | - | - | - | 3,465,477 |
| Share-based payments | - | - | 62,068 | - | - | 62,068 |
| Below market element of short-term promissory notes | - | - | 12,567 | - | - | 12,567 |
| Net loss and comprehensive loss | - | - | - | - | (3,132,314) | (3,132,314) |
| Balance – June 30, 2019 | 139,619,450 | 46,328,933 | 6,869,909 | 401,760 | (54,198,854) | (598,252) |

The accompanying notes form an integral part of the condensed interim financial statements.

PyroGenesis Canada Inc.

Condensed Interim Statements of Cash Flows
(unaudited)

| | Three months ended June 30, | | Six months ended June 30, | |
|---|-----------------------------|------------------|---------------------------|------------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Cash flows provided by (used in) | | | | |
| Operating activities | | | | |
| Net income loss | 5,228,019 | (2,253,390) | 3,470,992 | (3,132,314) |
| Adjustments for: | | | | |
| Share-based payments | 23,637 | 27,584 | 94,504 | 62,068 |
| Depreciation on property and equipment | 10,057 | 48,984 | 20,113 | 100,843 |
| Depreciation of right-of-use assets | 88,205 | 109,376 | 177,570 | 215,338 |
| Amortization of intangibles assets | 6,813 | 4,779 | 13,626 | 9,557 |
| Finance costs | 276,929 | 275,419 | 509,665 | 526,916 |
| Change in fair value of investments | (5,899,465) | 339,313 | (5,407,441) | (366,883) |
| | (265,805) | (1,447,935) | (1,120,971) | (2,584,475) |
| Net change in non-cash operating working capital items <i>[note 15]</i> | (753,741) | (522,373) | 368,493 | 632,421 |
| | (1,019,546) | (1,970,308) | (752,478) | (1,952,054) |
| Investing activities | | | | |
| Variation of inventories | - | 2,046 | - | (16,721) |
| Purchase of property and equipment <i>[note 9]</i> | (104,455) | (216,723) | (104,455) | (332,632) |
| Additions to intangible assets | (15,611) | (146,667) | (15,611) | (146,667) |
| Purchase of investments | (60,000) | - | (60,000) | - |
| Variation of deposits | 5,785 | 4,490 | (3,765) | 10,749 |
| | (174,281) | (356,854) | (183,831) | (485,271) |
| Financing activities | | | | |
| Repayment of R&D loans <i>[note 12]</i> | (214,000) | - | (214,000) | (247,200) |
| Repayment of convertible debentures | (4,500) | - | (358,500) | - |
| Repayment of lease liabilities | (33,654) | (53,225) | (68,272) | (105,719) |
| Repayment of promissory notes payables to the controlling shareholder and CEO | (295,000) | - | (295,000) | - |
| Proceeds from loans | - | 329,200 | - | 329,200 |
| Proceeds from convertible loans | - | - | 903,000 | - |
| Proceeds from issuance of shares – Private placement <i>[note 14]</i> | - | 3,492,180 | - | 3,554,472 |
| Proceeds from issuance of shares upon exercise of warrants | 3,160,669 | - | 3,160,669 | - |
| Proceeds from issuance of shares upon exercise of stock options | 141,600 | - | 588,000 | - |
| Shares purchased for cancellation | (964,391) | - | (964,391) | - |
| Share issue costs <i>[note 14]</i> | - | (88,995) | - | (88,995) |
| Interest paid | (168,536) | (200,675) | (281,851) | (356,241) |
| | 1,622,188 | 3,528,603 | 2,469,655 | 3,290,712 |
| Net increase (decrease) in cash | 428,361 | 1,151,323 | 1,533,346 | 648,192 |
| Cash - beginning of period | 1,139,416 | 141,850 | 34,431 | 644,981 |
| Cash - end of period | 1,567,777 | 1,293,173 | 1,567,777 | 1,293,173 |
| Supplemental cash flow disclosure | | | | |
| Non-cash transactions: | | | | |
| Purchase of property and equipment included in accounts payables | 86,962 | 11,325 | - | 50,602 |
| Purchase of intangibles assets included in accounts payables | 168,527 | 35,362 | - | 35,362 |
| Interest included in accounts payables | - | - | - | - |

The accompanying notes form an integral part of the condensed interim financial statements

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

1. Nature of operations and going concern disclosure

(a) Nature of operations

PyroGenesis Canada Inc. (the "Company"), incorporated under the laws of the Canada Business Corporations Act, was formed on July 11, 2011. The Company owns patents of advanced waste treatment systems technology and designs, develops, manufactures and commercialises advanced plasma processes and systems. The Company is domiciled at 1744 William Street, Suite 200, Montreal, Quebec. The Company is publicly traded on the TSX Venture Exchange under the Symbol "PYR". During 2015, the Company received approval to trade on the OTCQB in the USA under the symbol "PYRNF".

(b) Going concern

These condensed interim financial statements have been prepared on the going concern basis, which presumes that the Company will be able to realize its assets and discharge its liabilities in the normal course of business for the foreseeable future.

2. Basis of preparation

(a) Statement of compliance

These condensed interim financial statements have been prepared in accordance with International Financial Reporting Standard ("IFRS") as issued by the International Accounting Standards Board ("IASB"). These condensed interim financial statements do not include all of the necessary information required for full annual financial statements in accordance with IFRS and should be read in conjunction with the Company's audited financial statements for the year ended December 31, 2019.

These condensed interim financial statements were approved and authorized for issuance by the Board of Directors on July 28, 2020.

(b) Functional and presentation currency

These condensed interim financial statements are presented in Canadian dollars, which is the Company's functional currency.

(c) Basis of measurement

These condensed interim financial statements have been prepared on the historical cost basis except for the investments which are accounted for at fair value.

3. Significant accounting judgments, estimates and assumptions

The significant judgments, estimates and assumptions applied by the Company's in these condensed interim financial statements are the same as those applied by the Company in its audited annual financial statements as at and for the year ended December 31, 2019.

PyroGenesis Canada Inc.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

4. Revenues

During the six months ended June 30, 2019, the Company's revenues from long-term contracts and sales of goods are generated primarily from DROSRITE™ related sales of \$1,794,336 (2019 - \$Nil), PUREVAP™ related sales of \$43,058 (2019 - \$239,836), Torch related sales of \$705,022 (2019 - \$297,235), and the development and support related to systems supplied to the U.S. Military \$61,039 (2019 - \$455,427).

Refer to note 22 for sales by geographic area and by product line.

Transaction price allocated to remaining performance obligations

As at June 30, 2020, revenue expected to be recognized in the future related to performance obligations that are unsatisfied (or partially satisfied) at the reporting date is \$28,000,000. Revenue will be recognized as the Company satisfies its performance obligations under long-term contracts, which is expected to occur over the next 3 years.

5. Accounts receivable

Details of accounts receivable were as follows:

| | <u>June 30, 2020</u> | <u>December 31, 2019</u> |
|---------------------------------|----------------------|--------------------------|
| | \$ | \$ |
| 1 – 30 days | 209,903 | 71,423 |
| 31 – 60 days | - | 9,483 |
| 61 – 90 days | 69,757 | 17,753 |
| Greater than 90 days | 67,563 | 5,469 |
| Total trade accounts receivable | 347,223 | 104,128 |
| Other receivables | 19,946 | 106,412 |
| | <u>367,169</u> | <u>210,540</u> |

There is no allowance for expected credit losses recorded as at June 30, 2020 and December 31, 2019.

6. Costs and profits in excess of billings on uncompleted contracts and projects

As at June 30, 2020, the Company had seven uncompleted contracts and projects with total billings of \$234,654 which were less than total costs incurred and had recognized cumulative revenue of \$440,639 since those contracts and projects began. This compares with five contracts with total billings of \$99,594 which were less than total costs incurred and had recognized cumulative revenue of \$223,601 as at December 31, 2019.

Changes in costs and profits in excess of billings on uncompleted contracts during the three and the six months ended June 30, 2020 are explained by \$7,984, and \$29,194, recognized at the beginning of the year being transferred to accounts receivable, and by \$46,064, and \$112,200 resulting from changes in the measure of progress.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

7. Investment tax credits and government wage subsidy

As at June 30, 2020 investment tax credits receivable related to qualifying projects from the provincial government were \$522,119 (2019 - \$709,395). The Company also recorded during the six months ended June 30, 2020 an amount of \$353,638 (2019 - \$Nil) as a government subsidy receivable from Revenue Canada under the CEWS program.

8. Strategic investments

| | <u>June 30, 2020</u> | <u>December 31, 2019</u> |
|---|-------------------------|--------------------------|
| | \$ | \$ |
| Beauce Gold Fields (“BGF”) shares – level 1 | 138,482 | 133,354 |
| HPQ Silicon Resources Inc. (“HPQ”) shares - level 1 | 4,929,143 | 1,476,000 |
| HPQ warrants – level 3 | 2,404,684 | - |
| | <u>7,472,309</u> | <u>1,609,354</u> |

Investments in HPQ (TSXV: HPQ) comprise 24,044,600 common shares (18,450,000 - 2019) and 23,344,600 warrants (17,750,000 - 2019). 1,500,000 warrants have an exercise price of \$0.135 with an expiry date of November 21, 2020, 16,250,000 warrants have an exercise price of \$0.155 with an expiry date of August 21, 2021, 1,200,000 warrants have an exercise price of \$0.10 with an expiry date of April 28, 2023, and the remaining 4,394,600 warrants have an exercise price of \$0.10 with an expiry date of May 25, 2023. The fair value of the warrants was estimated using the black-Sholes option pricing model.

Investment in BGF (TSXV: BGF) consists of 1,025,794 of common shares. The 1,025,794 common shares of BGF were received in December 2018 as dividend in kind from a spinoff of HPQ.

16,250,000 common shares of HPQ and 16,250,000 warrants of HPQ were purchased in cash (\$1,950,000) in 2018. 2,500,000 common shares and 2,500,000 warrants were received in 2017 in lieu of payment of services rendered by the Company to HPQ. At the transaction dates, these non-monetary transactions were measured based on the fair value of the common shares and warrants received for a total amount of \$320,000. 1,200,000 and 1,200,000 warrants of HPQ were purchased in cash (\$60,000) in April 2020. 4,394,600 common shares of HPQ and 4,394,600 warrants of HPQ were received in May 2020 in lieu of payment of services rendered by the Company to HPQ. At the transaction dates, these non-monetary transactions were measured based on the fair value of the common shares and warrants received for a total amount of \$395,414.

A gain from initial recognition of the warrants of \$427,709 (\$56,780 – 2019) has been deferred off balance sheet until realised.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

8. Strategic investments (continued)

| | ("BGF") shares – level 1 | | HPQ shares – level 1 | | ("HPQ") Warrants - level 3 | |
|----------------------------|--------------------------|---------|----------------------|-----------|----------------------------|-----------|
| | Quantity | \$ | Quantity | \$ | Quantity | \$ |
| Balance, December 31, 2018 | 1,025,794 | 102,579 | 21,350,000 | 1,281,000 | 18,750,000 | 310,537 |
| Disposals | - | - | (2,900,000) | (261,000) | - | - |
| Expired warrants | - | - | - | - | (1,000,000) | - |
| Change in the fair value | - | 30,775 | - | 456,000 | - | (310,537) |
| Balance, December 31, 2019 | 1,025,794 | 133,354 | 18,450,000 | 1,476,000 | 17,750,000 | - |
| Additions | - | - | 5,594,600 | 455,414 | 5,594,600 | - |
| Change in the fair value | - | 5,128 | - | 2,997,729 | - | 2,404,684 |
| Balance, June 30, 2020 | 1,025,794 | 138,482 | 24,044,600 | 4,929,143 | 23,344,600 | 2,404,684 |

9. Property and equipment

| | Computer equipment | Machinery and equipment | Automobile | Leasehold improvements | Equipment under construction | Total |
|---|--------------------|-------------------------|---------------|------------------------|------------------------------|------------------|
| | \$ | \$ | \$ | \$ | \$ | \$ |
| Cost | | | | | | |
| Balance at December 31, 2018 | 549,864 | 1,621,899 | 21,912 | 904,512 | 2,168,136 | 5,266,323 |
| Additions | 21,654 | - | - | 9,539 | 922,917 | 954,110 |
| Reclass to Equipment under construction | - | - | - | (749,045) | 749,045 | - |
| Reclass to right-of-use assets | (49,530) | - | - | - | - | (49,530) |
| Impairment | - | - | - | - | (2,168,136) | (2,168,136) |
| Balance at December 31, 2019 | 521,988 | 1,621,899 | 21,912 | 165,006 | 1,671,962 | 4,002,767 |
| Additions | 18,364 | - | - | - | 173,053 | 191,417 |
| Balance at June 30, 2020 | 540,352 | 1,621,899 | 21,912 | 165,006 | 1,845,015 | 4,194,184 |
| Accumulated depreciation | | | | | | |
| Balance at December 31, 2018 | 479,802 | 1,371,542 | 17,440 | 89,236 | 105,421 | 2,063,441 |
| Depreciation | 32,368 | 50,071 | 1,342 | 3,749 | 81,305 | 168,835 |
| Reclass to right-of-use assets | (20,264) | - | - | - | - | (20,264) |
| Impairment | - | - | - | - | (186,726) | (186,726) |
| Balance at December 31, 2019 | 491,906 | 1,421,613 | 18,782 | 92,985 | - | 2,025,286 |
| Depreciation | 8,074 | 10,014 | 224 | 1,801 | - | 20,113 |
| Balance at June 30, 2020 | 499,980 | 1,431,627 | 19,006 | 94,786 | - | 2,045,399 |
| Carrying amounts | | | | | | |
| Balance at December 31, 2019 | 30,082 | 200,286 | 3,130 | 72,021 | 1,671,962 | 1,977,481 |
| Balance at June 30, 2020 | 40,372 | 190,272 | 2,906 | 70,220 | 1,845,015 | 2,148,785 |

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

10. Accounts payable and accrued liabilities

| | <u>June 30, 2020</u> | <u>December 31, 2019</u> |
|---|----------------------|--------------------------|
| | \$ | \$ |
| Accounts payable | 2,057,256 | 2,780,628 |
| Accrued liabilities | 1,921,658 | 1,866,822 |
| Accounts payable to the controlling shareholder | 137,484 | 214,470 |
| Accounts payable to a trust beneficially owned by the controlling shareholder | - | 51,234 |
| | <u>4,116,398</u> | <u>4,913,155</u> |

11. Billings in excess of costs and profits on uncompleted contracts

The amount to date of costs incurred and recognized profits less recognized losses for construction projects in progress amounted to \$6,562,406 (2019 - \$4,612,082).

Payments to date received were \$10,183,018 and \$1,950,000 of deposits on contract in progress (2019 - \$5,746,739 in cash and \$1,950,000 of other assets).

Changes in billings in excess of costs and profits on uncompleted contracts during the three and six months ended June 30, 2020 are explained by \$24,895 and \$44,370 recognized as revenue, and an increase of \$1,019,528 and \$2,530,325 resulting from cash received excluding amounts recognized as revenue.

12. Term loans

| | Other Term Loans ¹ | 2019 SR&ED Tax Credit loan ² | 2018 SR&ED Tax Credit loan ³ | 2017 SR& ED Tax Credit loan ⁴ | Total |
|----------------------------|----------------------------------|--|--|---|----------------|
| | \$ | \$ | \$ | \$ | \$ |
| Balance, December 31, 2018 | - | - | - | 247,200 | 247,200 |
| Additions | 115,200 | 247,500 | 214,000 | - | 576,700 |
| Conversion option | (12,800) | - | - | - | (12,800) |
| Financing costs | - | (63,558) | (54,955) | - | (118,513) |
| Accretion | 8,533 | 1,389 | 40,691 | - | 50,613 |
| Repayment | - | - | - | (247,200) | (247,200) |
| Balance, December 31, 2019 | 110,933 | 185,331 | 199,736 | - | 496,000 |
| Accretion | 4,267 | 31,606 | 14,264 | - | 50,137 |
| Repayment | - | - | (214,000) | - | (214,000) |
| Balance, June 30, 2020 | <u>115,200</u> | <u>216,937</u> | <u>-</u> | <u>-</u> | <u>332,137</u> |

¹ maturing May 1, 2020 bearing interest rate of 8% per annum payable at the maturity date.

² maturing December 23, 2020 bearing interest rate of 16.68% payable at the issuance.

³ maturing April 3, 2020 bearing interest rate of 16.68% payable at the issuance.

⁴ matured September 30, 2018 bearing interest rate of 18% (effective interest rate 23%), repaid February 2019.

PyroGenesis Canada Inc.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

12. Term loans (continued)

On December 23, 2019, the Company entered into a SR&ED tax credit loan of \$247,500 bearing interest at a rate of 16.68% and fees totaling \$22,375 paid at the issuance of the loan. The loan was discounted

using the effective interest method. The effective interest rate on the loan is 25.68%. The loan is secured by the 2019 investment tax credit receivable and is repayable on December 22, 2020.

The SR&ED tax credit loans are financing, in the form of loans, with respect to the Company's scientific research and experimental development tax credits ("SR&ED Tax Credits"). The principal of the loans is subject to holdback to be disbursed upon reception of notice of assessment. The principal of the loans is subject to repayment at the earlier of (a) receipt of the SR&ED Tax Credits refund or (b) the maturity date.

The SR&ED Tax Credits loan agreement provides for automatic renewal of twelve months if loan is not paid at maturity. As at March 31, 2020, the amount available under the term loan financing agreement totals \$247,500 (2019 – \$461,500).

Pursuant to each financing, the Company granted the lender a security interest and movable hypothec on all of its assets excluding its intellectual property but including a first rank claim on the refundable portion of its SR&ED Tax Credits for the fiscal year ended December 31, 2019 of \$434,474.

On May 1, 2019 the Company entered into loan agreements with unrelated individuals totaling \$115,200 bearing interest at the annual rate of 8% payable at maturity, on May 1, 2020. The other term loans are unsecured and are convertible, at 10% discount, for a variable amount, of shares into any future private placement until maturity. The fair value of the debt instrument at inception was determined using the estimated cash flows discounted using a market rate of 20%. The residual amount of the non derivative liability of \$12,800 associated with the conversion feature has been recorded in accounts payable and accrued liabilities.

The maturity of the other term loans was extended to July 13, 2020. An amount of \$115,200 was paid to extinguish the other loan amounts.

13. Convertible debentures

| | <u>June 30, 2020</u> | <u>December 31, 2019</u> |
|----------------------------|----------------------|--------------------------|
| 2018 Convertible debenture | - | \$ 2,898,358 |
| Convertible loan | <u>816,569</u> | - |
| | <u>816,569</u> | 2,898,358 |
| Current portion | <u>816,569</u> | 2,898,358 |
| Long-term portion | <u>-</u> | <u>-</u> |

Convertible loan

On March 18, 2020, the Company closed a \$903,000 non-brokered secured convertible loan at 12% per annum, with a trust whose beneficiary is the controlling shareholder and CEO of the Company. The Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis in arrears and matures September 17, 2021. The convertible loans may be converted before maturity, in whole at anytime or in part from time to time at a conversion price of \$0.25 at the option of the lender. The is secured by a deed of hypothec charging on the universalities of movable assets.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

13. Convertible debentures (continued)

The Convertible loan is a compound financial instrument and the total proceeds of the issuance was allocated between a liability for the loan and an equity component for the conversion feature. The fair value of the debt liability component at inception was determined using estimated future cash flows discounted using a market interest rate of 20%. The effective interest rate of the liability component is 21.55%. The residual amount representing the value of the conversion option equity component was classified in the shareholders' (Deficiency) Equity.

At the issuance date, the Convertible loan was recorded as follows:

| | |
|---|-----------------------|
| | \$ |
| Liability component | 804,578 |
| Conversion option recognized in equity, net of transaction cost of \$47,338 | 98,422 |
| Net proceeds | <u>903,000</u> |
| | June 30, 2020 |
| | Total |
| | \$ |
| Liability component at issuance | 804,578 |
| Effective interest accretion | 11,991 |
| Balance, end of period | <u>816,569</u> |

On April 2, 2018, the Company completed a \$3,000,000 non-brokered private placement of 9.5% secured convertible debentures (the "2018 Convertible Debenture"). The 2018 convertible debentures bear interest at the rate of 9.5% per annum, with interest payable in cash on a quarterly basis, and mature on March 29, 2020. Each Debenture is convertible into common shares of the Company at a conversion price of \$0.80 per common share. The 2018 convertible debentures may be redeemed before maturity, in whole at anytime or in part from time to time at the option of the Company. In the event the Company elects to redeem the debentures before the maturity date, the Company shall be required to pay all interest that otherwise would have accrued on the debentures up to the maturity date. The 2018 convertible debentures are secured by a hypothec on the universality of all of the property, rights and assets of the Company, present and future, movable and immovable, corporeal and incorporeal.

The 2018 Convertible Debenture is a compound financial instrument and the total proceeds of the issuance was allocated between a liability for the debenture and an equity component for the conversion feature. The fair value of the debt liability component at inception was determined using estimated future cash flows discounted using a market interest rate of 20%. The residual amount representing the value of the conversion option equity component was classified in the shareholders' (Deficiency) Equity.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

13. Convertible debentures (continued)

Convertible debenture

In connection with the convertible debenture, the Company paid finder fees in the amount of \$180,000 to the agent. Total transaction costs amount to \$315,702 and have been allocated between the liability and equity components. The effective interest rate of the liability component is 20.23%.

At the issuance date, the 2018 Convertible Debenture was recorded as follows:

| | |
|---|------------------|
| | \$ |
| Debt component, net of transactions cost of \$268,364 | 2,282,538 |
| Conversion option recognized in equity, net of transaction cost of \$47,338 | 401,760 |
| Net proceeds | <u>2,684,298</u> |

On March 30, 2020, the Company reached an agreement to extend the maturity date of its \$3,000,000 convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company redeemed \$300,000 (representing 10% of the principal amount), paid a onetime accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. The conversion features have not changed. The gain in the amount of \$59,037 resulting from the revised amortised cost of the convertible debenture was recognised in loss presented against the accretion expense.

| | <u>June 30, 2020</u> | <u>December 31, 2019</u> |
|---|----------------------|--------------------------|
| | <u>Total</u> | |
| | \$ | \$ |
| Balance, beginning of period | 2,898,358 | 2,527,241 |
| Effective interest accretion | 214,679 | 371,117 |
| | <u>3,113,037</u> | <u>2,898,358</u> |
| Finance fees | (54,000) | - |
| Gain on refinancing | (59,037) | - |
| Repayment of 2018 Convertible Debenture in cash | (304,500) | - |
| Conversion into common shares | (2,695,000) | - |
| Balance, end of period | <u><u>-</u></u> | <u><u>2,898,358</u></u> |

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

14. Shareholders' deficiency

Common shares and warrants

Authorized:

The Company is authorized to issue an unlimited number of Class A common shares without par value.

Issuance of shares

The following table sets out the activity in stock options during the three months ended June 30, 2020:

| | <u>Number of options</u> | <u>Weighted average exercise price</u> \$ |
|-----------------------------|------------------------------|--|
| Balance – December 31, 2019 | 8,438,000 | 0.37 |
| Granted | 100,000 | 0.45 |
| Exercised | 1,728,000 | 0.30 |
| Balance, June 30, 2020 | <u>6,810,000</u> | <u>0.31</u> |

As at June 30, 2020, the outstanding options, as issued under the stock option plan to directors, officers, employees and consultants for the purchases of one common share per option, are as follows:

| | <u>Number of stock options June 30, 2020</u> | <u>Exercise price per option (1)</u> \$ | <u>Expiry date</u> |
|--------------------|--|--|--------------------|
| September 25, 2016 | 3,000,000 | 0.18 | Sep 25, 2021 |
| October 25, 2016 | 100,000 | 0.19 | Oct 25, 2021 |
| November 3, 2017 | 2,480,000 | 0.58 | Nov 3, 2022 |
| February 9, 2018 | 80,000 | 0.60 | Feb 9, 2023 |
| May 10, 2018 | 250,000 | 0.52 | May 10, 2023 |
| July 3, 2018 | 300,000 | 0.51 | July 3, 2023 |
| October 29, 2018 | 100,000 | 0.52 | Oct 29, 2023 |
| September 29, 2019 | 400,000 | 0.51 | Sep 29, 2024 |
| January 2, 2020 | 100,000 | 0.45 | Jan 02, 2025 |
| | <u>6,810,000</u> | <u>0.31</u> | |

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

14. Shareholders' deficiency (continued)

On January 2, 2020, the Company granted 100,000 stock options to a director of the Company. The stock options have an exercise price of \$0.45 per common share, 100% vested at grant date and are exercisable over a period of 5 years. The fair value of the stock options was estimated by applying the Black-Scholes option pricing model using the following assumptions:

| Date of grant | |
|--|----------|
| Number of options granted | 100,000 |
| Exercise price (\$) | 0.45 |
| Fair value of each option under the Black Scholes pricing model (\$) | 0.34 |
| Assumptions under the Black Scholes model: | |
| Fair value of the market share (\$) | 0.18793 |
| Risk free interest rate (%) | 1.613474 |
| Expected volatility (%) | 46 |
| Expected dividend yield | - |
| Expected life (number of months) | 60 |
| Forfeiture rate (%) | - |

Share purchase warrants

The following table reflects the activity in warrants for the six months ended June 30, 2020 and the number of issued and outstanding share purchase warrants at December 31, 2019:

| | <u>Number of warrants December 31, 2019</u> | <u>Issued</u> | <u>Exercised</u> | <u>Expired</u> | <u>Number of warrants June 30, 2020</u> | <u>Price per warrant \$</u> | <u>Expiry date</u> |
|--|---|---------------|------------------|------------------|---|-------------------------------------|--------------------|
| Issuance of units – April 19, 2018 | 3,108,333 | - | - | 3,108,333 | - | 0.85 | Apr 19, 2020 |
| Issuance of broker warrants – April 19, 2018 | 74,000 | - | - | 74,000 | - | 0.85 | Apr 19, 2020 |
| Issuance of units – April 20, 2018 | 3,385,715 | - | - | 3,385,715 | - | 0.85 | Apr 20, 2020 |
| Issuance of units – September 28, 2018 | 3,448,276 | - | - | - | 3,448,276 | 0.58 | Jan 28, 2021 |
| Issuance of units – October 19, 2018 | 1,500,750 | - | 981,800 | - | 518,950 | 0.58 | Feb 13, 2021 |
| Issuance of units – December 17, 2018 | 2,244,367 | - | 350,000 | - | 1,894,367 | 0.85 | Dec 18, 2020 |
| Issuance of units – May 15, 2019 | 2,996,500 | - | 1,164,000 | - | 1,832,500 | 0.85 | May 15, 2021 |
| Issuance of units – May 24, 2019 | 2,024,500 | - | 734,500 | - | 1,290,000 | 0.85 | May 24, 2021 |
| Issuance of units – June 19, 2019 | 1,000,000 | - | 500,000 | - | 500,000 | 0.85 | Jun 19, 2021 |
| Issuance of units – October 25, 2019 | 225,000 | - | - | - | 225,000 | 0.75 | Oct 25, 2021 |
| | <u>20,007,441</u> | | <u>3,730,300</u> | <u>6,568,048</u> | <u>9,709,093</u> | <u>0.78</u> | |

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019

(unaudited)

15. Supplemental disclosure of cash flow information

Net changes in non-cash components of operating working capital

| | Three months ended June 30, | | Six months ended June 30, | |
|--|-----------------------------|------------------|---------------------------|----------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Decrease (increase) in: | | | | |
| Accounts receivable | (424,342) | 27,311 | (552,142) | 112,171 |
| Inventory | (9,245) | - | (9,245) | - |
| Costs and profits in excess of billings on uncompleted contracts | (38,080) | 42,306 | (83,005) | 183,825 |
| Investment tax credits receivable | (96,049) | (79,690) | (166,362) | 210,842 |
| Deposits | (4,701) | (119,178) | (305,795) | - |
| Prepaid expenses | 24,950 | (94,015) | 51,331 | (123,219) |
| Increase (decrease) in: | | | | |
| Accounts payable and accrued liabilities | (1,200,907) | 48,556 | (1,052,244) | 99,869 |
| Billings in excess of costs and profits on uncompleted contracts | 994,633 | (347,663) | 2,485,955 | 148,933 |
| | <u>(753,741)</u> | <u>(522,373)</u> | <u>2,485,955</u> | <u>632,421</u> |

16. Other information

Cost of sales and services for the three and six months ended June 30, 2020 was \$861,862 and \$1,313,356 (2019 - \$728,420 and \$1,388,191). Included in cost of sales and services was the amortization of intangible assets expense for the three and six months ended June 30, 2020 of \$6,813 and \$13,626 (2019 - \$4,779 and \$9,558).

Selling, general and administrative costs for the three and six months ended June 30, 2020 was \$1,664,976 and \$2,941,567 (2019 - \$1,611,363 and \$2,925,882). Included in selling, general and administrative costs was depreciation on property and equipment which for the three and six months ended June 30, 2020 of \$10,057 and \$20,113 (2019 \$49,984 and \$100,843) and depreciation of right of use assets of \$88,205 and \$177,570 (2019 -\$109,376 and \$215,338).

Employee benefits totaled \$1,245,974 and \$2,738,007 for the three and the six months ended June 30, 2020 (2019 - \$1,526,147 and \$2,991,781) and include share-based compensation of \$23,638 and \$94,504 (2019 - \$27,584 and \$62,068).

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

16. Other information (continued)

The Company has been awarded various grants during the three and the six months periods, which were recognized when they became receivable. The grants, received in these periods, are unconditional and amounted to \$102,797 and \$321,433 respectively (2019 - \$72,677 and \$204,691).

17. Net finance costs

| | Three months ended June 30, | | Six months ended June 30, | |
|--|------------------------------------|-------------|----------------------------------|-------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Finance costs | | | | |
| Interest and fees on convertible debentures | 68,832 | | 143,952 | |
| Interest accretion of convertible debentures | 123,538 | 170,574 | 167,633 | 340,715 |
| Interest on term loans | 15,944 | 13,116 | 50,909 | 13,116 |
| Interest on lease liabilities | 62,689 | 72,247 | 125,924 | 145,471 |
| Interest accretion on promissory notes | 4,401 | - | 18,859 | - |
| Interest accretion of term loans | - | 10,499 | - | 18,631 |
| Other interest expenses | 1,524 | 8,983 | 2,388 | 8,983 |
| Net finance costs | 276,628 | 275,419 | 509,665 | 160,033 |

18. Earnings (loss) per share

The following table provides a reconciliation between the number of basic and fully diluted shares outstanding as at June 30, 2020:

| | Three months ended June 30, | | Six months ended June 30, | |
|---|------------------------------------|-------------|----------------------------------|-------------|
| | 2020 | 2019 | 2020 | 2019 |
| Weighted daily average of Common shares | 144,354,683 | 134,708,332 | 143,319,985 | 134,755,149 |
| Dilutive effect of stock options | 3,092,134 | - | 2,367,903 | - |
| Dilutive effect of warrants | 3,934,847 | - | 957,718 | - |
| Dilutive effect of convertible debentures | 899,823 | - | 607,34 | - |
| Weighted average number of diluted shares | 152,281,488 | 134,708,332 | 147,252,951 | 134,755,149 |
| Number of anti-diluted stock options, warrants, convertible debentures and convertible loans excluded from fully diluted earnings per share calculation | 9,451,867 | 37,713,101 | 9,226,867 | 37,713,101 |

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

19. Related party transactions

During the three and the six months ended June 30, 2020, the Company concluded the following transactions with related parties:

The Company entered into a lease agreement for rent of a property with a trust whose beneficiary is the controlling shareholder and CEO of the Company. As at June 30, 2020 the carrying amount of the right-of-use asset and lease liabilities are \$1,099,881 and \$1,149,828, respectively.

An amount including rent and property taxes of \$68,687 and \$136,733 were paid to a trust whose beneficiary is the controlling shareholder and CEO (\$66,740 and \$133,102 were charged in 2019). A balance due of \$Nil (2019 - \$Nil) is included in accounts payable at June 30, 2020.

An amount of \$115,581 was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company (December 31, 2019 – \$Nil), of this amount \$45,257 is included in deposits.

A balance due to the controlling shareholder and CEO of the Company amounted to \$137,484 (December 31, 2019 - \$214,470) for expense report, salary and vacation payables and is included in accounts payable and accrued liabilities as at June 30, 2020.

As at June 30, 2020, an amount of \$4,413 (December 31, 2019 - \$7,427), of interest payable and an accretion amount of \$14,458 (December 31, 2019 - \$12,946), were accrued on the loan of \$295,000 from the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities

As at June 30, 2020, an amount of \$30,960 (December 31, 2019 - \$Nil), of interest payable and an accretion amount of \$42,951 (December 31, 2019 - \$Nil), were accrued on a convertible loan of \$903,000 from a trust whose beneficiary is the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

19. Related party transactions (continued)

The key management personnel of the Company are the members of the Board of Directors and certain officers. Total compensation to key management consisted of the following:

| | Three months ended June 30, | | Six months ended June 30, | |
|---|------------------------------------|-------------|----------------------------------|-------------|
| | 2020 | 2019 | 2020 | 2019 |
| | | | \$ | \$ |
| Salaries –officers | 117,648 | 102,000 | 380,318 | 204,000 |
| Pension contributions | 3,097 | 2,040 | 5,866 | 4,080 |
| Fees – Board of Directors | - | 24,000 | 44,000 | 46,000 |
| Share – based compensation – officers | 63,177 | - | 65,299 | - |
| Share – based compensation - Board of Directors | (43,448) | - | 18,793 | - |
| Other benefits – officers | 223,466 | 2,486 | 237,853 | 6,521 |
| Total compensation | 372,940 | 130,526 | 752,129 | 260,601 |

A balance of \$64,139 of key management compensation, of the amounts noted above, is included in accounts payable and accrued liabilities as at June 30, 2019 (December 31, 2019 - \$130,604).

20. Financial instruments

As part of its operations, the Company carries a number of financial instruments. It is management's opinion that the Company is not exposed to significant interest, currency or credit risks arising from these financial

instruments except as otherwise disclosed. The Company's overall risk management program focuses on the unpredictability of the financial market and seeks to minimize potential adverse effects on the Company's financial performance. The Company does not use derivative financial instruments to hedge these risks.

Foreign currency risk

The Company enters into transactions denominated in US dollars for which the related revenues, expenses, accounts receivable and accounts payable and accrued liabilities balances are subject to exchange rate fluctuations.

As at June 30, 2020 the following items are denominated in US dollars:

| | June 30, 2020 | December 31, |
|--|----------------------|------------------|
| | CDN | 2019 |
| | \$ | CDN |
| | \$ | \$ |
| Cash | 422,625 | 74,749 |
| Accounts receivable | 138,266 | 28,704 |
| Accounts payable and accrued liabilities | (636,165) | (403,273) |
| Total | (75,274) | (299,820) |

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

20. Financial instruments (continued)

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.

Sensitivity analysis

At June 30, 2020, if the US Dollar changes by 10% against the Canadian dollar with all other variables held constant, the impact on pre-tax gain or loss for the year ended June 30, 2020 would have been \$(75,000) (December 31, 2019 – \$(29,000)).

Credit risk

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The maximum credit risk to which the Company is exposed as at June 30, 2020 represents the carrying amount of cash, accounts receivable and deposits.

Credit concentration

During the three and the six months ended June 30, 2020, two customers accounted for 62%, 30% and 63%, 22% respectively of revenues from operations.

| | Three months ended June 30, 2020 | | Six months ended June 30, 2020 | |
|--------------|---|----------------------------|---------------------------------------|----------------------------|
| | Revenues | % of total revenues | Revenues | % of total revenues |
| | \$ | % | \$ | % |
| Customer 1 | 1,319,904 | 62% | 1,794,336 | 63% |
| Customer 2 | 638,887 | 30% | 638,887 | 22% |
| Total | 1,958,791 | 92% | 2,433,223 | 85% |

Four customers accounted for 74% (December 31, 2019 – three customers for 93%) of trade accounts receivable with amounts owing to the Company of \$264,722 (2019 - \$96,874), representing the Company's major credit risk exposure. Credit concentration is determined based on customers representing 10% or more of total revenues and/or total accounts receivable. The Company believes that there is no unusual exposure associated with the collection of these receivables. The Company manages its credit risk by performing credit assessments of its customers and provides allowances for potentially uncollectible accounts receivable. The Company does not generally require collateral or other security from customers on accounts receivable.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

20. Financial instruments (continued)

Fair value of financial instruments

Financial instruments are comprised of cash, accounts receivable, investments, deposits, accounts payable and accrued liabilities, term loans, long-term debt and convertible debentures. There are three levels of fair value that reflect the significance of inputs used in determining fair values of financial instruments:

Level 1 —quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 —inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices).

Level 3 —inputs for the asset or liability that are not based on observable market data.

Investments in HPQ shares are valued at quoted market prices and are classified as Level 1.

Investments in HPQ warrants are valued using the Black-Scholes pricing model and are classified as Level 3.

Investments in BGF shares are valued based on a valuation technique that estimates a business' value based on a recent round of financing and are classified as Level 1.

The fair values of cash, accounts receivable, accounts payable and accrued liabilities, and term loans approximate their carrying amounts due to their short-term maturities.

The fair value of the long-term debt and of the 2018 Convertible Debenture approximates their carrying amounts due to their recent issuance.

Interest rate risk

Interest rate risk is the risk that the value of a financial instrument might be adversely affected by a change in interest rates. Changes in market interest rates may have an effect on the cash flows associated with some financial assets and liabilities, known as cash flow risk, and on the fair value of other financial assets or liabilities, known as price risk, and on the fair value of investments or liabilities, known as price risks. The Company is exposed to a risk of fair value on the term loans and convertible debentures as those financial instruments bear interest at fixed rates.

Price risk

Price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market price (other than those arising from foreign currency risk and interest risk), whether those changes are caused by factors specific to the individual financial instrument or its issuers or factors affecting all similar financial instruments traded in the market. The most significant exposure to the price risk for the Company arises from its investments in shares of public companies quoted on the TSXV Exchange. If equity prices had increased or decreased by 15% as at June 30, 2019, with all other variables held constant, the Company's investments would have increased or decreased respectively, by approximately \$1,111,000 (December 31, 2019 - \$241,000).

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
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20. Financial instruments (continued)

Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivery of cash or another financial asset. The Company's ability to continue as a going concern is dependent on management's ability to raise required funding through future equity and / or debt issuances and to generate positive cash flows from operations (see note 1 (b)). The Company manages its liquidity risk by forecasting cash flows from operations and anticipating any investing and financing activities. Management and the Board of Directors are actively involved in the review, planning and approval of significant expenditures and commitments.

The following table summarizes the contractual maturities of financial liabilities as at June 30, 2020:

| | <u>Carrying value</u> | <u>Total Contractual amount</u> | <u>6 months or less</u> | <u>7 to 12 months</u> | <u>1 to 3 years</u> |
|--|-----------------------|---|-----------------------------|-----------------------|---------------------|
| | \$ | \$ | \$ | \$ | |
| Accounts payable and accrued liabilities | 4,116,398 | 4,116,398 | 4,116,398 | - | - |
| Term loans | 332,137 | 362,700 | 362,700 | - | - |
| Convertible debentures | 816,569 | 1,007,117 | 42,893 | 42,893 | 921,331 |
| | <u>5,265,107</u> | <u>5,486,218</u> | <u>4,521,994</u> | <u>42,893</u> | <u>921,331</u> |

21. Contingent liabilities

The Company is currently a party to various legal proceedings and a tax authorities' review. If management believes that a loss arising from these matters is probable and can reasonably be estimated, that amount of the loss is recorded. As additional information becomes available, any potential liability related to these matters is assessed and the estimates are revised, if necessary. Based on currently available information, management believes that the ultimate outcome of these matters, individually and in aggregate, will not have a material adverse effect on the Company's financial position or overall trends in results of operations.

The Company had received a government grant in prior years of approximately \$800,000 to assist with the development of a new system of advanced waste treatment systems technology. The grant is potentially repayable at the rate of 3% of any consideration received as a result of the project, for which funding has been received, to a maximum of the actual grant received. This repayment provision will remain in effect until May 30, 2024. The Company abandoned the project in 2011 and accordingly, no amount is expected to be repaid.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

22. Capital management

The Company's objectives in managing capital are:

- a) To ensure sufficient liquidity to support its current operations and execute its business plan; and
- b) To provide adequate return to the shareholders

The Company's primary objectives when managing capital is to ensure the entity continues as a going concern as well as to maintain optimal returns to shareholders and benefits for other stakeholders.

The Company currently funds these requirements from cash flows from operations and with financing arrangements with third parties and shareholders. The Company is not subject to any externally imposed capital requirements.

The management of capital includes common shares, warrants reserve, contributed surplus and equity portion of convertible debentures for a total amount of \$60,365,458 (December 31, 2019 - \$54,154,733) and debt of \$1,148,706, (December 31, 2019 - \$3,679,323). The Company monitors its working capital in order to meet its financial obligations. As at June 30, 2019, the Company's working capital deficiency was \$7,954,486, (December 31, 2019 – deficiency of \$10,492,101).

There were no changes in the Company's approach during the six months ended June 30, 2019.

23. Segment information

The Company operates in one segment, based on financial information that is available and evaluated by the Company's Board of Directors.

The Company's head office is located in Montreal, Quebec. The operation of the Company is located in one geographic area: Canada. The following is a summary of the Company's geographic information:

| | Three months ended June 30, | | Six months ended June 30, | |
|---------------------------------|-----------------------------|------------------|---------------------------|------------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Revenue from external customers | | | | |
| Canada | 687,748 | 886,195 | 808,980 | 1,663,313 |
| United States | 1,357,072 | 321,191 | 1,865,217 | 1,038,506 |
| Europe | 377 | - | 1,339 | - |
| Mexico | 33,675 | 188,187 | 33,675 | 745,814 |
| Asia | 25,441 | 25,779 | 26,065 | 34,321 |
| South America | 24,141 | - | 112,086 | - |
| | <u>2,128,454</u> | <u>1,421,352</u> | <u>2,847,362</u> | <u>3,481,954</u> |

PyroGenesis Canada Inc.

Notes to the Condensed Interim Financial Statements

For the periods ended June 30, 2020 and 2019
(unaudited)

23. Segment information (continued)

The following is a summary of the Company's revenue by product line:

| | Three months ended June 30, | | Six months ended June 30, | |
|--|-----------------------------|-----------|---------------------------|-----------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Sales of goods under long-term contracts | 1,536,877 | 1,380,695 | 2,174,828 | 3,377,341 |
| Sales of goods in point of time | 570,302 | 14,033 | 630,297 | 40,886 |
| Other revenues | 21,275 | 26,623 | 42,237 | 63,726 |
| | 2,128,454 | 1,421,352 | 2,847,362 | 3,481,954 |

24. Subsequent events

The global pandemic due to the novel coronavirus (COVID-19) is a situation that is constantly evolving, and the measures put in place are having multiple impacts on provincial, national and global economies. The overall effect of these events on the Company and its operations is too uncertain to be estimated at this time. The impacts will be accounted for when they are known and may be assessed.

The Company received under the exclusivity contract with DROSRITE International approximately US\$3,000,000 between July 13, 2020 and July 28, 2020.

On July 13, 2020, the Company paid an amount of \$115,200 to extinguish the other term loans.

In July 2020, the Company issued 100,000 common shares upon the exercise of 100,000 stock options with an exercise price of \$0.19.

In July 2020, the Company issued 962,000 common shares upon the exercise of 962,000 share purchase warrants for total proceeds of \$763,816.



PYROGENESIS CANADA INC.

MANAGEMENT'S DISCUSSION AND ANALYSIS

This management's discussion and analysis ("MD&A") is intended to assist readers in understanding the business environment, strategies, performance and risk factors of PyroGenesis Canada Inc. ("PyroGenesis", or the "Company"). The MD&A provides the reader with a view and analysis, from the perspective of management, of the Company's financial results for the three months ended June 30, 2020. The MD&A has been prepared in accordance with National Instrument 51-102, Continuous Disclosure Requirements, and should be read in conjunction with the audited financial statements and related notes thereto of the Company for the year ended December 31, 2019.

The financial statements and MD&A have been reviewed by PyroGenesis' Audit Committee and were approved by its Board of Directors on July 28, 2020. The Board of Directors is responsible for ensuring that the Company fulfills its responsibilities for financial reporting and is ultimately responsible for reviewing and approving the MD&A. The Board of Directors carries out this responsibility principally through its Audit Committee. The Audit Committee is appointed by the Board of Directors and is comprised of independent directors. The Audit Committee reports its findings to the Board of Directors for its consideration when it approves the MD&A and financial statements for issuance to shareholders.

The following information takes into account all material events that took place up until July 28, 2020, the date on which the Company's Board of Directors approved this MD&A. Unless otherwise indicated, all amounts are presented in Canadian dollars. The Company's functional and reporting currency is the Canadian dollar.

Additional information regarding PyroGenesis is available on SEDAR (www.sedar.com), OTC Markets (www.otcmarkets.com) and on the Company's website at www.pyrogenesis.com.

FORWARD-LOOKING STATEMENTS

This MD&A contains forward-looking statements. All statements other than statements of historical fact contained in this MD&A are forward-looking statements, including, without limitation, the Company's statements regarding its products and services; relations with suppliers and clients; future financial position; business strategies; potential acquisitions; potential business partnering; litigation; and plans and objectives. In certain cases, forward-looking statements can be identified by the use of words such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved" and similar words or the negative thereof. Although management of the Company believes that the expectations represented in such forward-looking statements are reasonable, there can be no assurance that such expectations will prove to be correct.



In particular, this MD&A contains forward-looking statements that relate, but are not limited, to:

- the Company's business strategies, strategic objectives and growth strategy;
- the Company's current and future capital resources and the need for additional financing;
- the Company's ability to increase sales, including the results of the successful completion of the Company's current projects;
- management's expectation that the Company will achieve sustained annual growth and profitability, and that gross margins will increase resulting in a decrease in cost of sales as a percentage of revenue; and
- the Company's overall financial performance.

By their nature, forward-looking statements require assumptions and are subject to inherent risks and uncertainties including those discussed herein. In particular, forward-looking statements relating to future sales, growth and profitability are based on the assumption that current projects will be completed, and the Company will be awarded certain anticipated contracts pursuant to recent negotiations with, and statements made by, third parties. There is significant risk that predictions and other forward-looking statements will not prove to be accurate. Readers are cautioned to not place undue reliance on forward-looking statements made herein because a number of factors could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.

The future outcomes that relate to forward-looking statements may be influenced by many factors, including, but not limited to, the strength of the Canadian, US and Asian economies; operational, funding, and liquidity risks; unforeseen engineering and environmental problems; delays or inability to obtain required financing and/or anticipated contracts; risks associated with licenses, permits and regulatory approvals; supply interruptions or labour disputes; foreign exchange fluctuations and collection risk; competition from other suppliers, or alternative, less capital intensive, energy solutions; and risk factors described elsewhere in this document under the heading "Risk Factors". We caution that the foregoing list of factors is not exhaustive, and that, when relying on forward-looking statements to make decisions with respect to the Company, investors and others should carefully consider these factors, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements.

Although the Company has attempted to identify significant factors that could cause actions, events or results to differ materially from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. Forward-looking statements are provided as of the date of this MD&A, and the Company assumes no obligation to update or revise such forward-looking statements to reflect new events or circumstances except as required under applicable securities laws.

The forward-looking statements contained herein are expressly qualified in their entirety by this cautionary statement. The forward-looking statements included in this MD&A are made as of the date of this MD&A or such other date specified herein.



OVERVIEW

PyroGenesis Canada Inc. is a world leader in the design, development, manufacturing and commercialization of advanced plasma processes. The Company provides engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working from its Montreal office and its 3,800m² production facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. PyroGenesis' core competencies allow the Company to be a leader in providing innovative plasma torches, plasma waste processes, plasma atomisation processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis is a publicly traded Canadian company on the TSX Venture Exchange (Ticker symbol: PYR.V), on the OTCQB in the United States (Ticker symbol: PYRNF) and on the Frankfurt Stock Exchange (FSX) under the symbol "8PY".

SELECTED FINANCIAL INFORMATION

| | Three months ended June 30, | | % Change | Six months ended June 30, | | % Change |
|---|-----------------------------|----------------|------------|---------------------------|----------------|------------|
| | 2020 | 2019 | 2020vs2019 | 2020 | 2019 | 2020vs2019 |
| Revenues | \$ 2,128,454 | \$ 913,769 | 133% | \$ 2,847,362 | \$ 1,650,212 | 73% |
| Cost of sales and services | 861,862 | 728,420 | 18% | 1,313,356 | 1,388,191 | -5% |
| Gross margin | 1,266,592 | 185,349 | 583% | 1,534,006 | 262,021 | 485% |
| Expenses | | | | | | |
| Selling, general and administrative | 1,664,976 | 1,611,363 | 3% | 2,941,566 | 2,925,882 | 1% |
| Research and development | (3,867) | 212,645 | -102% | 19,221 | 308,420 | -94% |
| Net finance costs | 276,928 | 275,418 | 1% | 509,665 | 525,916 | -3% |
| | 1,938,037 | 2,099,426 | -8% | 3,470,452 | 3,761,218 | -8% |
| Net loss from operations | (671,445) | (1,914,077) | -65% | (1,936,446) | (3,499,197) | -45% |
| Changes in fair market value of strategic investments | 5,899,465 | (339,313) | 1839% | 5,407,441 | 366,883 | 1374% |
| Comprehensive income | \$ 5,228,020 | \$ (2,253,390) | 332% | \$ 3,470,995 | \$ (3,132,314) | 211% |
| Earnings (loss) per share | | | | | | |
| Basic | \$ 0.04 | \$ (0.02) | | \$ 0.02 | \$ (0.02) | |
| Diluted | \$ 0.03 | \$ (0.02) | | \$ 0.02 | \$ (0.02) | |
| Modified EBITDA (loss) | \$ (265,804) | \$ (1,447,933) | -82% | \$ (1,120,968) | \$ (2,584,473) | -57% |

Modified EBITDA (loss) is not a performance measure defined under IFRS and it is not considered an alternative to Income (Loss) from operations or Comprehensive Earnings (Loss) in the context of measuring a Company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of their results and related trends, and as such increases transparency and clarity. Modified EBITDA (loss) is an important measure of operating performance because it allows management, investors and others to evaluate and compare the Company's core operating results, including our return on capital and operating efficiencies, from period to period, by removing the impact of its capital structure (interest expense to service outstanding debt), asset base (depreciation and amortization), tax consequences, and other non-operating items not requiring cash outlays including share-based compensation and change in fair value of investment. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation.

We have included definitions of this and other non-IFRS financial measures in the "Reconciliation of non-IFRS Measures (EBITDA, Adjusted and Modified)" section of this MD&A.



Extract from Statement of Financial Position at:

| | June 30, 2020 | Dec 31, 2019 |
|-----------------------------|----------------------|-----------------------|
| Current assets | 3,518,360 | 1,324,554 |
| Non-current assets | 14,294,886 | 8,254,675 |
| Total assets | \$ 17,813,246 | \$ 9,579,229 |
| Current liabilities | 10,981,730 | 11,816,655 |
| Non-current liabilities | 3,770,740 | 3,845,497 |
| Total liabilities | \$ 14,752,470 | \$ 15,662,152 |
| Shareholders' equity | \$ 3,060,776 | \$ (6,082,923) |

RESULTS OF OPERATIONS

Revenues

PyroGenesis recorded revenue of \$2,128,454 in the second quarter of 2020 representing an increase of 133% compared with \$913,769 recorded in the second quarter of 2019.

Revenues recorded in the three and six months ended June 30, 2020 were generated primarily from:

- (i) DROSRITE™ related sales of \$1,319,904 (3 months) and \$1,794,336 (6 months)
- (ii) PUREVAP™ related sales of \$25,093(3 months) and \$43,058 (6 months)
- (iii) torch related sales of \$617,077 (3 months) and \$705,022 (6 months)
- (iv) support services related to PAWDS-Marine systems supplied to the US Navy \$37,143 (3 months) and \$61,039 (6 months).

Cost of Sales and Services and Gross Margin

| | Three months ended June 30, | | | Six months ended June 30, | | |
|--|-----------------------------|-------------------|------------------------|---------------------------|---------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Employee compensation | \$ 103,957 | \$ 414,873 | -75% | \$ 376,884 | \$ 843,235 | -55% |
| Subcontracting | 188,949 | 83,166 | 127% | 189,474 | 88,888 | 113% |
| Direct materials | 528,584 | 195,966 | 170% | 589,641 | 359,838 | 64% |
| Manufacturing overhead & other | 95,667 | 56,108 | 71% | 152,464 | 136,018 | 12% |
| Foreign exchange loss | (43,350) | 2,589 | -1775% | 30,655 | 15,786 | 94% |
| Investment tax credits | (18,758) | (29,061) | -35% | (39,388) | (65,132) | -40% |
| Cost of Sales and Services before Amortization of Intangible Assets | \$ 855,049 | \$ 723,641 | 18% | \$ 1,299,730 | 1,378,633 | -6% |
| Amortization of intangible assets | 6,813 | 4,779 | 43% | 13,626 | 9,558 | 43% |
| Total Cost of Sales and Services | \$ 861,862 | \$ 728,420 | 18% | \$ 1,313,356 | \$ 1,388,191 | -5% |



Gross Margin

| | Three months ended June 30, | | Six months ended June 30, | |
|----------------------------|-----------------------------|------------|---------------------------|--------------|
| | 2020 | 2019 | 2020 | 2019 |
| Revenues | \$ 2,128,454 | \$ 913,769 | \$ 2,847,362 | \$ 1,650,212 |
| Cost of Sales and Services | 861,862 | 728,420 | 1,313,356 | 1,388,191 |
| Gross Margin | \$ 1,266,592 | \$ 185,349 | \$ 1,534,006 | \$ 262,021 |
| Gross Margin % | 59.5% | 20.3% | 53.9% | 15.9% |

Cost of sales and services before amortization of intangible assets is not a performance measure defined under IFRS and it is not considered an alternative to gross margin in the context of measuring the Company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of its results and related trends, and increases transparency and clarity. Gross margin before amortization of intangible assets is an important measure of operating performance because it allows management, investors and others to evaluate and compare the Company's core operating results, including its return on capital and operating efficiencies, from period to period, by removing the impact of non-operating items not requiring cash outlays. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation or a substitute for financial measures prepared in accordance with IFRS.

Cost of sales and services before amortization of intangible assets was \$855,049 in Q2 2020, representing an increase of 18% compared with \$723,641 in Q2 2019, primarily due to an increase in subcontracting and direct material expenses offset by a reduction in employee compensation in Q2 2020.

In Q2 2020, employee compensation decreased to 103,957 (Q2 2019 - \$414,873) and subcontracting, direct materials and manufacturing overhead increased to \$813,201 (Q2 2019 - \$335,240). The gross margin for Q2 2020 was \$1,268,592 or 59.5% of revenue compared to a gross margin of \$185,349 or 20.3% of revenue for Q2 2019. As a result of the type of contracts being executed, the nature of the project activity, as well as the composition of the cost of sales and services, as the mix between labour, materials and subcontracts may be significantly different. Of note, the Company in Q2 2020 applied for an amount of \$648,125 in wage subsidy from Revenue Canada under the CEWS program. From this amount, \$92,028 was applied to employee compensation under cost of sales and services.

Investment tax credits recorded against cost of sales are related to projects that qualify for tax credits from the provincial government of Quebec. Qualifying tax credits decreased to \$18,758 in Q2 2020, compared with \$29,061 in Q2 2019. This represents a decrease of 35% year-over-year. In total, the Company earned refundable investment tax credits of \$17,332 in Q2 2020. The Company continues to make investments in research and development projects involving strategic partners and government bodies.

The amortization of intangible assets of \$6,813 in Q2 2020 and \$4,779 for Q2 2019 relates to patents and deferred development costs. Of note, these expenses are non-cash items and will be amortized over the duration of the patent lives.



Selling, General and Administrative Expenses

| | Three months ended June 30, | | | Six months ended June 30, | | |
|--|-----------------------------|---------------------|------------------------|---------------------------|---------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Employee compensation | \$ 1,087,226 | \$ 812,113 | 34% | \$ 1,986,802 | \$ 1,624,786 | 22.3% |
| Professional fees | 348,221 | 303,854 | 15% | 400,143 | 459,020 | -13% |
| Office and general | 81,798 | 82,157 | 0% | 156,518 | 127,441 | 23% |
| Travel | 26,781 | 147,836 | -82% | 68,397 | 223,838 | -69% |
| Depreciation on property and equipment | 10,057 | 48,984 | -79% | 20,113 | 100,843 | -80% |
| Depreciation rou assets | 88,205 | 109,376 | -19% | 177,570 | 215,338 | -18% |
| Investment tax credits | (32,105) | (7,500) | 328% | (39,605) | (14,913) | 166% |
| Government grants | (34,228) | (10,440) | 228% | (46,728) | (32,478) | 44% |
| Other expenses | 65,383 | 97,399 | -33% | 123,853 | 159,939 | -23% |
| Sub-total before Share-based payments | \$ 1,641,338 | \$ 1,583,779 | 4% | \$ 2,847,063 | \$ 2,863,814 | -1% |
| Share-based payments | 23,638 | 27,584 | -14% | 94,504 | 62,068 | 52% |
| Total selling, general and administrative | \$ 1,664,976 | \$ 1,611,363 | 3% | \$ 2,941,567 | \$ 2,925,882 | 1% |

Included within Selling, General and Administrative expenses (“SG&A”) are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for Q2 2020 excluding the costs associated with share-based compensation (a non-cash item in which options vest principally over a four-year period), were \$1,641,338 representing an increase of 4% compared with \$1,583,779 reported for Q2 2019.

The increase in SG&A expenses in Q2 2020 over the same period in 2019 is mainly attributable to the net effect of:

- i) an increase of 34% in employee compensation due primarily to an increase in commission expenses offset by amounts claimed from Revenue Canada under the CEWS wage subsidy program,
- ii) an increase of 15% for professional fees, primarily due to an increase in legal fees,
- iii) a decrease of 0.4% in office and general expenses, is due to a decrease in computer and internet expenses,
- iv) travel costs decreased by 82%, due to a decrease in travel abroad,
- v) depreciation on property and equipment decreased by 79% due to lower amounts of property and equipment being depreciated,
- vi) depreciation on right of use assets decreased by 19% due to lower amounts of right of use assets being depreciated,
- vii) Investment tax credits increased by 328% due to an additional refund of \$24,605 from the 2018 tax return filed,
- viii) government grants increased by 228% due to higher levels of activities supported by such grants,
- ix) other expenses decreased by 33%, primarily due to a decrease in cost of freight and shipping.

Separately, share based payments decreased by 14% in Q2 2020 over the same period in 2019 as a result of the vesting structure of the stock option plan including the stock options granted on January 2, 2020.



Depreciation on Property and Equipment

| | Three months ended June 30, | | | Six months ended June 30, | | |
|--|-----------------------------|-----------|------------------------|---------------------------|------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Depreciation on property and equipment | \$ 10,057 | \$ 48,984 | -79% | \$ 20,113 | \$ 100,843 | -80% |

The depreciation on property and equipment decreased to \$10,057 in Q2 2020, compared with \$48,984 in Q2 2019. The 79% decrease is primarily due to a \$1,981,410 write off, of equipment in December 2019.

Research and Development (“R&D”) Costs

| | Three months ended June 30, | | | Six months ended June 30, | | |
|---|-----------------------------|-------------------|------------------------|---------------------------|-------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Employee compensation | \$ 31,153 | \$ 271,577 | -89% | \$ 279,817 | \$ 461,692 | -39% |
| Investment tax credits | 8,926 | (43,130) | -121% | (33,227) | (67,454) | -51% |
| Subcontracting | 740 | 11,620 | -94% | 12,315 | 11,620 | 6% |
| Materials and equipment | 21,999 | 29,357 | -25% | 32,577 | 66,752 | -51% |
| Other expenses | 1,885 | 5,458 | -65% | 2,444 | 8,023 | -70% |
| Sub-total before government grants | \$ 64,703 | \$ 274,882 | -76% | \$ 293,926 | \$ 480,633 | -39% |
| Government grants | (68,570) | (62,237) | 10% | (274,705) | (172,213) | 60% |
| Total net R&D costs | \$ (3,867) | \$ 212,645 | -102% | \$ 19,221 | \$ 308,420 | -94% |

The Company incurred (\$3,867) of R&D costs, net of government grants, on internal projects in Q2 2020, a decrease of 102% as compared with \$212,645 in Q2 2019. The decrease in Q2 2020 is primarily related to an increase in government grants supporting our R&D activities and an amount of \$129,201 claimed under the wage subsidy from Revenue Canada under the CEWS program.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and Experimental Development (“SR&ED”) tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see “Cost of Sales” above).

Net Finance Costs

| | Three months ended June 30, | | | Six months ended June 30, | | |
|------------------|-----------------------------|---------|------------------------|---------------------------|---------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Finance expenses | 276,928 | 275,418 | 1% | 509,665 | 526,916 | -3% |

Finance costs for Q2 2020 totaled \$276,928 as compared with \$275,418 for Q2 2019, were less than 1%, resulting in a virtually unchanged variance.



Strategic Investments

| | Three months ended June 30, | | | Six months ended June 30, | | |
|--|-----------------------------|--------------|------------------------|---------------------------|------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Changes to the fair value of strategic investments | \$ 5,899,465 | \$ (339,313) | 1839% | \$ 5,407,441 | \$ 366,883 | 1374% |

The adjustment to the fair market value of strategic investments for Q2 2020 resulted in a gain of \$5,899,465 compared to a loss in the amount of \$339,313 in Q2 2019, representing an increase of 1839% year-over-year. The increase is primarily attributable to the increased market share value in the HPQ Silicon Resources Inc. and Beauce Gold Fields.

Net comprehensive income

| | Three months ended June 30, | | | Six months ended June 30, | | |
|--------------------------|-----------------------------|----------------|------------------------|---------------------------|----------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Net comprehensive income | \$ 5,228,020 | \$ (2,253,390) | 332% | \$ 3,470,995 | \$ (3,132,314) | 211% |

The net comprehensive gain for Q2 2020 of \$5,228,020 compared to a loss of \$2,253,390, in Q2 2019, represents an increase of 332% year-over-year. The increased gain of \$7,481,410 in the comprehensive gain in Q2 2020 is primarily attributable to the factors described above, which have been summarized as follows:

- (i) an increase in product and service-related revenue of \$1,214,685 arising in Q2 2020, an increase in cost of sales and services totaling \$133,442, primarily due to an increase in subcontracting, direct materials, manufacturing overhead & other, offset by a decrease in employee compensation,
- (ii) an increase in SG&A expenses of \$53,613 arising primarily due to an increase in employee compensation, professional fees, offset by a decrease in travel, depreciation on property and equipment, depreciation ROU assets, and other expenses,
- (iii) a decrease in R&D expenses of \$216,512 primarily due to an increase in government grants and wage subsidy,
- (iv) an increase in net finance costs of \$1,510 primarily due to interest on higher amounts of debt,
- (v) an increase in fair value adjustment of \$6,238,778 primarily due to strategic investments.



Reconciliation of Non-IFRS measures (EBITDA, Adjusted and Modified)

| | Three months ended June 30, | | | Six months ended June 30, | | |
|--|-----------------------------|-----------------------|------------------------|---------------------------|-----------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Comprehensive income | \$ 5,228,020 | \$ (2,253,390) | 332% | \$ 3,470,995 | \$ (3,132,314) | -211% |
| Depreciation on property and equipment | 10,057 | 48,984 | -79% | 20,113 | 100,843 | -80% |
| Depreciation rou assets | 88,205 | 109,376 | -19% | 177,570 | 215,338 | -18% |
| Amortization of intangible assets | 6,813 | 4,779 | 43% | 13,626 | 9,558 | 43% |
| Financing charges | 276,928 | 275,419 | 1% | 509,665 | \$ 526,916 | -3% |
| EBITDA (gain) | \$ 5,610,023 | \$ (1,814,832) | 409% | \$ 4,191,969 | \$ (2,279,659) | 284% |
| Other non-cash items: | | | | | | |
| Share-based payments | 23,638 | 27,584 | -14% | 94,504 | 62,068 | 52% |
| Adjusted EBITDA (gain) | \$ 5,633,661 | \$ (1,787,248) | 415% | \$ 4,286,473 | (2,217,590) | 293% |
| Change in fair value of investments | 5,899,465 | (339,313) | 1839% | 5,407,441 | 366,883 | 1374% |
| Modified EBITDA (loss) | \$ (265,804) | \$ (1,447,935) | -82% | \$ (1,120,968) | \$ (2,584,474) | -57% |

EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation and Amortization, Adjusted EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation, Amortization and other non-cash items including share-based payment costs, and Modified EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation, Amortization and other non-cash items including share-based payment costs and change in fair value of investments.

EBITDA, Adjusted EBITDA and Modified EBITDA are not performance measures defined under IFRS and they are not considered an alternative to income or loss from operations, or to comprehensive earnings or loss, in the context of measuring a company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of its results and related trends and increases transparency and clarity. Management believes that EBITDA, Adjusted EBITDA and Modified EBITDA are important measures of operating performance because it allows management, investors and others to evaluate and compare the Company's operating results, including its return on capital and operating efficiencies, from period-to-period by removing the impact of the Company's capital structure (interest expense to service outstanding debt), asset base (depreciation and amortization), tax consequences, and other non-operating items not requiring cash outlays including the adjustment to the fair value of investments and share-based compensation. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation.

The EBITDA gain in Q2 2020 was \$5,610,023 compared with an EBITDA loss of \$1,814,832 for Q2 2019, representing an increase of 409% year-over-year. The \$7,424,855 increase in the EBITDA gain in Q2 2020 compared with Q2 2019 is due to the increase in comprehensive income of \$7,418,410, a decrease in depreciation on property and equipment of \$38,927, a decrease in depreciation of right of use assets of \$21,171, an increase in amortization of intangible assets of \$2,034, and an increase in finance charges of \$1,511.

Adjusted EBITDA gain in Q2 2020 was \$5,633,661 compared with an Adjusted EBITDA loss of \$1,787,248 for Q2 2019. The increase of \$7,420,909 in the Adjusted EBITDA gain in Q2 2020 is attributable to an increase in EBITDA gain of \$7,424,855, offset by a decrease of \$3,946 in share-based payments.

The Modified EBITDA loss in Q2 2020 was \$265,804 compared with a Modified EBITDA loss of \$1,447,935 for Q2 2019, representing a decrease of 82%. The decrease in the Modified EBITDA loss in Q2 2020 is attributable to the increase as mentioned above in the Adjusted EBITDA of \$7,357,909 and an increase in the change of fair value of strategic investments of \$6,238,778.



SUMMARY OF QUARTERLY RESULTS

| | 2020 | | 2019 | | | | 2018 | |
|-----------------------------|--------------|-------------|--------------|--------------|-------------|------------|-------------|--------------|
| | Q2 | Q1 | Q4 | Q3 | Q2 | Q1 | Q4 | Q3 |
| Revenues | \$ 2,128,454 | \$ 718,908 | \$ 1,066,329 | \$ 2,097,437 | \$ 913,769 | \$ 736,443 | \$ 450,436 | \$ 1,097,726 |
| Gross margin | 1,266,592 | 267,414 | 88,982 | 947,090 | 185,349 | 76,671 | (345,158) | 252,152 |
| Gross margin % | 59.5% | 37.2% | 8.3% | 45.2% | 20.3% | 10.4% | -76.6% | 23.0% |
| Comprehensive income (loss) | 5,228,020 | (1,757,027) | (5,073,771) | (965,031) | (2,253,390) | (878,925) | (2,523,283) | (2,758,831) |
| Earnings (loss) per share | | | | | | | | |
| Basic | 0.04 | (0.01) | (0.04) | (0.01) | (0.02) | (0.01) | (0.02) | (0.02) |
| Diluted | 0.03 | (0.01) | (0.04) | (0.01) | (0.02) | (0.01) | (0.02) | (0.02) |

The majority of PyroGenesis' revenue is recognised from long-term contracts over time and is dependent on the timing of project initiation and execution, including project engineering, manufacturing, and testing. In Q2 2020 the Company has adopted IFRS 15 dealing with revenue from contracts with customers.

LIQUIDITY AND CAPITAL RESOURCES

The following table summarizes the contractual maturities of financial liabilities as at June 30,

| | Carrying value | Total Contractual amount | 6 months or less | 7 to 12 months | 1 to 3 years |
|--|------------------|--------------------------|------------------|----------------|----------------|
| | \$ | \$ | \$ | \$ | |
| Accounts payable and accrued liabilities | 4,116,398 | 4,116,398 | 4,116,398 | - | - |
| Term loans | 332,137 | 362,700 | 362,700 | - | - |
| Convertible debentures | 816,569 | 1,007,117 | 42,893 | 42,893 | 921,331 |
| | 5,265,107 | 5,486,218 | 4,521,994 | 42,893 | 921,331 |

The Company has incurred, in the last several years, operating losses and negative cash flows from operations, resulting in an accumulated deficit of \$57,304,682 and a negative working capital of \$7,463,370 as at Q2 2020, (December 31, 2019 - \$60,237,656 and \$10,492,102 respectively). Furthermore, as at Q2 2020, the Company's current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$1,567,777 (December 31, 2019 - \$34,431). The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.

Revenue generated from active projects has begun to produce sufficient positive cash flow to fund operations. The Company has a strong backlog from signed contracts totaling \$28MM, and a pipeline of prospective new projects resulting in the Company's business plan becoming less dependent on raising additional funds to finance operations within and beyond the next 12 months. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so, should it need to, in the future. If the Company is unable to obtain sufficient additional financing when needed, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations.



SUMMARY OF CASH FLOWS

| | Three months ended June 30, | | Six months ended June 30, | |
|---|-----------------------------|----------------|---------------------------|----------------|
| | 2020 | 2019 | 2020 | 2019 |
| Cash provided by (used in) operating activities | \$ (1,019,546) | \$ (1,970,308) | \$ (752,478) | \$ (1,952,054) |
| Cash provided by (used in) investing activities | (174,281) | (356,854) | (183,831) | (485,271) |
| Cash provided by (used in) financing activities | 1,622,188 | 3,528,603 | 2,469,655 | 3,290,712 |
| Increase (decrease) in cash | 428,361 | 1,201,441 | 1,533,346 | 853,387 |
| Cash - end of period | 1,567,777 | 1,293,173 | 1,567,777 | 1,293,173 |

During the three months ended June 30, 2020, cash flows used by operating activities was \$1,019,546 compared to cash flows used of \$1,970,308 for the same period in the prior year. Cash flows used in the operating activities was \$752,478 compared to \$1,952,054 for the same period in 2019.

The use of cash during Q2, 2020 consists of the comprehensive income of \$5,228,019 (2019 – comprehensive loss of \$2,253,390) plus adjustments for operating activities of \$5,493,824 (2019 - \$805,455), plus a net change in non-cash operating working capital items of \$753,741 (2019 – \$522,373).

The use of cash during the six-months ended Q2, 2020 consists of the comprehensive income of \$3,470,992 (2019 – comprehensive loss of \$3,132,314) plus adjustments for operating activities of \$4,591,963 (2019 - \$547,839), plus a net change in non-cash operating working capital items of \$368,493 (2019 – \$632,421).

Investing activities in Q2 2020, resulted in a use of cash of \$174,281 (\$183,831 for the six-months ended June 30, 2020), compared to a use of cash of \$356,854 in Q2 2019 (\$485,271 for the six-months ended June 30, 2019) resulting from the purchase of inventories, investments, property and equipment and variation of deposits.

Financing activities in Q2, 2020 generated funds of \$1,622,188, compared with generated funds of \$3,528,603 for the same periods in 2019. In Q2, 2020, the Company repaid a portion of the convertible debenture including modification costs of \$4,500, redeemed shares for \$964,391, repaid R&D loans of \$214,000 and promissory notes to the controlling shareholder and CEO of \$295,000, made payment of lease liabilities of \$33,654. Stock options and warrants were exercised for total proceeds of \$3,302,269. Interest paid was \$168,536 in Q1 2020 compared to \$200,675 in Q2 2019. In 2019, the funds generated mainly resulted from the net proceeds from private placement of \$3,403,185 and loans of \$329,200. The use of funds resulted from the repayment of lease liabilities of \$53,225 and the interest paid as mentioned above.

Financing activities in the six-months ended June 30, 2020 generated funds of \$2,469,655, compared with generated funds of \$3,290,712 for the same periods in 2019. In 2020, the Company repaid a portion of the convertible debenture including modification costs of \$358,500, redeemed shares for \$964,391, repaid R&D loans of \$214,000 and promissory notes to the controlling shareholder and CEO of \$295,000, made payment of lease liabilities of \$68,272 and received proceeds from the issuance of a convertible loan of \$903,000. Stock options and warrants were exercised for total proceeds of \$3,748,669. Interest paid was \$281,851 in 2020 compared to \$354,241 in 2019. In 2019, the use of funds mainly resulted from repayment of R&D loan in the amount of \$247,200, the repayment of lease liabilities of \$105,719 and the interest paid as mentioned above. Net proceeds of \$3,465,477 was received from the issuance of common shares and \$329,200 from loans.



The net cash position of the Company increased by \$428,361 for Q2, 2020 (\$1,533,346 in the six-months ended June 30, 2020) compared to a net increase of \$1,151,323 for Q1, 2019 (\$644,981 in the six-months ended June 30, 2019).

CAPITAL STOCK INFORMATION

The authorized share capital of the Company consists of an unlimited number of Class A common shares (the “Common Shares”). As at July 28, 2020 PyroGenesis had 150,208,325 on shares, 8,446,893 share purchase warrants, 6,710,000 outstanding stock options issued, and 6,060,000 exercisable options issued.

As previously announced, the Company bought back for cancellation 1,285,000 of its own common shares in the market for \$964,391.

GOING CONCERN

The Company presumes it will be able to realize its assets and discharge its liabilities in the normal course of business for the foreseeable future. The Company’s management has reviewed the Company’s projected cashflows and backlog and is of the opinion that the Company will generate sufficient positive cash flows and profits from operations and strategic investments to meet current and future cash requirements. Management expects that the investments currently being made in accelerating projects under development for various clients, together with executing on the \$28MM backlog at July 28 2020, (581% of 2019 revenues) which is primarily related to the Company’s successful diversification into niche markets of the additive manufacturing (including 3D printing), and metals & mining industries, will continue to improve the Company’s cash position.

The December 31, 2019 financial statements have been prepared using International Financial Reporting Standards (“IFRS”) applicable to a going concern, which contemplates the realization of assets and settlement of liabilities in the normal course of business as they become due. If the going concern assumption were not appropriate for these financial statements then adjustments would be necessary to the carrying value of assets and liabilities, the reported expenses and the statements of financial position classifications used. The impact on the financial statements could be material.



RELATED PARTY TRANSACTIONS

During the three and the six months ended June 30, 2020, the Company concluded the following transactions with related parties:

The Company entered into a lease agreement for rent of a property with a trust whose beneficiary is the controlling shareholder and CEO of the Company. As at June 30, 2020 the carrying amount of the right-of-use asset and lease liabilities are \$1,099,881 and \$1,149,828, respectively.

An amount including rent and property taxes of \$68,687 and \$136,733 were paid to a trust whose beneficiary is the controlling shareholder and CEO (\$66,740 and \$133,102 were charged in 2019). A balance due of \$Nil (2019 - \$Nil) is included in accounts payable at June 30, 2020.

An amount of \$115,581 was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company (December 31, 2019 – \$Nil), of this amount \$45,257 is included in deposits.

A balance due to the controlling shareholder and CEO of the Company amounted to \$137,484 (December 31, 2019 - \$214,470) for expense report, salary and vacation payables and is included in accounts payable and accrued liabilities as at June 30, 2020.

As at June 30, 2020, an amount of \$4,413 (December 31, 2019 - \$7,427), of interest payable and an accretion amount of \$14,458 (December 31, 2019 - \$12,946), were accrued on the loan of \$295,000 from the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities

As at June 30, 2020, an amount of \$30,960 (December 31, 2019 - \$Nil), of interest payable and an accretion amount of \$42,951 (December 31, 2019 - \$Nil), were accrued on a convertible loan of \$903,000 from a trust whose beneficiary is the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

The key management personnel of the Company are the members of the Board of Directors and certain officers. Total compensation to key management consisted of the following:

| | Three months ended June 30, | | Six months ended June 30, | |
|---|------------------------------------|-------------|----------------------------------|-------------|
| | 2020 | 2019 | 2020 | 2019 |
| | | | \$ | \$ |
| Salaries –officers | 117,648 | 102,000 | 380,318 | 204,000 |
| Pension contributions | 3,097 | 2,040 | 5,866 | 4,080 |
| Fees – Board of Directors | - | 24,000 | 44,000 | 46,000 |
| Share – based compensation – officers | 63,177 | - | 65,299 | - |
| Share – based compensation - Board of Directors | (43,448) | - | 18,793 | - |
| Other benefits – officers | 223,466 | 2,486 | 237,853 | 6,521 |
| Total compensation | 372,940 | 130,526 | 752,129 | 260,601 |



A balance of \$64,139 of key management compensation, of the amounts noted above, is included in accounts payable and accrued liabilities as at June 30, 2019 (December 31, 2019 - \$130,604).

SUBSEQUENT EVENTS

The Company discusses the novel coronavirus (COVID-19) under risk factors in the June 30, 2020 MD & A.

The Company received under the exclusivity contract with DROSRITE International approximately US\$3,000,000 between July 13, 2020 and July 28, 2020.

On July 13, 2020, the Company paid an amount of \$115,200 to extinguish the other term loans.

In July 2020, the Company issued 100,000 common shares upon the exercise of 100,000 stock options with an exercise price of \$0.19.

In July 2020, the Company issued 962,000 common shares upon the exercise of 962,000 share purchase warrants for total proceeds of \$763,816.

CRITICAL ACCOUNTING ESTIMATES, NEW AND FUTURE ACCOUNTING POLICIES AND FINANCIAL INSTRUMENTS

For a discussion of significant accounting policies, significant accounting judgments, estimates and assumptions, and financial instruments, please refer to notes 3, 4, and 24 of the annual 2019 Financial Statements.

RISK FACTORS

The global pandemic due to the novel coronavirus (COVID-19) is a situation that is constantly evolving, and the measures put in place are having multiple impacts on provincial, national and global economies. The overall effect of these events on the Company and its operations is too uncertain to be estimated at this time. The impacts will be accounted for when they are known and may be assessed.

PyroGenesis is subject to a number of risks and uncertainties that could significantly affect the Company's financial condition and performance. This list of risk factors may not be exhaustive as the Company operates in a rapidly changing business environment and new risk factors emerge from time to time. The Company cannot predict such risk factors, nor can the Company assess the impact, if any, of such risk factors or uncertainties on its business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those projected in any forward-looking statements. Accordingly, neither shareholders of the Company nor purchasers of securities of the Company should rely on forward-looking statements as a prediction of actual results. If any of these risks actually occur, the Company's business, results of operations, financial position and cash flows could be adversely affected. In any such case, the market price of the Company's common shares could decline, and investors may lose all or part of their investment.



Revenue Risks

PyroGenesis may experience delays in achieving revenues, particularly with plasma gasification projects which have a long sales cycle. Revenues may be delayed or negatively impacted by issues encountered by the Company or its clients including:

- (a) unforeseen engineering and/or environmental problems;
- (b) delays or inability to obtain required financing, licenses, permits and/or regulatory approvals;
- (c) supply interruptions and/or labour disputes;
- (d) foreign exchange fluctuations and/or collection risk; and
- (e) competition from other suppliers and/or alternative energy solutions that are less capital intensive.

There is no assurance that the business will perform as expected or that returns from the business will support the expenditures needed to develop it.

Technology Development and Manufacturing Capability Risks

PyroGenesis recently expanded into new areas of business and, as a result, many of the Company's products are at various stages of the development cycle. The Company may be unable to commercialise such products, or it may be unable to manufacture such products in a commercially viable manner. Whilst management is confident in both its technology and in its team of experienced engineers, scientists and technicians, it cannot know with certainty, which of its products will be commercialised, when such products will be commercialised, or whether such products will be able to be manufactured and distributed profitably.

Product Revenues/History of Losses

PyroGenesis has incurred losses in the majority of years since its inception. In the past the Company's operations have not generated sufficient earnings and cash flows to date to result in consistent profitability or positive cash flow. For the three months and six months ending June 30, 2020 the Company has net comprehensive income of \$5,228,020 and \$3,470,995 respectively.

Additional financing and dilution

PyroGenesis may require additional financing. There can be no assurance that additional financing will be available to the Company when needed, or on terms acceptable to the Company. PyroGenesis' inability to raise financing to support ongoing operations or to fund capital expenditures could limit the Company's growth and may have a material adverse effect upon the Company.

The Company does not exclude raising additional funds by equity financing. In addition, at July 28, 2020, 6,710,000 stock options are currently issued and outstanding, together with 8,446,893 share purchase warrants and a \$903,000 convertible loan. The exercise of stock options and/or warrants, together with the conversion of the loan, as well as any new equity financings, represents dilution factors for present and future shareholders.



Sales Cycle and Fixed Price Contracts

PyroGenesis sales cycle is long and the signing of new contracts is subject to delay, over which the Company has little control. The Company also enters into sales contracts with fixed pricing, which may be impacted by changes over the period of implementation. There is no assurance that delays or problems in fulfilling contracts with clients will not adversely affect the Company's activities, operating results or financial position.

Reliance on Technology

PyroGenesis will depend upon continuous improvements in technology to meet client demands in respect of performance and cost, and to explore additional business opportunities. There can be no assurance that the Company will be successful in its efforts in this regard or that it will have the resources available to meet this demand. Whilst management anticipates that the research and development will allow the Company to explore additional business opportunities, there is no guarantee that such business opportunities will be presented or realised. The commercial advantage of the Company will depend to a significant extent on the intellectual property and proprietary technology of PyroGenesis and the ability of the Company to prevent others from copying such proprietary technologies. PyroGenesis currently relies on intellectual property rights and other contractual or proprietary rights, including (without limitation) copyright, trade secrets, confidential procedures, contractual provisions, licenses and patents, to protect its proprietary technology. PyroGenesis may have to engage in litigation in order to protect its patents or other intellectual property rights, or to determine the validity or scope of the proprietary rights of others. This type of litigation can be expensive and time consuming, regardless of whether or not the Company is successful. PyroGenesis may seek patents or other similar protections in respect of particular technology; however, there can be no assurance that any future patent applications will actually result in issued patents, or that, even if patents are issued, they will be of sufficient scope or strength to provide meaningful protection or any commercial advantage to the Company. Moreover, the process of seeking patent protection can itself be long and expensive. In the meantime, competitors may develop technologies that are similar or superior to PyroGenesis' technology or design around the patents owned by the Company, thereby adversely affecting the Company's competitive advantage in one or more of its areas of business. Despite the efforts of the Company, its intellectual property rights may be invalidated, circumvented, challenged, infringed or required to be licensed to others. It cannot be assured that any steps the Company may take to protect its intellectual property rights and other rights to such proprietary technologies that are central to the Company's operations will prevent misappropriation or infringement of its technology.

Changes to Contracts

PyroGenesis is dependent upon its ability to establish and develop new relationships and to build on existing relationships with current clients. The Company cannot provide assurance that it will be successful in maintaining or advancing its relationships with current clients or procure additional clients. In addition, PyroGenesis cannot provide assurance that the U.S. Military and/or other military clients will continue to provide the Company with business. Sales to governments and governmental entities are subject to specific additional risks, such as delays in funding, termination of contracts or sub-contracts at the convenience of the government, termination, reduction or modification of contracts or sub-contracts in the event of changes in the government's policies or as a result of budgetary constraints and increased or unexpected costs resulting in losses or reduced profits under fixed price contracts.



Foreign Exchange Exposure

PyroGenesis' products and services are increasingly being sold in markets outside of Canada, whilst most of its operating expenses and capital expenditures are denominated in Canadian dollars. As a result, the Company is exposed to fluctuations in the foreign exchange rates between Canadian dollar and the currency in which a particular sale is transacted, which may result in foreign exchange losses that could affect earnings.

Competition

The industry is competitive and PyroGenesis competes with a substantial number of companies which have greater technical and financial resources. There can be no assurance that such competitors will not substantially increase the resources devoted to the development and marketing of products and services that compete with those of the Company or that new or existing competitors will not enter the various markets in which PyroGenesis is active. There can be no assurance that competitors will not develop new and unknown technologies with which the Company may have difficulty competing. Furthermore, failure to remain cost competitive may result in PyroGenesis losing business to its competitors.

Management and Key Personnel

PyroGenesis depends on the skills and experience of its management team and other key employees. The Company relies heavily on its ability to attract and retain highly-skilled personnel in a competitive environment. PyroGenesis may be unable to recruit, retain, and motivate highly-skilled employees in order to assist the Company's business, especially activities that are essential to the success of the Company. Failure to recruit and retain highly-skilled employees may adversely affect PyroGenesis' business, financial condition and results of operations.

Implementation of a strategic plan

PyroGenesis' commercial strategy aims to leverage its products, consumables, and services whilst focusing on the resolution of problems within niche markets within the industries served by the Company. There can be no assurances as to the success of the Company's strategic plan, which should be considered under the risks perspective and difficulties frequently encountered by a developing business.

Adverse Decisions of Sovereign Governments

PyroGenesis conducts an increasing portion of its business internationally. There is no assurance that any sovereign government, including Canada's, will not establish laws or regulations that will not be detrimental to the Company's interests or that, as a foreign corporation, it will continue to have access to the regulatory agencies in other countries. Governments have, from time to time, established foreign exchange controls, which could have a material adverse effect on the Company's business, financial condition and results of operations.



Governmental Regulation

PyroGenesis is subject to a variety of federal, provincial, state, local and international laws and regulations relating namely to the environment, health and safety, export controls, currency exchange, labour and employment and taxation. These laws and regulations are complex, change frequently and have tended to become more stringent over time. Failure to comply with these laws and regulations may result in a variety of administrative, civil and criminal enforcement measures, including assessment of monetary penalties, imposition of remedial requirements and issuance of injunctions as to future compliance. The Company may be subject to compliance audits by regulatory authorities in the various countries in which it operates.

Environmental Liability

PyroGenesis is subject to various environmental laws and regulations enacted in the jurisdictions in which it operates, which govern the manufacturing, processing, importation, transportation, handling and disposal of certain materials used in the Company's operations. Management believes that it has adequate procedures in place to address compliance with current environmental laws and regulations. Furthermore, management monitors the Company's practices concerning the handling of environmentally hazardous materials. However, there can be no assurance that the Company's procedures will prevent environmental damage occurring from spills of materials handled by the Company or that such damage has not already occurred. On occasion, substantial liabilities to third parties may be incurred. The Company may have the benefit of insurance maintained by it or the operator, however, the Company may become liable for damages against which it cannot adequately insure or against which it may elect not to insure because of high costs or other reasons. The Company's clients are subject to similar environmental laws and regulations, as well as limits on emissions to the air and discharges into surface and sub-surface waters. While regulatory developments that may follow in subsequent years could have the effect of reducing industry activity, the Company cannot predict the nature of the restrictions that may be imposed. The Company may be required to increase operating expenses or capital expenditures in order to comply with any new restrictions or regulations.

Product Liability and Other Lawsuits

PyroGenesis is subject to a variety of potential product liabilities claims and other lawsuits related with its operations, including liabilities and expenses associated with product defects. The Company maintains product liability and other insurance coverage that management believes is generally in accordance with the market practice in its industry, but there can be no assurance that the Company will always be adequately insured against all such potential liabilities.

Market Liquidity

The market price for the common shares of the Company could be subject to wide fluctuations. Factors such as the announcement of significant contracts, technological innovations, new commercial products, patents, a change in regulations, quarterly financial results, future sales of common shares by the Company or current shareholders, and many other factors could have considerable repercussions on the price of the Company's common shares. In addition, the financial markets may experience significant price and value fluctuations that affect the market prices of equity securities of companies that sometimes are unrelated to the operating performance of these companies. Broad market fluctuations, as well as economic conditions generally may adversely affect the market price of the Company's common shares.



Information systems disruptions

The Company's business depends on the efficient and uninterrupted operation of its computer and communications software, hardware systems, and its other information technology. If such systems were to fail, or the Company was unable to successfully expand the capacity of these systems or integrate new technologies into its existing systems, its operations and financial results could be adversely affected.

OUTLOOK

Percent complete revenue recognition in our major projects, which is the revenue recognition method we are mandated to follow by GAAP, is such that it is not linear, but exponential and as such, Q2 is now starting to reflect the results one might expect given recent announcements. It is interesting to note that using this revenue recognition method, only \$1.8MM has been recognized under the \$22MM+ DROSRITE™ contract for which we have announced receipt of over \$7MM, and which will be completed within the next year.

Using this same revenue recognition method, we can provide guidance for Q3 2020, and for the year ending December 31st, 2020: At this point we expect that Q3, and the nine months ending September 30, 2020, will both be profitable as will year end results. We are projecting Q3 2020 EPS (Basic & Diluted) to be conservatively in excess of 6 cents and the year to be in excess of 10 cents.

Any discussion regarding the OUTLOOK of the company would be remiss if it did not address the continued increase in the Company's market capitalization and the implications that has for the future.

Without a doubt the Company's market capitalization suffered, as did many other companies, in the general Covid-19 market meltdown at the end of March 2020. However, PyroGenesis soon broke from the pack with the issuance of a material press release on March 24th, 2020.

Management believes that its breaking from the ranks caught the attention of investors, fund managers, and money managers who all now had the time during the Covid-19 lockdown to fully analyze the complicated story that is PyroGenesis. Management does not see any reason why this interest would abate anytime soon. To the contrary, Management has reason to believe that interest in the Company will only increase over the foreseeable future. As such, several strategies (up listings, spinoffs, acquisitions) are now being accelerated/considered.

Having a larger market capitalization has also helped in discussions with potential customers who take comfort from the possibility that a higher market capitalization may translate into easier access to capital. For the record, there is no intention to raise capital for working capital purposes.

If 2018 was the year in which PyroGenesis successfully positioned each of its commercial business lines by strategically partnering with multi-billion-dollar entities, and 2019 was the year that saw the appropriate personnel and infrastructure being put in place while building upon the success of 2018, then 2020 is without a doubt the year that the long awaited breakout, which began in the second half of 2019, takes place; it is in fact already upon us:



To date during 2020, PyroGenesis has:

- 1) received significant payments under the \$22MM contract with Drosrite International thereby validating announcements made during 2019,
- 2) established a relationship with a US based tunneling company (contracts and payments ongoing),
- 3) Established itself in the iron ore pelletization industry as a potential supplier of torches geared to replacing existing burners and thereby reducing GHGs. Interest is also spilling over into other industries with GHG reduction targets,
- 4) Established a relationship with an OEM in North America with the intent to eventually supply powders for their 3D printing needs. This augments our relationship with Aubert & Duval, while at the same time de-risking our dependence on them,
- 5) retired the \$3MM convertible debenture in full,
- 6) bought back approximately 1.2 Million shares under the existing Normal Course Issuer Bid,
- 7) increased Company's investment in HPQ, who has subsequently also experienced a significant increase in market capitalization,
- 8) further benefited from early conversions of warrants maturing in 2021 of over \$3MM.

The Company has booked a significant backlog of signed contracts (in excess of \$28MM; 2019 Revenues approx. \$5MM) which, when taking the eagerly awaited US Navy contract into account, will increase to over \$38MM. This provides a solid cornerstone upon which PyroGenesis can:

- a) continue to build on the recent successes with the Company's DROSRITE™ offering,
- b) Leverage off of the recent successes with the Company's torch offerings to (i) the iron ore pelletization industry, and (ii) a tunneling client,
- c) Accelerate activities with Aubert & Duval in the Additive Manufacturing sector as well as HPQ in the Mining and Metallurgical sector, both of which did not progress as fast as management would have liked in 2019. Significant attention will be placed on both these activities in 2020.

Specifically, with Aubert & Duval the goal will be to complete the integration of the cutting-edge advances PyroGenesis has made to the powder production process.

With respect to HPQ, the goal would be to accelerate the game changing PUREVAP™ family of processes which we are developing for HPQ, namely:

- The PUREVAP™ "Quartz Reduction Reactors" (QRR), an innovative process (patent pending), which will permit the one step transformation of quartz (SiO₂) into high purity silicon (Si) at reduced costs, energy input, and carbon footprint that will propagate its considerable renewable energy potential; and
- The PUREVAP™ Nano Silicon Reactor (NSiR), a new proprietary process that use PUREVAP™ QRR silicon (Si) as feedstock, to make spherical silicon nano powders and nanowires;

Looking forward, the Company has, as of December 31st, 2019, approximately \$10MM of in-the-money warrants and options expiring in 2020 and 2021. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial obligations) which is not reflected as an asset on the balance sheet.

**FORM 52-109FV2
CERTIFICATION OF INTERIM FILINGS
VENTURE ISSUER BASIC CERTIFICATE**

I, P. Peter Pascali, President and CEO of PyroGenesis Canada Inc., certify the following:

1. **Review:** I have reviewed the interim financial statements and interim MD&A (together, the “interim filings”) of PyroGenesis Canada Inc. (the “issuer”) for the interim period ended June 30st, 2020.
2. **No misrepresentations:** Based on my knowledge, having exercised reasonable diligence, the interim filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, with respect to the period covered by the interim filings.
3. **Fair presentation:** Based on my knowledge, having exercised reasonable diligence, the interim financial statements together with the other financial information included in the interim filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date of and for the periods presented in the interim filings.

Date: **July 28th, 2020**

/s/ P Peter Prascali

P Peter Prascali

President and Chief Executive Officer

NOTE TO READER

In contrast to the certificate required for non-venture issuers under National Instrument 52-109 Certification of Disclosure in Issuers’ Annual and Interim Filings (NI 52-109), this Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures (DC&P) and internal control over financial reporting (ICFR), as defined in NI 52-109. In particular, the certifying officers filing this certificate are not making any representations relating to the establishment and maintenance of

- i. controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the issuer in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and
- ii. a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer’s GAAP.

The issuer’s certifying officers are responsible for ensuring that processes are in place to provide them with sufficient knowledge to support the representations they are making in this certificate. Investors should be aware that inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost effective basis DC&P and ICFR as defined in NI 52-109 may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.

FORM 52-109FV2
CERTIFICATION OF INTERIM FILINGS
VENTURE ISSUER BASIC CERTIFICATE

I, Michael Blank, Chief Financial Officer of PyroGenesis Canada Inc., certify the following:

1. **Review:** I have reviewed the interim financial statements and interim MD&A (together, the “interim filings”) of PyroGenesis Canada Inc. (the “issuer”) for the interim period ended June 30th, 2020.
2. **No misrepresentations:** Based on my knowledge, having exercised reasonable diligence, the interim filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, with respect to the period covered by the interim filings.
3. **Fair presentation:** Based on my knowledge, having exercised reasonable diligence, the interim financial statements together with the other financial information included in the interim filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date of and for the periods presented in the interim filings.

Date: **Tuesday July 28th, 2020**

/s/ **Michael Blank**

Michael Blank
Chief Financial Officer

NOTE TO READER

In contrast to the certificate required for non-venture issuers under National Instrument 52-109 Certification of Disclosure in Issuers’ Annual and Interim Filings (NI 52-109), this Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures (DC&P) and internal control over financial reporting (ICFR), as defined in NI 52-109. In particular, the certifying officers filing this certificate are not making any representations relating to the establishment and maintenance of

- i. controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the issuer in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and

- ii. a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer's GAAP.

The issuer's certifying officers are responsible for ensuring that processes are in place to provide them with sufficient knowledge to support the representations they are making in this certificate. Investors should be aware that inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost effective basis DC&P and ICFR as defined in NI 52-109 may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.



**PyroGenesis Announces Q2 2020 Results:
Net Income \$5.2MM; Gross Margin 60%; Earnings per Share \$0.04**

MONTREAL, QUEBEC (GlobeNewswire – July 29th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today its financial and operational results for the second-quarter ended June 30th, 2020.

"Percent complete revenue recognition in our major projects, which is the revenue recognition method we are mandated to follow by GAAP, is such that it is not linear, but exponential and as such, Q2 is now starting to reflect the results one might expect given recent announcements. It is interesting to note that using this revenue recognition method, only \$1.8MM has been recognized under the \$22MM+ DROSRITE™ contract for which we have announced receipt of over \$7MM, and which will be completed within the next year. Using this same revenue recognition method, we can provide guidance for Q3 2020, and for the year ending December 31st, 2020: At this point, we expect that Q3 2020, and the nine months ending September 30, 2020, will both be profitable as will year end results. We are projecting Q3 2020 EPS (Basic & Diluted) to be conservatively in excess of 6 cents," said P. Peter Pascali, CEO and President of PyroGenesis. "We are happy to be reporting these results in record time, and are pleased to note that we did so within the time frame set by more demanding exchanges. As such, we have set a goal to report all future financial results within the more stringent requirements set by the TSX as opposed to the TSXV."

Q2 2020 results reflect the following highlights:

- Revenues of \$2,128,454, an increase of 133% from \$913,769 posted in Q2 2019
- Comprehensive income of \$5,228,020 an increase of 332% from (\$2,253,390) posted in Q2 2020
- Gross margin of 59.5% an increase of 39.2% over the same period in Q2 2019
- Cash on hand on June 30, 2020 was \$1,567,777 (December 31, 2019: \$34,431)
- Backlog of signed contracts as of the date of this writing is approx. \$28MM.

Management Guidance for Q3 2020

- Management expects significant revenue growth
 - Management expects that Q3 2020 and the nine months ending September 30, 2020 to be profitable
 - Earnings per Share (EPS) > \$0.06.
-

Management Guidance for full year 2020:

- Management expects significant revenue growth in 2020,
- Earnings per Share (EPS) > \$0.10.

OUTLOOK

Percent complete revenue recognition in our major projects, which is the revenue recognition method we are mandated to follow by GAAP, is such that it is not linear, but exponential and as such, Q2 is now starting to reflect the results one might expect given recent announcements. It is interesting to note that using this revenue recognition method, only \$1.8MM has been recognized under the \$22MM+ DROSRITE™ contract for which we have announced receipt of over \$7MM, and which will be completed within the next year.

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Any discussion regarding the OUTLOOK of the company would be remiss if it did not address the continued increase in the Company's market capitalization and the implications that has for the future.

Without a doubt the Company's market capitalization suffered, as did many other companies, in the general Covid-19 market meltdown at the end of March 2020. However, PyroGenesis soon broke from the pack with the issuance of a material press release on March 24th, 2020.

Management believes that its breaking from the ranks caught the attention of investors, fund managers, and money managers who all now had the time during the Covid-19 lockdown to fully analyze the complicated story that is PyroGenesis. Management does not see any reason why this interest would abate anytime soon. To the contrary, Management has reason to believe that interest in the Company will only increase over the foreseeable future. As such, several strategies (up listings, spinoffs, acquisitions) are now being accelerated/considered.

Having a larger market capitalization has also helped in discussions with potential customers who take comfort from the possibility that a higher market capitalization may translate into easier access to capital. For the record, there is no intention to raise capital for working capital purposes.

If 2018 was the year in which PyroGenesis successfully positioned each of its commercial business lines by strategically partnering with multi-billion-dollar entities, and 2019 was the year that saw the appropriate personnel and infrastructure being put in place while building upon the success of 2018, then 2020 is without a doubt the year that the long awaited breakout, which began in the second half of 2019, takes place; it is in fact already upon us:

To date during 2020, PyroGenesis has:

- 1) received significant payments under the \$22MM contract with Drosrite International thereby validating announcements made during 2019,
- 2) established a relationship with a US based tunneling company (contracts and payments ongoing),
- 3) Established itself in the iron ore pelletization industry as a potential supplier of torches geared to replacing existing burners and thereby reducing GHGs. Interest is also spilling over into other industries with GHG reduction targets,
- 4) Established a relationship with an OEM in North America with the intent to eventually supply powders for their 3D printing needs. This augments our relationship with Aubert & Duval, while at the same time de-risking our dependence on them,
- 5) retired the \$3MM convertible debenture in full,
- 6) bought back approximately 1.2 Million shares under the existing Normal Course Issuer Bid,
- 7) increased Company's investment in HPQ, who has subsequently also experienced a significant increase in market capitalization,
- 8) further benefited from early conversions of warrants maturing in 2021 of over \$3MM.

The Company has booked a significant backlog of signed contracts (in excess of \$28MM; 2019 Revenues approx. \$5MM) which, when taking the eagerly awaited US Navy contract into account, will increase to over \$38MM. This provides a solid cornerstone upon which PyroGenesis can:

- a) continue to build on the recent successes with the Company's DROSRITE™ offering,
- b) Leverage off of the recent successes with the Company's torch offerings to (i) the iron ore pelletization industry, and (ii) a tunneling client,
- c) Accelerate activities with Aubert & Duval in the Additive Manufacturing sector as well as HPQ in the Mining and Metallurgical sector, both of which did not progress as fast as management would have liked in 2019. Significant attention will be placed on both these activities in 2020.

Specifically, with Aubert & Duval the goal will be to complete the integration of the cutting-edge advances PyroGenesis has made to the powder production process.

With respect to HPQ, the goal would be to accelerate the game changing PUREVAP™ family of processes which we are developing for HPQ, namely:

- The PUREVAP™ "Quartz Reduction Reactors" (QRR), an innovative process (patent pending), which will permit the one step transformation of quartz (SiO₂) into high purity silicon (Si) at reduced costs, energy input, and carbon footprint that will propagate its considerable renewable energy potential; and
 - The PUREVAP™ Nano Silicon Reactor (NSiR), a new proprietary process that use PUREVAP™ QRR silicon (Si) as feedstock, to make spherical silicon nano powders and nanowires;
-

Looking forward, the Company has, as of December 31st, 2019, approximately \$10MM of in-the-money warrants and options expiring in 2020 and 2021. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial obligations) which is not reflected as an asset on the balance sheet.

Financial Summary

Revenues

PyroGenesis recorded revenue of \$2,128,454 in the second quarter of 2020, representing an increase of 133% compared with \$913,769 recorded in the second quarter of 2019.

Revenues recorded in the three and six months ended June 30, 2020 were generated primarily from:

- (i) DROSRITE™ related sales of \$1,319,904 (3 months) and \$1,794,336 (6 months),
- (ii) PUREVAP™ related sales of \$25,093 (3 months) and \$43,058 (6 months),
- (iii) torch related sales of \$617,077 (3 months) and \$705,022 (6 months),
- (iv) support services related to PAWDS-Marine systems supplied to the US Navy \$37,143 (3 months) and \$61,039 (6 months).

Cost of Sales and Services and Gross Margins

Cost of sales and services before amortization of intangible assets was \$855,049 in Q2 2020, representing an increase of 18% compared with \$723,641 in Q2 2019, primarily due to an increase in subcontracting and direct material expenses offset by a reduction in employee compensation in Q2 2020.

In Q2 2020, employee compensation decreased to 103,957 (Q2 2019 - \$414,873) and subcontracting, direct materials and manufacturing overhead increased to \$813,201 (Q2 2019 - \$335,240). The gross margin for Q2 2020 was \$1,268,592 or 59.5% of revenue compared to a gross margin of \$185,349 or 20.3% of revenue for Q2 2019. As a result of the type of contracts being executed, the nature of the project activity, as well as the composition of the cost of sales and services, as the mix between labour, materials and subcontracts may be significantly different. Of note, the Company in Q2 2020 applied for an amount of \$648,125 in wage subsidy from Revenue Canada under the CEWS program. From this amount, \$92,028 was applied to employee compensation under cost of sales and services.

Investment tax credits recorded against cost of sales are related to projects that qualify for tax credits from the provincial government of Quebec. Qualifying tax credits decreased to \$18,758 in Q2 2020, compared with \$29,061 in Q2 2019. This represents a decrease of 35% year-over-year. In total, the Company earned refundable investment tax credits of \$17,332 in Q2 2020. The Company continues to make investments in research and development projects involving strategic partners and government bodies.

The amortization of intangible assets of \$6,813 in Q2 2020 and \$4,779 for Q2 2019 relates to patents and deferred development costs. Of note, these expenses are non-cash items and will be amortized over the duration of the patent lives.

Selling, General and Administrative Expenses

Included within Selling, General and Administrative expenses (“SG&A”) are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for Q2 2020 excluding the costs associated with share-based compensation (a non-cash item in which options vest principally over a four-year period), were \$1,641,338 representing an increase of 4% compared with \$1,583,779 reported for Q2 2019.

The increase in SG&A expenses in Q2 2020 over the same period in 2019 is mainly attributable to the net effect of:

- an increase of 34% in employee compensation due primarily to an increase in commission expenses offset by amounts claimed from Revenue Canada under the CEWS wage subsidy program,
- an increase of 15% for professional fees, primarily due to an increase in legal fees,
- a decrease of 0.4% in office and general expenses, is due to a decrease in computer and internet expenses,
- travel costs decreased by 82%, due to a decrease in travel abroad,
- depreciation on property and equipment decreased by 79% due to lower amounts of property and equipment being depreciated,
- depreciation on right of use assets decreased by 19% due to lower amounts of right of use assets being depreciated,
- Investment tax credits increased by 328% due to an additional refund of \$24,605 from the 2018 tax return filed,
- government grants increased by 228% due to higher levels of activities supported by such grants,
- other expenses decreased by 33%, primarily due to a decrease in cost of freight and shipping.

Separately, share based payments decreased by 14% in Q2 2020 over the same period in 2019 as a result of the vesting structure of the stock option plan including the stock options granted on January 2, 2020.

Research and Development (“R&D”) Costs

The Company incurred (\$3,869) of R&D costs, net of government grants, on internal projects in Q2 2020, a decrease of 102% as compared with \$212,645 in Q2 2019. The decrease in Q2 2020 is primarily related to an increase in government grants supporting our R&D activities and an amount of \$129,201 claimed under the wage subsidy from Revenue Canada under the CEWS program.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and Experimental Development (“SR&ED”) tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see “Cost of Sales” above).

Net Finance Costs

Finance costs for Q2 2020 totaled \$276,928 as compared with \$275,418 for Q2 2019, were less than 1%, resulting in a virtually unchanged variance.

Strategic Investments

The adjustment to the fair market value of strategic investments for Q2 2020 resulted in a gain of \$5,899,465 compared to a loss in the amount of \$339,313 in Q2 2019, representing an increase of 1839% year-over-year. The increase is primarily attributable to the increased market share value in the HPQ Silicon Resources Inc. and Beauce Gold Fields.

Net Comprehensive Loss

The net comprehensive gain for Q2 2020 of \$5,228,020 compared to a loss of \$2,253,390, in Q2 2019, represents an increase of 332% year-over-year. The increased gain of \$7,481,410 in the comprehensive gain in Q2 2020 is primarily attributable to the factors described above, which have been summarized as follows:

- (i) an increase in product and service-related revenue of \$1,214,685 arising in Q2 2020, an increase in cost of sales and services totaling \$133,442, primarily due to an increase in subcontracting, direct materials, manufacturing overhead & other, offset by a decrease in employee compensation,
- (ii) an increase in SG&A expenses of \$53,613 arising primarily due to an increase in employee compensation, professional fees, offset by a decrease in travel, depreciation on property and equipment, depreciation ROU assets, and other expenses,
- (iii) a decrease in R&D expenses of \$216,512 primarily due to an increase in government grants and wage subsidy,
- (iv) an increase in net finance costs of \$1,510 primarily due to interest on higher amounts of debt,
- (v) an increase in fair value adjustment of \$6,238,778 primarily due to strategic investments.

EBITDA

The EBITDA gain in Q2 2020 was \$5,610,023 compared with an EBITDA loss of \$1,814,832 for Q2 2019, representing an increase of 409% year-over-year. The \$7,424,855 increase in the EBITDA gain in Q2 2020 compared with Q2 2019 is due to the increase in comprehensive income of \$7,418,410, a decrease in depreciation on property and equipment of \$38,927, a decrease in depreciation of right of use assets of \$21,171, an increase in amortization of intangible assets of \$2,034, and an increase in finance charges of \$1,511.

Adjusted EBITDA gain in Q2 2020 was \$5,633,661 compared with an Adjusted EBITDA loss of \$1,787,248 for Q2 2019. The increase of \$7,420,909 in the Adjusted EBITDA gain in Q2 2020 is attributable to an increase in EBITDA gain of \$7,424,855, offset by a decrease of \$3,946 in share-based payments.

The Modified EBITDA loss in Q2 2020 was \$265,804 compared with a Modified EBITDA loss of \$1,447,935 for Q2 2019, representing a decrease of 82%. The decrease in the Modified EBITDA loss in Q2 2020 is attributable to the increase as mentioned above in the Adjusted EBITDA of \$7,357,909 and an increase in the change of fair value of strategic investments of \$6,238,778.

Liquidity

The Company has incurred, in the last several years, operating losses and negative cash flows from operations, resulting in an accumulated deficit of \$57,304,682 and a negative working capital of \$7,463,370 as at Q2 2020, (December 31, 2019 - \$60,237,656 and \$10,492,102 respectively). Furthermore, as at Q2 2020, the Company's current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$1,567,777 (December 31, 2019 - \$34,431). The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.

Revenue generated from active projects has begun to produce sufficient positive cash flow to fund operations. The Company has a strong backlog from signed contracts totaling \$28MM, and a pipeline of prospective new projects resulting in the Company's business plan becoming less dependent on raising additional funds to finance operations within and beyond the next 12 months. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so, should it need to, in the future. If the Company is unable to obtain sufficient additional financing when needed, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws.

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SOURCE PyroGenesis Canada Inc.

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Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Provides Updated EPS Guidance
for Third Quarter and Full Year 2020**

MONTREAL, QUEBEC (GlobeNewswire – August 13th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to provide today, further to its Q2 2020 financial press release dated July 29th, 2020, updated earnings per share ("EPS") guidance for Q3 2020, and the full year 2020.

PyroGenesis now expects EPS for Q3 2020 to be in excess of \$0.07. On July 29th, 2020, the Company had given prior guidance of \$0.06 for the same period. Furthermore, the Company now expects an EPS for the full year 2020 to be conservatively in excess of \$0.11.

"We understand the market's interest in our providing guidance, so we are progressing cautiously and conservatively as we are committed to meet or exceed market expectations," said P. Peter Pascali, CEO and President of PyroGenesis. "Our confidence, and increased visibility, in our Q3 2020 results has resulted in this update, and we will continue to provide such updates as needed. The Company continues to exceed internal expectations in the execution of all its projects and business lines with little to no impact from the summer holiday period nor the ongoing pandemic."

Updated Earnings Guidance for Q3 2020 and full year 2020:

- Management continues to expect significant revenue growth
- Q3 2020 updated EPS > \$0.07
- Full year 2020 updated EPS > \$0.11.

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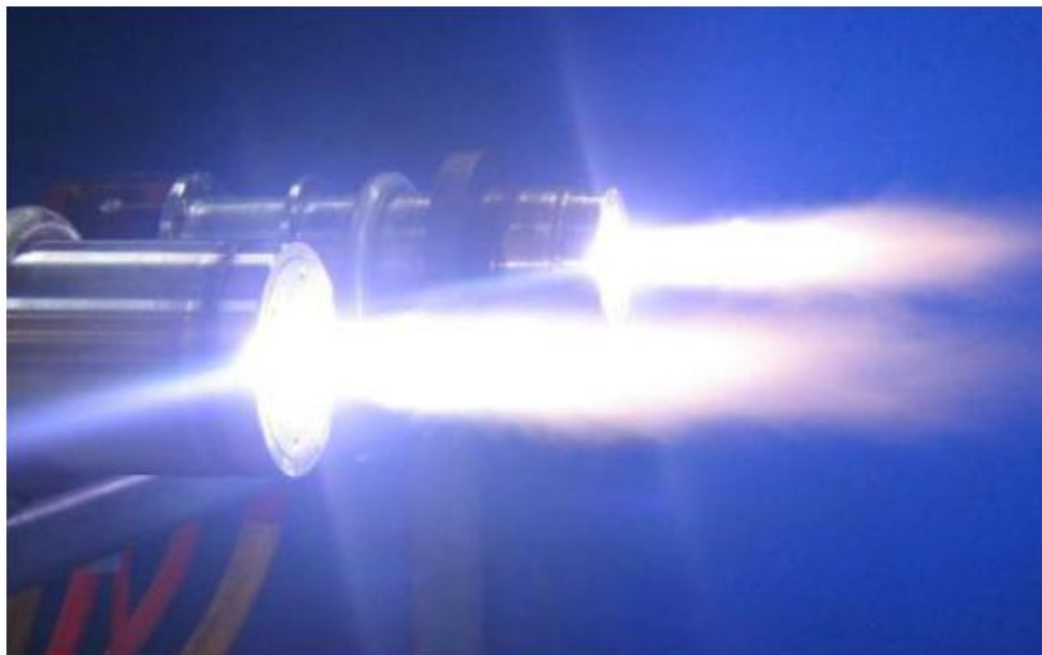
SOURCE PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>



**NOTICE OF MEETING
AND
MANAGEMENT INFORMATION CIRCULAR
FOR THE
ANNUAL AND SPECIAL MEETING OF SHAREHOLDERS
TO BE HELD ON SEPTEMBER 22, 2020**

Dated August 17, 2020

PYROGENESIS CANADA INC. NOTICE OF ANNUAL AND SPECIAL MEETING OF SHAREHOLDERS

This year due to the global COVID-19 pandemic, PYROGENESIS CANADA INC.'S annual and special meeting of shareholders will be held in a virtual-only format, via online live audio webcast. A virtual-only meeting format is being applied in order to give all shareholders an equal opportunity to participate in the meeting regardless of their geographic location or other particular constraints, circumstances or risks they may be facing as a result of COVID-19. **Shareholders will not be able to attend the meeting in person. Important details about the meeting and how shareholders can participate virtually are set out in this information circular and the accompanying proxy materials.**

NOTICE IS HEREBY GIVEN that an annual and special meeting (the “**Meeting**”) of the shareholders (“**Shareholders**”) of PYROGENESIS CANADA INC. (the “**Corporation**”) will be held online via live audio webcast at <https://web.lumiagm.com/414668875> at 9:30 A.M. EST, on September 22, 2020 for the following purposes:

- (a) to receive the audited consolidated financial statements of the Corporation for the financial year ended December 31, 2019, together with the report of the auditors thereon;
- (b) to appoint KPMG LLP as auditor of the Corporation for the ensuing year and to authorize the directors to fix their remuneration;
- (c) to elect the directors for the Corporation for the ensuing year;
- (d) to consider and, if deemed appropriate, to pass an ordinary resolution to reapprove the stock option plan implemented by the Corporation in June 2011, wherein 10% of the issued and outstanding Common Shares of the Corporation are reserved for issuance to directors, officers, employees and other service providers of the Corporation; and
- (e) to transact such other business as may properly be brought before the Meeting.

Accompanying this Notice of Meeting is the Management Information Circular (the “**Information Circular**”) and a form of proxy (the “**Proxy**”). The Information Circular includes more detailed information relating to the matters to be addressed at the Meeting. The Information Circular is deemed to form a part of this Notice of Meeting.

This year, as a precautionary measure to proactively address the public health impact of Coronavirus disease (COVID-19), mitigate health and safety risks to the Corporation’s shareholders, employees and other stakeholders, and abide by government guidelines limiting indoor public events, the Corporation will hold a virtual-only Meeting via live audio webcast. Shareholders will have an equal opportunity to participate in the Meeting online, regardless of geographic location, as well as to ask questions and vote on certain topics. Non-registered (or beneficial) shareholders who have not duly appointed themselves as proxyholders will be able to participate in the meeting as guests, but guests will not be able to vote or speak at the meeting. Shareholders will not be able to attend the Meeting physically. A summary of the information shareholders and proxyholders will need to attend the Meeting online as provided in the Management proxy circular.

Registered Shareholders of the Corporation unable to attend the virtual Meeting should read the notes to the Proxy and complete and return the Proxy to the Corporation’s registrar and transfer agent, AST Trust Company, 1 Toronto Street, Suite 1200, Toronto, Ontario, M5C 2V6, or by e-mail to proxyvote@astfinancial.com. A proxy will not be valid unless it is deposited at the office of AST Trust Company not less than 48 hours (excluding Saturdays, Sundays and holidays) prior to the commencement of the Meeting or any adjournment thereof. Late proxies may be accepted or rejected by the chair of the Meeting in his discretion, and the chair is under no obligation to accept or reject any particular late proxy. If you are a non-registered shareholder of the Corporation and received these materials through your broker or another intermediary, please complete and return the Proxy or other voting form in accordance with instructions provided to you by your broker or such other intermediary.

The enclosed Proxy appoints nominees of management as proxyholder and you may amend the Proxy, if you wish, by inserting in the space provided the name of the person you wish to represent you as proxyholder at the Meeting.

Only holders of Common Shares of the Corporation of record at the close of business on the Record Date will be entitled to vote at the Meeting.

DATED this 17th day of August, 2020.

**BY ORDER OF THE BOARD OF DIRECTORS OF
PYROGENESIS CANADA INC.**

(signed) "P. Peter Pascali"

P. Peter Pascali
Chair

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GENERAL INFORMATION RESPECTING THE MEETING

Time, Date and Place

The annual and special meeting (the “**Meeting**”) of shareholders (“**Shareholders**”) of PYROGENESIS CANADA INC. (the “**Corporation**” or “**PCI**”) will be held online via live audio webcast at <https://web.lumiagm.com/414668875> at 9:30 A.M. EST, on September 22, 2020, as set forth in the Notice of Meeting.

How To Access PYROGENESIS 2020 Virtual AGM

Registered shareholders and duly appointed proxyholders will be able to listen to the Meeting, ask questions and vote online, all in real time, provided they are connected to the Internet at all times.

Guests - including non-registered (beneficial) shareholders who did not appoint themselves as proxyholder - will be able to listen to the Meeting but will not be able to vote live nor ask questions.

Shareholders who wish to appoint a person other than the management nominees identified in the form of proxy or voting instruction form - including non-registered (beneficial) shareholders who wish to appoint themselves as proxyholder - must carefully follow the instructions in the management proxy circular and on their form of proxy or voting instruction form.

Additionally, the shareholder or its duly appointed proxyholder MUST call AST at 1(866) 751-6315 (toll free in Canada and the United States) or (212) 235-5754 (other countries) by 9:30 a.m. (Eastern Time) on September 18, 2020 [voting cut-off] and provide the AST representative with the required information so that AST may provide the proxyholder with a 13-digit Control Number by email. Without a 13-digit Control Number, proxyholders will not be able to vote at the meeting but will be able to attend as guests.

Shareholders are strongly encouraged to express their vote in advance by completing the form of proxy or voting instruction form that was sent to them. Detailed instructions on how to complete and return proxies and voting instruction forms by mail, fax or email are provided in the management information circular accompanying them.

Alternatively, shareholders may express their vote in advance by voting online or using the toll-free telephone number set out on the form of proxy or voting instruction form.

To be effective, voting instructions must be received by our transfer agent and registrar, AST Trust Company (Canada) (“AST”), at any time prior to 9:30 a.m. (Eastern Time) on September 18, 2020.

Virtual Meeting Access Instructions

To access the Virtual Meeting, follow the steps described below:

If you are a registered shareholder:

1. Log in online at <https://web.lumiagm.com/414668875>
2. Select the "Control # / No de contrôle" icon and enter your 13-digit control number as indicated on the form of proxy, followed by the following password: **pyrogenesis2020** (case sensitive).

Note: If you use your control number to log in to the Meeting, any vote you cast will thereby revoke any proxy you previously submitted. If you do not wish to revoke a proxy that you previously submitted, you should refrain from voting during the Meeting.

If you are a duly appointed proxyholder:

1. Log in online at <https://web.lumiagm.com/414668875>
2. Select the “Control # / No de contrôle” icon then enter your 13-digit control number and the following password: **pyrogenesis2020** (case sensitive).

Note: Proxyholders who have been duly appointed and registered with AST in accordance with the instructions provided herein below will receive their 13-digit control number via e-mail from AST after the proxy voting deadline has passed.

If you are a guest:

1. Log in online at <https://web.lumiagm.com/414668875>
2. Select the “Guest / Invité” icon and complete the online form.

Matters to be Considered

At the Meeting, Shareholders will be asked:

- (a) to receive and consider the audited consolidated financial statements of the Corporation for the financial year ended December 31, 2019, together with the report of the auditors thereon;
- (b) to re-appoint KPMG LLP as auditors of the Corporation for the ensuing year and to authorize the directors to fix their remuneration (the “**Auditors Appointment Resolution**”);
- (c) to elect the directors for the Corporation for the ensuing year (the “**Election of Directors Resolution**”);
- (d) to consider and, if deemed appropriate, to pass an Ordinary Resolution to reapprove the stock option plan of the Corporation (the “**Option Plan**”), as attached in Schedule “A”, in which 10% of the Corporation’s issued and outstanding Common Shares (the “**Common Shares**”) are reserved for issuance to directors, officers, employees and other service providers of the Corporation (the “**Option Plan Resolution**”); and
- (e) to transact such other business as may properly be brought before the Meeting.

The Board of Directors (the “**Board**”) unanimously recommends that Shareholders vote **FOR** the Auditors Appointment Resolution, the Election of Directors Resolution and the Option Plan Resolution at the Meeting.

Unless otherwise stated, the information contained in this management information circular (the “**Information Circular**”) is as of August 17, 2020.

Currency

In this Information Circular, unless otherwise indicated, all dollar amounts “\$” are expressed in Canadian dollars and references to “US\$” are to United States dollars.

Quorum and Votes Required for Certain Matters

A quorum for the Meeting shall be one Shareholder present in person or represented by proxy representing a minimum of 5% of the issued and outstanding voting shares of the Corporation. The Auditors Appointment Resolution, the Election of Directors Resolution and the Option Plan Resolution require the affirmative vote of not less than a majority of the votes cast by Shareholders who vote in respect thereof, by proxy, at the Meeting (an “**Ordinary Resolution**”).

Solicitation of Proxies

This Information Circular is furnished in connection with the solicitation by management of the Corporation of proxies to be used at the Meeting of Shareholders of Common Shares to be held on September 22, 2020 for the purposes set forth above and in the enclosed notice of meeting. References in this Information Circular to the Meeting include any adjournment or adjournments thereof. It is expected that the solicitation will be primarily by mail, but proxies may also be solicited personally by directors, officers or regular employees of the Corporation at nominal cost. The cost of solicitation by management will be borne directly by the Corporation.

Voting Online

Shareholders may express their vote in advance by voting online or using the toll-free telephone number set out on the form of the proxy or voting instruction form.

Voting of Proxies

Common Shares represented by properly executed proxies in favour of persons designated in the printed portion of the enclosed form of proxy **will be voted or withheld from voting in accordance with the instructions of the Shareholder on any ballot that may be called for and that, if the Shareholder specifies a choice with respect to any matter to be acted upon, the Common Shares will be voted accordingly. In the absence of such direction Common Shares will be voted FOR each of such matters.** The enclosed form of proxy confers discretionary authority upon the persons named therein with respect to amendments or variations to matters identified in the Notice of Meeting, or other matters which may properly come before the Meeting. At the time of printing this Information Circular, management of the Corporation knows of no such amendments, variations or other matters to come before the Meeting. If, however, any such amendments or other matters properly come before the Meeting, the persons named in the accompanying form of proxy will vote on such amendments or other matters in accordance with their best judgment.

Appointment of Proxyholders

Shareholders who wish to appoint a person other than the management nominees identified in the form of proxy or voting instruction form - including non-registered (beneficial) shareholders who wish to appoint themselves as proxyholder - must carefully follow the instructions in the management proxy circular and on their form of proxy or voting instruction form.

Additionally, the shareholder or its duly appointed proxyholder MUST call AST at 1(866) 751-6315 (toll free in Canada and the United States) or (212) 235-5754 (other countries) by 9:30 a.m. (Eastern Time) on September 18, 2020 [voting cut-off] and provide the AST representative with the required information so that AST may provide the proxyholder with a 13-digit Control Number by email. Without a 13-digit Control Number, proxyholders will not be able to vote at the meeting but will be able to attend as guests.

Enclosed with this Information Circular is a form of proxy for use at the Meeting. The persons named in the enclosed form of proxy are officers or directors of the Corporation. If a registered Shareholder cannot attend the Meeting but wishes to vote on the resolutions, the registered Shareholder should sign, date and deliver the enclosed form of proxy to the Corporation's registrar and transfer agent, AST Trust Company (Canada) ("AST"), 1 Toronto Street, Suite 1200, Toronto, Ontario, M5C 2V6 or by e-mail to proxyvote@astfinancial.com. **A Shareholder may appoint a person or company (who need not be a Shareholder) to represent the Shareholder at the Meeting other than the person or company, if any, designated in the form of proxy to represent them at the Meeting or any adjournment thereof by striking out the printed name of such person or company and inserting such other person or company's name in the blank space provided in that form of proxy or by completing another proper form of proxy and, in either case, depositing the completed proxy at the office of the transfer agent indicated on the enclosed envelope not later than 48 hours (excluding Saturdays, Sundays and holidays) before the time of the Meeting or any adjournment thereof. Late proxies may be accepted or rejected by the chair of the Meeting in his discretion, and the chair is under no obligation to accept or reject any particular late proxy.**

A registered Shareholder forwarding the enclosed form of proxy may indicate the manner in which the appointee is to vote with respect to any specific item by checking the appropriate space. If the registered Shareholder giving the proxy wishes to confer a discretionary authority with respect to any item of business, then the space opposite the item is to be left blank. The Common Shares represented by the form of proxy submitted by a registered Shareholder will be voted in accordance with the directions, if any, given in the form of proxy.

To be valid, a form of proxy must be executed by a registered Shareholder or a registered Shareholder's attorney duly authorized in writing or, if the registered Shareholder is a body corporate, under its corporate seal or, by a duly authorized officer or attorney.

Revocation of Proxies

A Shareholder may revoke a proxy given pursuant to this solicitation by an instrument in writing, including another proxy bearing a later date, executed by the Shareholder or by its attorney authorized in writing, and deposited either at the Corporation's registrar and transfer agent, AST, at any time up to and including the last business day preceding the day of the Meeting at which the proxy is to be used, or with the chair of such Meeting on the day of the Meeting, or in any other manner permitted by law.

Voting by Non-Registered Shareholders

Only registered Shareholders or duly appointed proxyholders are permitted to attend and vote at the virtual Meeting. Many Shareholders are "non-registered" shareholders because the Common Shares they own are not registered in their names but are instead registered in the name of the brokerage firm, bank or trust company through which they purchased the Common Shares. More particularly, a person is not a registered Shareholder in respect of Common Shares which are held on behalf of that person (a "**Non-Registered Holder**") but which are registered either: (a) in the name of an intermediary (an "**Intermediary**") that the Non-Registered Holder deals with in respect of the Common Shares (Intermediaries include, among others, banks, trust companies, securities dealers or brokers and trustees or administrators of self-administered RRSPs, RRIFs, RESPs and similar plans); or (b) in the name of a clearing agency (such as CDS Clearing and Depository Services Inc., "**CDS**") of which the Intermediary is a participant. In accordance with the requirements of National Instrument 54-101 - *Communication With Beneficial Owners of Securities of a Reporting Issuer* of the Canadian Securities Administrators (the "**CSA**"), the Corporation has distributed copies of the notice of meeting, this Information Circular and the form of proxy (collectively, the "**Meeting Materials**") to the clearing agencies and Intermediaries for onward distribution to Non-Registered Holders.

Intermediaries are required to forward the Meeting Materials to Non-Registered Holders unless a Non-Registered Holder has waived the right to receive them. Frequently, Intermediaries will use service companies to forward the Meeting Materials to Non-Registered Holders. Generally, Non-Registered Holders who have not waived the right to receive Meeting Materials will either:

- (a) be provided with a form of proxy **which has already been signed by the Intermediary** (typically by a facsimile, stamped signature), which is restricted as to the number of Common Shares beneficially owned by the Non-Registered Holder but which is otherwise not completed. Because the Intermediary has already signed the form of proxy, this form of proxy is not required to be signed by the Non-Registered Holder when submitting the proxy. In this case, the Non-Registered Holder who wishes to submit a proxy should otherwise properly complete the enclosed form of proxy and **deposit it with the Corporation's transfer agent as provided above**; or
- (b) more typically, be provided with a voting instruction form **which is not signed by the Intermediary**, and which, when properly completed and signed by the Non-Registered Holder and **returned to the Intermediary or its service company** (or as an alternative, votes may often be registered by telephone or over the Internet), will constitute voting instructions (often called a "voting instruction form") which the Intermediary must follow. Typically, the voting instruction form will consist of a one page pre-printed form. Sometimes, instead of the one page pre-printed form, the voting instruction form will consist of a regular printed proxy form accompanied by a page of instructions which contains a removable label containing a bar-code and other information. In order for the form of proxy to validly constitute a voting instruction form, the Non-Registered Holder must remove the label from the instructions and affix it to the form of proxy, properly complete and sign the form of proxy and return it to the Intermediary or its service company in accordance with the instructions of the Intermediary or its service company.

In either case, the purpose of this procedure is to permit Non-Registered Holders to direct the voting of the Common Shares which they beneficially own. Should a Non-Registered Holder who receives one of the above forms wish to vote on-line at the virtual Meeting, the Non-Registered Holder should strike out the names of the management proxyholders named in the form and insert the Non-Registered Holder's name in the blank space provided. **In either case, Non-Registered Holders should carefully follow the instructions of their Intermediary or its service company, including those regarding when and where the proxy or voting instruction form is to be delivered.**

Voting of Common Shares Represented by Management Proxies

On any ballot that may be called for at the Meeting, the Common Shares represented by each properly executed proxy in favour of the persons designated in the enclosed form of proxy received by the Corporation will, subject to Section 148 of the *Canadian Business Corporations Act* (the "**CBCA**"), be voted or withheld from voting in accordance with the specifications given by the Shareholder. In the absence of such specifications in an enclosed form of proxy where the Shareholder has appointed the persons whose names have been pre-printed in the enclosed form of proxy as the Shareholder's nominee at the Meeting, the Common Shares represented by such proxies will be voted **FOR** (a) the Auditors Appointment Resolution; (b) the Election of Directors Resolution; and (c) the Option Plan Resolution.

The enclosed form of proxy confers discretionary authority upon the persons named therein with respect to amendments or variations to matters identified in the notice of meeting and any other matters which may properly come before the Meeting. Management knows of no such amendments or variations to matters identified in the notice of meeting or other matters to come before the Meeting. However, where a Shareholder has appointed the persons whose names have been pre-printed in the enclosed form of proxy as the Shareholder's nominee at the Meeting, if any amendments or variations to matters identified in the notice of meeting or other matters which are not now known to management should properly come before the Meeting, the enclosed form of proxy may be voted on such matters in accordance with the best judgment of the person voting the proxy.

INTEREST OF CERTAIN PERSONS OR COMPANIES IN MATTERS TO BE ACTED UPON

Other than as disclosed herein, no director or executive officer of the Corporation who has held such position at any time since the beginning of the Corporation's last financial year, each proposed nominee for election as a director of the Corporation, and associates or affiliates of the foregoing persons, has any material interest, direct or indirect, by way of beneficial ownership of securities or otherwise, in any matters to be acted upon at the Meeting. Directors and executive officers of the Corporation have an interest in the Option Plan Resolution as such persons are eligible to be and have been granted awards under the Option Plan.

VOTING SECURITIES AND PRINCIPAL HOLDERS OF VOTING SECURITIES

The authorized share capital of the Corporation consists of an unlimited number of Class A Common Shares without par value (the "Common Shares"), with the right to:

- (a) vote at any meeting of Shareholders;
- (b) receive, as and when declared by the directors of the Corporation, any dividends payable on such dates, for such amounts and at such place or places as the Board of Directors may from time to time determine; and
- (c) receive the remaining property of the Corporation on liquidation or dissolution.

As of the date hereof, there are 150,628,325 Common Shares issued and outstanding.

The Corporation has prepared a list of all persons who are registered holders of Common Shares on the Record Date and the number of Common Shares registered in their name on that date. Each Shareholder is entitled to one vote on all matters to be acted upon at the Meeting for each Common Share registered in his name as it appears on the list of registered Shareholders. At the close of business on the Record Date, there were 150,628,325 Common Shares outstanding. Shareholders of record at the close of business on the Record Date are entitled to receive notice of, and to vote at, the Meeting.

Other than as disclosed in the table below, to the knowledge of the directors and officers of the Corporation, as of the date hereof, no persons or companies beneficially own, directly or indirectly, or exercise control or direction over, more than 10% of the votes attached to all outstanding Common Shares of the Corporation.

| Name of Shareholder | Number of Common Shares ⁽¹⁾⁽²⁾ | Percentage of Common Shares |
|---------------------------------|---|-----------------------------|
| P. Peter Pascali ⁽³⁾ | 73,813,722 | 49.00% |

Notes:

- (1) The information as to Common Shares beneficially owned, controlled or directed, not being within the knowledge of the Corporation, has been obtained by the Corporation from publicly disclosed information.
- (2) On a non-diluted basis.
- (3) 6,234,781 Common Shares are beneficially owned by Fiducie de Crédit Mellon Trust of which Mr. Pascali is a trustee and beneficiary; 7,251,000 Common Shares are beneficially owned by 8339856 Canada Inc., of which Mr. Pascali exercises control; and 60,327,941 Common Shares are owned by Mr. Pascali. Please see "*Particulars of Matters to Be Acted upon by Shareholders at the Meeting – Election of Directors.*"

PARTICULARS OF MATTERS TO BE ACTED UPON BY SHAREHOLDERS AT THE MEETING

Presentation of Financial Statements

The audited consolidated financial statements of the Corporation for the financial year ended December 31, 2019, and report of the auditors thereon, have been approved by the Board and will be presented at the Meeting. No vote of the Shareholders is required with respect to this item of business.

Appointment of Auditor

KPMG LLP (“KPMG”) as the independent registered certified auditors of the Corporation. Management proposes that KPMG be appointed as auditors of the Corporation, to hold office until the next annual meeting of Shareholders or until a successor is appointed, and to authorize the Board to fix its remuneration.

Unless the Shareholder has specifically instructed in the accompanying form of proxy that the Common Shares represented by such proxy are to be withheld or voted otherwise, the persons named in the accompanying proxy will vote FOR the appointment of KPMG as auditors of the Corporation to hold office until the next annual meeting of Shareholders or until a successor is appointed and to authorize the Board of Directors to fix its remuneration.

Election of Directors

The articles of the Corporation provide that the Board of Directors of the Corporation consists of a minimum of three (3) and a maximum of fifteen (15) directors. At the Meeting, the seven (7) persons named hereunder will be proposed for election as directors of the Corporation. Management does not contemplate that any of the nominees will be unable to serve as a director, but if that should occur for any reason prior to the Meeting, it is intended that discretionary authority shall be exercised by the person named in the accompanying proxy to vote the proxy for the election of any other person or person in place of any nominee or nominees unable to serve.

The Board of Directors unanimously recommends that Shareholders vote FOR the Election of Directors Resolution.

Unless the Shareholder has specifically instructed in the enclosed form of proxy that the Common Shares represented by such proxy are to be withheld from voting, the person named in the accompanying proxy will vote FOR the election of the below named directors.

The following table and the notes thereto state the names and the province or state, and country of residence of all persons proposed to be nominated for election as directors, all other positions and offices with the Corporation now held by them, their principal occupations or employments and abbreviated biographies, their periods of service as directors of the Corporation and the number of Common Shares beneficially owned or over which control or direction is exercised by each of them as at the date hereof. If elected, each director will hold office until the next annual meeting of Shareholders or until his successor is duly elected, unless prior thereto the director resigns, or the director’s office becomes vacant by reason of death or other cause.

| Name and Province or State, and Country of Residence of Each Proposed Director | Principal Occupation over the Last Five Years | Director Since | Shares Beneficially Owned, Directly or Indirectly, or Over Which Control or Direction is Exercised ⁽¹⁾⁽²⁾ |
|--|---|-----------------------------|--|
| P. Peter Pascali Quebec, Canada, | President, Chief Executive Officer, and Director of the Corporation. | June 2006 | 73,813,722 Common Shares |
| Robert Radin ⁽³⁾ South Carolina, USA | President of Radin & Associates Consulting, LLC since 2011; U.S. Army Assistant Deputy Chief of Staff, G-4 from 2009 to 2011; Commanding General of the U.S. Army Sustainment Command from 2007 to 2009. | February 2012 | 650,000 Common Shares |
| Andrew Abdalla ⁽³⁾ , Quebec, Canada | Chair of the Audit Committee, CA. Senior partner at MNP LLP. Past director of Cedars Cancer Foundation and YES Montreal, Past President and Director of the Financial and Estate Planning Council of Montreal | May 2018 | Nil |
| Dr. Virendra Jha Quebec, Canada | Director on the Board of the Atomic Energy of Canada Limited. Current; Member of the Order of Canada; Vice President Canadian Space Agency 2003 to 2008; Acting President of the Canadian Space Agency 2005 to 2006; Chief Engineering Adviser at the Canadian Space Agency until his retirement in 2014. | September 2019 | Nil |
| Michael Blank ⁽³⁾ Quebec, Canada, | Previously V.P. Finance at Newtrax Technologies from 2016 to 2019; Chief Financial Officer at Sonomax Technologies Inc./Eers Global Technologies Inc. from 2009 to 2016. | September 2019 | Nil |
| Rodayna Kafal ⁽⁴⁾ Quebec, Canada | Current VP, Investor Relations and Strategic Business Development at PyroGenesis Canada Inc. | New nomination for director | 59,867 Common Shares |
| Rodney Beveridge ⁽⁵⁾ Quebec, Canada | Vice President, Portfolio Manager at TD Wealth Private Investment Advice. | New nomination for director | Nil |

Notes:

- (1) The information with respect to the Common Shares beneficially owned, controlled or directed, is not within the direct knowledge of the Corporation and has been furnished by the respective individuals.
- (2) Particulars of options held by each nominee, if any, are set out in the section “*Executive Compensation – Incentive Plan Awards*” and “*Executive Compensation - Director Compensation – Incentive Plan Awards*”.
- (3) Member of the Audit Committee of the Corporation (the “**Audit Committee**”).
- (4) Ms. Kafal is a nominee for Director.
- (5) Mr. Beveridge is a nominee for Director.

As a group, the proposed directors beneficially own, control or direct, directly or indirectly, 74,523,589 Common Shares, representing approximately 49.48% of the issued and outstanding Common Shares as of the date hereof.

Biographies

The following is a brief description of the current and proposed directors of the Corporation:

P. Peter Pascali – President, Chief Executive Officer and Director:

After graduating with an MBA from McGill University, Montreal in 1983, Mr. Pascali became an investment banker specializing in mergers and acquisitions and then public offerings. He initially worked for the Bank of Nova Scotia and then, in 1987, joined Westpac Banking Corporation. In 1989, he was recruited by DeGeorge Financial Corporation as a strategic advisor. Mr. Pascali joined the Corporation in 1992 where he has been responsible for developing the business strategy and marketing focus for commercializing the Corporation's technologies and running the business. Mr. Pascali continues to develop the Corporation's strategy and oversee the operational management as the President and Chief Executive Officer.

Robert M. Radin - Director:

Mr. Radin has recently retired from the U.S. Army after serving for over 35 years and attaining the rank of Major General. His last assignment was as the U.S. Army Assistant Deputy Chief of Staff, G-4, (Logistics), the Pentagon, and Washington, DC. In this position he was responsible for policy development, strategic planning and budget programming for distribution, logistics force structure, readiness reporting, Army pre-positions stocks, contingency contracting and support of U.S. Army worldwide operations. Prior to joining the Army Staff, he served as the Commanding General of the U.S. Army Sustainment Command at Rock Island, Illinois. Other key assignments include: Deputy Chief of Staff for Operations and Logistics for the U.S. Army Materiel Command from 2005 to 2007; Commanding General of the Joint Munitions Command from 2004 to 2005; and from 2003 to 2004 was deployed to Kuwait as the Commanding General, U.S. Army Materiel Command-SWA and was responsible for support of U.S. land forces in Kuwait, Iraq, Afghanistan and Djibouti. After retiring from the Army in June 2011, he founded Radin & Associates Consulting, LLC, a firm that assists clients with supply chain related issues. Mr. Radin has graduated from the U.S. Military Academy at West Point and holds postgraduate degrees from the Florida Institute of Technology and the National Defense University.

Andrew Abdalla – Chair of the Audit Committee and Director:

Mr. Abdalla is a partner at MNP, a leading national accounting, tax and business consulting firm in Canada. Mr. Abdalla brings more than 20 years of strategic planning, and tax advice, with a specific focus on sales and income tax, acquisitions and divestitures, business valuations, corporate reorganizations and spinoffs. Mr. Abdalla received his Chartered Professional Accountant (CPA, CA) designation in 1987. He holds a Bachelor of Commerce and a graduate diploma in public accounting from Concordia University in Montreal.

Dr. Virendra Jha – Director:

Dr. Jha, Member of the order of Canada, has over 42 years of experience in the Canadian Space Program ranging from in-depth engineering work to senior management positions in both the Private and the Public Sectors. Dr. Jha began his space career in 1972 when he joined the Aerospace group of RCA Limited Montreal, which later became Spar Aerospace Limited. In 1988, he became the Director of Engineering at Spar Aerospace Limited. In 1991 Dr. Jha joined the Canadian Space Agency as Director of the Space Mechanics Group. In 1996, he was promoted to the position of Director General, Space Technologies Branch of the CSA. From 2003 till 2008, he was the Vice-President responsible for Science, Technology and Programs at the Canadian Space Agency. As Vice President, Dr. Jha provided strategic direction, vision and leadership to all core technical sectors of the Agency. From November 2005 until February 2006, Dr. Jha also served as the Acting President of the Canadian Space Agency. He was Chief Engineering Adviser at the Canadian Space Agency until his retirement in 2014. Dr. Jha received his B. Tech. degree in Mechanical Engineering from the Indian Institute of Technology Delhi India, his Master's degree in Mechanical engineering from McMaster University, Hamilton, Canada, and his Ph.D. degree in Mechanical Engineering from Concordia University, Montreal, Canada and the C.Dir. (Chartered Director) Degree from McMaster University, Hamilton, Canada. Dr. Jha's technical contributions in Canadian Space Program as well as in International Space activities have been significant. His leadership and commitment to the profession is reflected by his recognition and active participation in many groups, committees and advisory boards. Dr. Jha currently serves as a director on the Board of the Atomic Energy of Canada Limited ("AECL"), a Canadian federal Crown Corporation and Canada's largest nuclear science and technology laboratory.

Michael Blank – Acting Chief Financial Officer and Director:

Mr. Blank has over 30 years of executive experience in leading finance and operations for private and public organizations, Mr. Blank has a sound professional judgement in business plan preparation, budgeting, cash flow management and internal control implementation. As the Chief Financial Officer of global publicly held corporations, Mr. Blank has gained significant experience in financial reporting, accounting, finance and capital management, investor relations, and international operations. Mr. Blank has acquired an extensive knowledge of taxation and audit over 10 years at KPMG, a leading international public accounting and consulting firm, in Canada and Europe. Adept at explaining complex accounting and tax rules and their impacts on businesses, he provided corporate tax consulting and the information clients rely on to make strong business decisions. Mr. Blank holds a bachelor's degree in commerce with finance and accounting major with honors, from Queen's University and a Diploma in Public Accounting from McGill University. Mr. Blank is a designated Chartered Professional Accountant (CPA), and qualifies as a Chartered Accountant (CA).

Rodayna Kafal – New Nominee for Director:

Upon graduating from McGill University in 2009 (Bachelor's degree in Chemical Engineering), Ms. Kafal took on lead roles in process engineering at the Natural Gas Technologies Centre in Montreal, where she was responsible for managing a number of high level projects. Thereafter, she enrolled in a two-year graduate program in Industrial Engineering and Project Management at École Polytechnique de Montréal. Ms. Kafal joined PyroGenesis with a strong background in process engineering, combined with practical experience in sales, promotional activities and business relations. Ms. Kafal has been a member of PyroGenesis' Strategic Management Group since 2016 where she has been instrumental in providing input into all aspects of PyroGenesis' growth and represented the views of the investor community. As Vice President, Investor Relations and Strategic Business Development, Ms. Kafal continues to oversee PyroGenesis' complete investor relations program, while managing the Company's marketing team.

Rodney Beveridge – New Nominee for Director:

Mr. Beveridge holds the Chartered Investment Management (CIM®) designation as well as a Bachelor of Arts in Honour Applied Economics and a Bachelor of Science in Biochemistry, both from Queen's University. Mr. Beveridge is currently Vice President, Portfolio Manager at TD Wealth Private Investment Advice and has been actively involved in the financial markets since 2006. Mr. Beveridge has a unique understanding of retail markets and corporate financial structures.

Cease Trade Orders or Bankruptcies

No proposed director of the Corporation:

1. is, as at the date hereof, or has been, within 10 years before the date hereof, a director, chief executive officer or chief financial officer of any company (including the Corporation) that:

- (a) was subject to (i) a cease trade order; (ii) an order similar to a cease trade order; or (iii) an order that denied the relevant company access to any exemption under securities legislation, that was in effect for a period of more than 30 consecutive days (an “**Order**”) that was issued while the proposed director was acting in the capacity as director, chief executive officer or chief financial officer; or
 - (b) was subject to an Order that was issued after the proposed director ceased to be a director, chief executive officer or chief financial officer and which resulted from an event that occurred while that person was acting in the capacity as director, chief executive officer or chief financial officer; or
2. is, as at the date hereof, or has been within 10 years before the date hereof, a director or executive officer of any company (including the Corporation) that, while that person was acting in that capacity, or within a year of that person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets; or
3. has, within the 10 years, before the date hereof become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to, or instituted any proceedings, arrangements or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold the assets of the proposed director.

Penalties or Sanctions

As at the date hereof, no proposed director of the Corporation has been subject to:

1. any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or has entered into a settlement agreement with a securities regulatory authority; or
2. any other penalties or sanctions imposed by a court or regulatory body that would likely be considered important to a reasonable shareholder in deciding whether to vote for a proposed director.

Option Plan Re-approval

Shareholders of the Corporation originally approved the implementation of the Option Plan in June 2011. Under the terms and conditions of the Option Plan, up to a maximum of 10% of the issued and outstanding Common Shares of the Corporation are reserved for directors, officers, employees and other service providers. Please see “*Equity Compensation Plan Information – The Option Plan*” for a summary of the Option Plan.

The TSX Venture Exchange (the “**Exchange**”) policy requires that rolling stock option plans, such as that of the Corporation, be approved and ratified by Shareholders and the Exchange on an annual basis.

Shareholder Approval

Shareholders approved the introduction of the Option Plan at the Corporation’s annual and special meeting of Shareholders in June 2011. Further, Shareholder approval is not required for option grants made in accordance with the Option Plan, except as required by Exchange policy. Pursuant to such policies, disinterested Shareholder approval is required when the number of Common Shares reserved for issuance under the Option Plan exceeds a 10% threshold. While options were granted in the financial year ended December 31, 2012, none were granted in the year ended December 31, 2013, nor in the year ended December 31, 2014. Options were subsequently granted in the year ended December 31, 2015, 2016, 2017, 2018 and 2019, however the ten percent (10%) threshold was not surpassed and thus disinterested Shareholder approval will not be sought at this Meeting.

Board of Directors' Recommendation

The Board of Directors unanimously recommends that the Shareholders vote FOR the re-approval of the Option Plan Resolution.

Approval

To be effective, the Option Plan Resolution must be approved by an Ordinary Resolution of Shareholders, either on-line or by proxy. Shareholders will be asked to consider and, if deemed appropriate, to pass the Option Plan Resolution. Pursuant to the policies of the Exchange, the Option Plan Resolution must be approved by not less than a majority of the votes cast in respect thereof by Shareholders present on-line or by proxy at the virtual Meeting.

Unless the Shareholder has specifically instructed in the enclosed form of proxy that the Common Shares represented by such proxy are to be voted against the Option Plan Resolution, the persons named in the accompanying proxy will vote FOR the Option Plan Resolution.

The following is the text of the Option Plan Resolution which will be put forward for approval by the Shareholders at the Meeting:

“BE IT RESOLVED AS AN ORDINARY RESOLUTION THAT”:

1. the Corporation’s Option Plan, as described in Schedule “A” of this management information circular of the Corporation dated August 17, 2020, and the grant of options thereunder, in accordance therewith, be hereby approved; and
2. any one director or officer of the Corporation be, and such director or officer of the Corporation is hereby, authorized, instructed and empowered, acting for, in the name of and on behalf of the Corporation, to do or to cause all such other acts and things in the opinion of such director or officer of the Corporation as may be necessary or desirable in order to fulfill the intent of this foregoing resolution.”

Other Matters

Management of the Corporation knows of no amendment, variation or other matter to come before the Meeting other than the matters referred to in the Notice of Meeting accompanying this Information Circular. However, if any other matter properly comes before the Meeting, the form of proxy furnished by the Corporation will be voted on such matters in accordance with the best judgment of the persons voting the proxy.

EXECUTIVE COMPENSATION

Compensation Discussion and Analysis

Objectives of Compensation Program

Securities legislation requires the disclosure of compensation received by each “Named Executive Officer” or “NEO” of the Corporation for the three most recently completed financial years. “Named Executive Officer” is defined by the legislation to mean: (i) each of the Chief Executive Officer and the Chief Financial Officer (or an individual that served in a similar capacity) of the Corporation; (ii) each of the Corporation’s three most highly compensated executive officers, including any of its subsidiaries, or the three most highly compensated individuals acting in a similar capacity, other than the Chief Executive Officer and the Chief Financial Officer, at the end of the most recently completed financial year and whose total compensation, individually, exceeds \$150,000; and (iii) any additional individual for whom disclosure would have been provided under (ii) but for the fact that the individual was not serving as an executive officer of the Corporation or its subsidiaries at the end of the most recently completed financial year end of the Corporation.

P. Peter Pascali, CEO, Michael Blank, current Acting CFO, and Pierre Carabin, CTO & Chief Strategist are the NEOs of the Corporation for purposes of the following disclosure.

Until July 11, 2011, the Corporation was a capital pool company (“CPC”) in accordance with the policies of the Exchange, named Industrial Growth Income Corporation (“IGIC”), which did not conduct any active business operations. On July 11, 2011, the Corporation completed its qualifying transaction and an amalgamation whereby IGIC and PyroGenesis Inc. amalgamated into one corporation named PyroGenesis Canada Inc.

Given the size of its Board of Directors, the Board continues to review and redesign the overall compensation plan for senior management so as to continue to address the objectives identified below.

The Board also assumes responsibility for reviewing and monitoring the long-range compensation strategy for the Corporation’s senior management and sets plans and specific goals at the beginning of every review period. The Board reviews compensation of senior management on an annual basis.

Overview of Compensation Philosophy

The Corporation believes that the creation of long-term value for Shareholders depends on its ability to attract, motivate and retain highly talented executives. The Corporation intends to encourage sustained profitability and increase Shareholder value by relating executive compensation to the Corporation’s operating and financial performance. Using equity based compensation and other mechanisms the Corporation aims to align the long-term interests of its executive team with that of its Shareholders. It is intended that the Corporation’s compensation program will also be designed to increase the probability of retaining key employees.

It is the Corporation’s intention that the following principles shall guide the Corporation’s overall compensation philosophy going forward: (a) providing a fair and competitive level of compensation; (b) attracting, retaining and motivating qualified executives who are critical to the Corporation’s long-term success; (c) rewarding performance, both on an individual basis and with respect to the business in general; and (d) reinforcing the link between Shareholders’ interests and the compensation of the Corporation’s executives.

Elements of Executive Compensation

In compensating its senior executive officers, the Corporation currently employs a combination of annual compensation in the form of base salary and long-term equity based incentives in the form of option grants under the Option Plan. The Corporation also provides its senior executive officers with competitive benefits and perquisites.

Cash-Based Compensation

Base Salary – Salaries form an essential component of the Corporation’s compensation package as they are the first base measure to compensate performance as well as to remain competitive relative to peers in the industry. Base salaries are fixed and therefore not subject to uncertainty and are used as the basis to determine other elements of compensation and benefits. NEOs with employment agreements with the Corporation will be paid an annual salary that also takes into account his or her existing professional qualifications and experience. The NEOs’ performances and salaries are to be reviewed periodically by the CEO based on pre-established management objectives determined by him in consultation with the Board. The CEO’s performance is reviewed by the full Board based on pre-established management objectives.

Equity Incentive Plans

Options – The granting of options is to act as a variable component of compensation intended to attract, motivate and reward the executive officers and directors of the Corporation in advancing the success and interests of the Corporation. In determining the number of options to be granted under the Option Plan, the Board gives consideration to, among other things, the individual’s current and potential contribution to the success of the Corporation as well as the relative position of the individual within the Corporation.

Additionally, the Corporation may also utilize the grant of options upon hiring of new employees as an element of compensation designed to attract qualified personnel. The grant of options would typically be included in the terms of the particular individual’s employment offer letter and the number of options granted would depend on the Corporation’s level of desire to retain the particular individual, the particular responsibilities of the position and the individual’s level of experience. Please see “*Securities Authorized for Issuance under Equity Compensation Plans – The Option Plan*” for further details regarding the Option Plan.

Benefits and Perquisites

The Corporation’s employee benefit program for employees and executive officers includes life, medical, dental and disability insurance. Perquisites are offered to executive officers, which include benefits linked to transportation and parking. The Corporation did not use benchmarking to determine these benefits.

Pension Plan Benefits

The Corporation’s group retirement pension plan (the “**Pension Plan**”) is a deferred profit sharing plan, created to allow the employees and executive officers to accumulate capital for their retirement. The Pension Plan was established for all employees who, in the opinion of the Board of Directors, have materially and significantly contributed to the prosperity and profits of the Corporation. According to the Pension Plan, the Corporation is required to contribute out of the profits of the Corporation, to a maximum amount of 2% of the employee’s base salary. The Corporation’s contribution will be such amount which, in the opinion of the Board of Directors, is warranted by the profits and overall financial position of the Corporation. The employees’ and the Corporation’s contributions are subject to the maximum eligible amount allowed for under the *Income Tax Act* (Canada). Employees choose, on their own, the financial products to invest their contributions and those of the Corporation.

The following table summarizes the contribution accounts of the NEOs:

| Name | Accumulated value as at December 31, 2018 (\$)⁽¹⁾ | Compensatory (\$)⁽²⁾ | Accumulated value as at December 31, 2019 (\$)⁽³⁾ |
|------------------------------|---|--|---|
| P. Peter Pascali | \$ 21,228 | \$ 4,800 | \$ 29,649 |
| Pierre Carabin | \$ 13,839 | \$ 3,360 | \$ 19,325 |
| Alan Curleigh ⁽⁴⁾ | Nil | Nil | Nil |
| Michael Blank ⁽⁵⁾ | Nil | Nil | Nil |

Notes:

- (1) Represents the market value of the Pension Plan at December 31, 2018, including accumulated contributions, net investment income, less any withdrawals.
- (2) The Corporation paid contribution into the Pension Plan during 2019. This amount is matched by the employee, but not included in this amount.
- (3) Represents the market value of the Pension Plan at December 31, 2019, including accumulated contributions, net investment income, less any withdrawals.
- (4) Mr. Curleigh does not participate in the Corporation’s Pension Plan and resigned as Acting Chief Financial Officer and Chair of the Corporation at September 29, 2019.
- (5) Mr. Blank appointed on September 29, 2019 as Acting CFO and Director of the Corporation, does not participate in the Corporation’s Pension Plan.

Compensation Governance

Financial Risk Management

The Corporation's compensation practices alleviate risk by having a balance of short term and long term compensation. For example, substantial grants of options do not vest in a year, which allows for continued appreciation and does not jeopardize the Corporation.

Compensation Consultants and Advisors

There were no compensation consultants or advisors retained by the Corporation during the financial year ended December 31, 2019.

Summary Compensation Table

The following table sets forth all annual and long-term compensation for services in all capacities to the Corporation for the three financial years ended respectively December 31, 2017, December 31, 2018 and December 31, 2019, in respect of the NEOs, in accordance with National Instrument Form 51-102F6.

| Name and Principal Position | Year | Salary (\$) | Share- based awards (\$) | Option- based awards (\$) ⁽¹⁾ | Non-equity incentive plan compensation (\$) | | Pension value (\$) | All other compensation (\$) | Total compensation (\$) |
|---|------|-------------|--------------------------------|--|--|---------------------------------|-----------------------|--------------------------------|----------------------------|
| | | | | | Annual incentive plans | Long-term incentive plans | | | |
| P. Peter Pascali, Chief Executive Officer | 2019 | \$ 240,000 | N/A | \$ 0 | N/A | N/A | \$ 4,800 | \$ 11,826 | \$ 256,626 |
| | 2018 | \$ 240,000 | N/A | \$ 0 | N/A | N/A | \$ 4,800 | \$ 11,727 | \$ 256,527 |
| | 2017 | \$ 240,000 | N/A | \$ 858,526 | N/A | N/A | \$ 4,800 | \$ 32,885 | \$ 1,136,211 |
| Pierre Carrabin, CTO & Chief Strategist | 2019 | \$ 168,000 | N/A | \$ 0 | N/A | N/A | \$ 3,360 | \$ 1,367 | \$ 172,727 |
| | 2018 | \$ 168,000 | N/A | \$ 30,000 | N/A | N/A | \$ 3,360 | \$ 1,339 | \$ 202,699 |
| | 2017 | \$ 166,000 | N/A | \$ 0 | N/A | N/A | \$ 3,321 | \$ 1,197 | \$ 170,518 |
| Michael Blank, Acting Chief Financial Officer ⁽²⁾ | 2019 | \$ 8,500 | N/A | \$ 68,000 | N/A | N/A | \$ 0 | \$ 0 | \$ 76,500 |
| | 2018 | \$ 0 | N/A | \$ 0 | N/A | N/A | \$ 0 | \$ 0 | \$ 0 |
| | 2017 | \$ 0 | N/A | \$ 0 | N/A | N/A | \$ 0 | \$ 0 | \$ 0 |
| Alan Curleigh, Former Acting Chief Financial Officer ⁽³⁾ | 2019 | \$ 46,750 | N/A | \$ 0 | N/A | N/A | \$ 0 | \$ 0 | \$ 46,750 |
| | 2018 | \$ 69,000 | N/A | \$ 0 | N/A | N/A | \$ 0 | \$ 0 | \$ 69,000 |
| | 2017 | \$ 69,000 | N/A | \$ 0 | N/A | N/A | \$ 0 | \$ 0 | \$ 69,000 |

Notes:

- (1) Represents the total grant date fair value of options granted and may not represent the amounts the recipient will actually realize from the awards. The fair value of the options has been estimated at the date of the grant in accordance with IFRS using a Black-Scholes option pricing model.
- (2) Mr. Blank is the current Acting Chief Financial Officer and Director of the Corporation; In the year ended December 31, 2019, Mr. Blank earned \$8,500 for his Board and corporate related services.
- (3) Mr. Curleigh is no longer acting Chief Financial Officer of the Corporation and Chair of the Board of Directors of the Corporation as of September 2019; In the year ended December 31, 2019, Mr. Curleigh earned \$46,750 for his Board and corporate related services.

Incentive Plan Awards

The following table provides information regarding the incentive plan awards for each NEO with an employment agreement with the Corporation as of December 31, 2019.

| Name | Option-based Awards | | | | Share-based Awards | |
|---------------------------------|---|-----------------------|------------------------|---|--|---|
| | Number of securities underlying unexercised options (#) | Option exercise price | Option expiration date | Value of unexercised in-the-money options (\$) ⁽¹⁾ | Number of shares or units of shares that have not vested (#) | Market or payout value of share awards that have not vested |
| P. Peter Pascali ⁽²⁾ | 600,000 | \$ 0.30 | Feb. 12, 2020 | \$ 96,000 | | |
| | 3,000,000 | \$ 0.18 | Sept. 25, 2021 | \$ 840,000 | N/A | N/A |
| | 2,400,000 | \$ 0.58 | Nov. 3, 2022 | \$ 0 | | |
| Pierre Carabin ⁽³⁾ | 70,000 | \$ 0.30 | Feb. 12, 2020 | \$ 11,200 | N/A | N/A |
| | 100,000 | \$ 0.52 | Oct. 29, 2023 | \$ 0 | | |
| Michael Blank ⁽⁴⁾ | 200,000 | \$ 0.51 | Sept. 29, 2024 | \$ 0 | N/A | N/A |

Notes:

- (1) Based on the closing price of Common Shares of the Corporation on the Exchange on December 31, 2019 of C\$0.46 per Common Share.
- (2) In accordance with Mr. Pascali's Option Agreement dated February 12, 2015, his options to purchase 600,000 Common Shares vest as follows: 25% vested on February 12, 2015, 25% vested on February 12, 2016, 25% vested on February 12, 2017 and 25% vested on February 12, 2018. In accordance with Mr. Pascali's Option Agreement dated September 26, 2016, as amended on November 22, 2016, his options to purchase 3,000,000 Common Shares vests as follows: 2,500,000 vested on September 26, 2016, and the remaining 500,000 vested on September 26, 2017. In accordance with Mr. Pascali's Option Agreement dated November 3, 2017, his options to purchase 2,400,000 Common Shares vest as follows: 50% vested on November 3, 2017 and 50% will vest on November 3, 2018.
- (3) In accordance with Mr. Carabin's Option Agreement dated February 12, 2015, his options to purchase 250,000 Common Shares vest as follows: 25% vested on February 12, 2015, 25% vested on February 12, 2016, 25% vested on February 12, 2017 and 25% vested on February 12, 2018. In accordance with Mr. Carabin's Option Agreement dated October 29, 2018, his options to purchase 100,000 Common Shares vest as follows: 10% vested on October 29, 2018, 20% will vested on October 29, 2019, 30% on October 29, 2020 and the final 40% on October 29, 2021.
- (4) In accordance with Mr. Blank's Options Agreement dated September 29, 2019, his options to purchase 200,000 Common Shares vest as follows: 50% vested on September 29, 2019, and 50% on September 29, 2020.

Options/SAR Grants during the most recently completed financial year – December 31, 2019

| NEO name | Securities, Under Options / SARs Granted (#) | % of Total Options / SARs Granted to Employees in the Financial Year | Exercise of Base Price (\$/Security) | Market Value of Securities Underlying Options / SARs on the Date of Grant (\$ security) | Expiration Date |
|---------------------------------|--|--|--------------------------------------|---|-----------------|
| P. Peter Pascali ⁽¹⁾ | NIL | N/A | N/A | N/A | N/A |
| Pierre Carabin ⁽²⁾ | NIL | N/A | N/A | N/A | N/A |
| Michael Blank ⁽³⁾ | 200,000 | 50% | \$ 0.51 | \$ 102,000.00 | Sept. 29, 2024 |
| Alan Curleigh ⁽⁴⁾ | NIL | N/A | N/A | N/A | N/A |

Notes:

- (1) All Option grants for Mr. Pascali are reflected in the *Incentive Plan Awards Table* for the NEOs detailed above.
- (2) All Option grants for Mr. Carabin are reflected in the *Incentive Plan Awards Tables* for the NEOs detailed above.
- (3) All Option grants for Mr. Blank are reflected in the *Incentive Plan Awards Tables* for the NEOs detailed above.
- (4) All Option grants for Mr. Curleigh are reflected in the *Incentive Plan Awards Tables* for the NEOs detailed above.

Termination Benefits

During the financial year ended December 31, 2019, the Corporation had employment agreements with the following NEOs: Mr. Pascali and Mr. Carabin.

The NEOs employment agreements provide that if the Corporation terminates their employment for any reason other than for cause, death, disability or upon change of control of the Corporation, the NEOs shall be entitled to a three (3) months' notice, or in lieu of that notice, they shall receive an amount equivalent to one year's base salary with all accrued benefits.

Estimated Incremental Payments on Termination without Cause

The following table provides details regarding the estimated incremental payments from the Corporation to each of the NEOs with employment agreements with the Corporation on termination without cause. If a NEO is terminated without cause, for any reason other than death or disability, then the Corporation shall give them written notice of such termination.

| Name ⁽¹⁾ | Severance Period (# of months) | Base Salary | Pro rated Bonus / Other | Premium Contributions (2) | Option Based Awards ⁽³⁾ | Total Payment |
|------------------------------|-----------------------------------|-------------|----------------------------|---------------------------------|---------------------------------------|---------------|
| P. Peter Pascali | 12 | \$ 240,000 | \$ 0 | \$ 16,626 | \$ 936,000 | \$ 1,192,626 |
| Pierre Carabin | 12 | \$ 168,000 | \$ 0 | \$ 4,727 | \$ 11,200 | \$ 183,927 |
| Michael Blank ⁽⁴⁾ | 0 | Nil | \$ 0 | Nil | \$ 0 | \$ 0 |
| Alan Curleigh ⁽⁵⁾ | 0 | Nil | \$ 0 | Nil | \$ 0 | \$ 0 |
| Total | 24 | \$ 408,000 | \$ 0 | \$ 21,353 | \$ 947,200 | \$ 1,376,553 |

Notes:

- (1) NEOs terminated without cause are not entitled to a bonus.
- (2) An amount equal to the number of months premium contributions paid on behalf of the NEO immediately prior to the termination in connection with the NEO's participation in the Corporation's health insurance plan and Pension Plan.
- (3) Each employee's stock options shall be exercisable for a period of ninety (90) days if the NEO shall cease to be a Participant as defined in the Option Agreement, and in no event after the expiry date of the option. The amounts represent the value of the option-based awards as of the end of the completed financial year using the closing market price of the Corporation's securities on that date of \$0.46 per Common Share.
- (4) Mr. Blank is the current Acting Chief Financial Officer and Director. Mr. Blank does not have an employment agreement with the Corporation.
- (5) Mr. Curleigh no longer holds the position of Acting Chief Financial Officer and Chair of the Board of Directors. Mr. Curleigh does not have an employment agreement with the Corporation.

Non-Competition and Non-Solicitation

As per their employment agreements, the NEOs are bound by non-competition and non-solicitation of clients and employees clauses for up to one (1) year following the termination of their employment with the Corporation.

Exercise of Options

In addition, a NEO's stock option(s) shall be exercisable for a period of ninety (90) days if the NEO ceases to be a Participant as defined in the Option Agreement, and in no event after the expiry date of the option.

Director Compensation

In July 2011, the Board determined that non-management directors of the Corporation are to be compensated in accordance with the Corporation's Retainer and Per-Diem Guidelines (the "**Guidelines**"), that is, each director shall be paid a \$10,000 annual retainer and each director shall be paid a \$2,000 per diem for Board related activities in accordance with the Guidelines. No other remuneration has been paid to the directors for their services as directors, except as indicated herein and for reimbursements of reasonable out-of-pocket expenses incurred in connection with such duties. Directors are also eligible to participate in the Option Plan.

Between 2016 and 2019, directors of the Corporation were granted additional options pursuant to the Option Plan. The table below discloses all amounts of compensation paid or accrued to the directors for the financial year ended December 31, 2019.

| Name | Fee earned \$ | Share - based awards \$ | Option Based Awards ⁽²⁾ | Non-equity incentive plan compensation \$ | Pension Value \$ | All other compensation \$ | Total Compensation \$ |
|--|------------------|----------------------------|------------------------------------|--|---------------------|------------------------------|--------------------------|
| Alan Curleigh (1) | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 |
| P. Peter Pascali (2) | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 |
| Michael Blank (2) | \$ 8,500 | \$ 0 | \$ 68,000 | \$ 0 | \$ 0 | \$ 0 | \$ 76,500 |
| Robert Radin | \$ 18,250 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 18,250 |
| Christopher Twigge- Molecey ⁽³⁾ | \$ 9,750 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 9,750 |
| Andrew Abdalla | \$ 19,000 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 0 | \$ 19,000 |
| Dr. Virendra Jha ⁽⁴⁾ | \$ 8,500 | \$ 0 | \$ 68,000 | \$ 0 | \$ 0 | \$ 0 | \$ 76,500 |
| Total | \$ 64,000 | \$ 0 | \$ 136,000 | \$ 0 | \$ 0 | \$ 0 | \$ 200,000 |

Notes:

- (1) Mr. Curleigh is no longer Director or NEO of the Corporation. All compensation received by Mr. Curleigh are reflected in the *Summary Compensation Table* for the NEOs.
- (2) Mr. Pascali and Mr. Blank (appointed as Acting CFO and Director) are current Directors and NEOs of the Corporation. All compensation received by Mr. Pascali and Mr. Blank are reflected in the *Summary Compensation Table* for the NEOs.
- (3) Mr. Twigge-Molecey is no longer Director of the Corporation.
- (4) Dr. Jha appointed on September 29, 2019 as Director of the Corporation.
- (5) Represents the total grant date fair value of options granted in the latest financial year and may not represent the amounts the recipient will actually realize from the awards. The fair value of the options has been estimated at the date of the grant in accordance with IFRS using a Black-Scholes option pricing model.

Incentive Plan Awards

The following table provides information regarding the incentive plan awards for each director outstanding during the financial year ended December 31, 2019:

| Name ⁽¹⁾ | Option-based Awards | | | | Share-based Awards | | |
|---------------------------------|---|----------------------------|------------------------|---|--|---|--|
| | Number of securities underlying unexercised options (#) | Option exercise price (\$) | Option expiration date | Value of unexercised in-the-money options (\$) ⁽²⁾ | Number of shares or units of shares that have not vested (#) | Market or payout value of share awards that have not vested | |
| Robert Radin ⁽³⁾ | 100,000 | \$ 0.30 | Feb. 12, 2020 | \$ 16,000 | N/A | N/A | |
| | 250,000 | \$ 0.52 | May. 10, 2023 | \$ 0 | N/A | N/A | |
| Andrew Abdalla ⁽⁴⁾ | 300,000 | \$ 0.51 | July. 3, 2023 | \$ 0 | N/A | N/A | |
| Dr. Virendra Jha ⁽⁵⁾ | 200,000 | \$ 0.51 | Sept. 29, 2024 | \$ 0 | N/A | N/A | |

Notes:

- (1) Mr. Pascali and Mr. Blank are current Directors and NEOs of the Corporation. All incentive plan awards received by the director is reflected in the *Incentive Plan Awards* table for the NEO.
- (2) Based on the closing price of the Corporation's Common Shares on the Exchange on December 31, 2019 of \$0.46 per Common Share.
- (3) In accordance with Mr. Radin's Option Agreement dated February 12, 2015, his options to purchase 100,000 Common Shares vest as follows: 25% vested on February 12, 2015, 25% vested on February 12, 2016, 25% vested on February 12, 2017 and 25% vested on February 12, 2018.
- (4) In accordance with Mr. Abdalla's Option Agreement dated May 10, 2018, his options to purchase 250,000 Common Shares vest as follows: 50% vested May 10, 2018 and 50% vested on May 10, 2019. In accordance with Mr. Abdalla's Option Agreement dated July 3, 2018, his options to purchase 300,000 Common Shares vest as follows: 50% vested July 3, 2018 and 50% vested on July 3, 2019.
- (5) In accordance with Dr. Jha's Option Agreement dated September 29, 2019, his options to purchase 100,000 Common Shares vest as follows: 50% vested on September 29, 2019 and 50% will vest on September 29, 2020.

The following table provides information regarding the value vested or earned on incentive plan awards during the financial year ended December 31, 2019:

| Name ⁽¹⁾ | Option-based Awards - Value vested during the year (\$) ⁽²⁾ | Share-based awards - Value vested during the year (\$) ⁽²⁾ | Non- equity incentive plan compensation - Value earned during the year (\$) ⁽²⁾ |
|---|--|---|--|
| Robert Radin | \$ 0 | NA | NA |
| Andrew Abdalla | \$ 17,750 | NA | NA |
| Dr. Virendra Jha | \$ 0 | NA | NA |
| Christopher Twigge-Molecey ⁽³⁾ | \$ 0 | NA | NA |

Notes:

(1) Mr. Pascali and Mr. Blank are current Directors and NEOs of the Corporation. All incentive plan awards received by Mr. Pascali and Mr. Blank are reflected in the *Incentive Plan Awards table* for the NEOs.

(2) Aggregate dollar value that would have been realized if the options had been exercised on the vesting date (computed based on the difference between the market price of shares at exercise and the exercise price of the options on the vesting date).

(3) Mr. Twigge-Molecey is no longer a Director of the Corporation.

External Management Companies

There are currently no contracts with external management companies in effect.

SECURITIES AUTHORIZED FOR ISSUANCE UNDER EQUITY COMPENSATION PLANS

Equity Compensation Plan Information

The only compensation plan of the Corporation under which equity securities are currently authorized for issuance is the Option Plan. The Option Plan was previously reapproved by the Shareholders of the Corporation in June 2016. The table below summarizes information in relation to the Common Shares reserved for issuance under the Option Plan as of December 31, 2019.

| Plan | Number of Securities to be issued upon exercise of outstanding options | Weighted average exercise price of outstanding options | Number of Securities remaining available for issuance |
|--|--|--|---|
| Option Plan (approved by Shareholders) | 8,438,000(1) | \$ 0.37 | 5,692,345 |
| Option Plan (not approved by Shareholders) | N/A | N/A | N/A |

Notes:

(1) Based on 10% of the Corporation's issued and outstanding Common Shares as of the end of the Corporation's most recently completed financial year.

As of the date hereof, there are 9,090,000 options of the Corporation outstanding (6% of the current issued and outstanding Common Shares of the Corporation).

The Option Plan

The Option Plan provides that up to ten percent (10%) of the issued and outstanding Common Shares from time to time may be reserved for issuance upon the exercise of options granted.

The purpose of the Option Plan is to advance the interests of the Corporation by encouraging the directors, officers and key employees of the Corporation and consultants retained by the Corporation to increase the proprietary interests of such persons in the Corporation; align the interests of such persons with the interests of the Corporation's Shareholders generally; encourage such persons to remain associated with the Corporation; and furnish such persons with an additional incentive in their efforts on behalf of the Corporation.

The options are non-assignable and may be granted for a term not exceeding five years.

Options may be granted to directors, officers, employees and other service providers (the “**Participants**”) subject to the rules and regulations of applicable regulatory authorities and any Canadian stock exchange upon which the Corporation’s Common Shares may be listed or may trade from time to time.

The Board of Directors of the Corporation is responsible for providing for the granting, exercise and method of exercise of Options.

The securities that may be acquired by Participants under the Option Plan shall consist of authorized but unissued Common Shares. The Common Shares may be acquired upon the exercise of such Option provided that the minimum exercise price shall not be less than the Discounted Market Price as defined in the Exchange Corporate Finance Manual.

The aggregate number of Common Shares reserved for issuance under the Option Plan, or any other plan or agreement of the Corporation, shall not exceed ten percent (10%) of the total number of issued and outstanding Common Shares from time to time (calculated on a non-diluted basis). The aggregate number of Common Shares reserved for issuance to any one Participant (other than a consultant or a person employed in investor relations activities) together with such Participant's participation in any other plan of the Corporation, shall not exceed five percent (5%) of the total number of issued and outstanding Common Shares on a yearly basis (calculated on a non-diluted basis); and all consultants or persons employed in investor relations activities shall not exceed two percent (2%) of the total number of issued and outstanding Shares (calculated on a non-diluted basis).

The period during which an Option may be exercised shall be determined by the Board at the time the Option is granted, subject to any vesting limitations which may be imposed by the Board in its sole unfettered discretion at the time such Option is granted, provided that for a Participant other than a person employed in investor relations activities, no Option shall be exercisable for a period exceeding five (5) years from the date the Option is granted unless otherwise specifically provided by the Board and authorized by the Exchange, if applicable; and for a Participant employed in investor relations activities, no Option shall be exercisable for a period exceeding twelve (12) months from the date the Option is granted, with no more than one-fourth of the Options vesting in any three month period.

If any Participant ceases to be a member of the Board, senior officer, employee, management company employee or consultant of the Corporation for any reason other than death, permanent disability or normal retirement, his or her Option will terminate on the earlier of the date of the expiration of the option period and for Participants other than those employed in investor relations activities, ninety (90) days after the date such Participant ceases to be a member of the Board, senior officer, employee, management company employee or consultant of the Corporation, or any subsidiary of the Corporation; and for Participants employed in investor relations activities, thirty (30) days after the date such Participant ceases to be employed in investor relations activities. If such cessation or termination is by reason of substantial breach or cause on the part of the Participant, the Options shall be automatically terminated forthwith and shall be of no further force or effect.

In the event of the death, permanent disability or normal retirement of a Participant, any Option previously granted to such Participant shall be exercisable until the end of the period during which the option can be exercised, as was determined by the Board at the time of the grant or until the expiration of twelve (12) months or a period determined by the Board, after the date of death, permanent disability or normal retirement of such Participant, whichever is earlier, and then, in the event of death or permanent disability.

The Board may amend the Option Plan at any time, provided however, that no such amendment may materially and adversely affect any Option previously granted to a Participant without the consent of the Participant, except to the extent required by law. Any such amendment shall, if required, be subjected to the prior approval of, or acceptance by, the rules and regulations of applicable regulatory authorities and any Canadian stock exchange upon which the Corporation's Common Shares may be listed or may trade from time to time.

On May 18, 2017, the Board modified the Option Plan to clarify certain dispositions related to insiders' participation limits, as required by Exchange policies. Shareholder approval is not required for such amendment given that the Board has the full power and authority to correct and amend any rules related to the Option Plan, including such changes that may be required by the stock exchange or regulatory authorities for which the Corporation is subject. To that effect, the Option Plan was amended so as to provide that the maximum number of Common Shares issued to insiders (as a group) under the Option Plan, in any one (1) year period, is limited to ten percent (10%) of the Corporation's issued and outstanding Common Shares at the date of the issuance.

CORPORATE GOVERNANCE PRACTICES

Board of Directors

The Board of Directors is of the view that maintaining effective corporate governance practices is an important factor which contributes to the general success of the Corporation.

The Board of Directors is responsible for the supervision of the management of the Corporation's business and affairs in the interests of the Shareholders of the Corporation, while continually monitoring the integrity of the Corporation, its officers and employees.

Composition of the Board of Directors

As of the date hereof, the Board of Directors is composed of five (5) directors, Messieurs P. Peter Pascali, Robert Radin, Andrew Abdalla, Michael Blank and Dr. Virendra Jha.

On September 29, 2019, Mr. Alan Curleigh, member and Chair of the Board of Directors and Mr. Christopher Twigge-Molecey, member of the Board of Directors and Audit Committee resigned.

Further to the announcement on September 29, 2019, the Board of Directors approved the appointments of Dr. Virendra Jha, as an independent member of the Board of Directors, as well as, Mr. Michael Blank, as a non-independent member of the Board of Directors, member of the Audit Committee, as well as the Acting Chief Financial Officer of PyroGenesis. Mr. Pascali assumed the role of Chair of the Board of Directors.

The independent members of the Board are Messieurs Radin, Abdalla, and Dr. Jha within the meaning of National Instrument 58-101 – *Disclosure of Corporate Governance Practices* ("NI 58-101") adopted by the Canadian Securities Administrators. The non-independent member of the Board is Mr. Pascali (current President and Chief Executive Officer of the Corporation) and Mr. Blank (current Acting Chief Financial Officer). Mr. Pascali and Mr. Blank have been determined to be non-independent within the meaning of NI 58-101 by virtue of their position as current executive officers of the Corporation.

The Board of Directors is of the opinion that the current size is adequate, given the purpose of the Corporation, and will further the efficiency of its deliberations, while ensuring a diversity of opinion and experience. The Corporation believes that each and every current director is eager to fulfil his obligations and assume his responsibilities in the best interests of the Corporation and of all the Shareholders and not in the best interests of himself or a particular group of Shareholders.

The independent directors did not hold any regularly scheduled meetings during the financial year ended December 31, 2019, at which non-independent directors and members of management were not in attendance. To facilitate open and candid discussion among its independent directors, the independent directors are encouraged to ask questions and to review related matters. In addition, any item which could involve a potential conflict of interest among one or more directors is voted on by those directors that are not related to the conflict in question. It is anticipated that independent directors' meetings will be held as deemed appropriate during the current financial year.

Meetings of the Board

The Board held eight (5) meetings during the financial year ended December 31, 2019. The members of the Board and their attendance are set forth below.

| Board of Directors | | |
|---|----------------------------------|---------------------------|
| Name of Director | Independent⁽¹⁾ | Meeting Attendance |
| Alan Curleigh ⁽²⁾ | No | [4 of 5] |
| P. Peter Pascali | No | [5 of 5] |
| Robert Radin | Yes | [5 of 5] |
| Christopher Twigge-Molecey ⁽³⁾ | Yes | [4 of 5] |
| Andrew Abdalla | Yes | [5 of 5] |
| Michael Blank | No | [1 of 5] |
| Dr. Virendra Jha | Yes | [1 of 5] |

Notes:

- (1) To be considered independent, a member of the Board must not have any direct or indirect or "material relationship" with the Corporation. A material relationship is a relationship which could, in the view of the Board, be reasonably expected to interfere with the exercise of a member's independent judgment.
- (2) Mr. Curleigh is no longer Acting Chief Financial Officer and Chair of the Board of Directors of the Corporation
- (3) Mr. Twigge-Molecey is no longer a Director of the Corporation.

Orientation and Continuing Education

While the Corporation does not have a formal orientation and training program, new Board members are provided with:

1. information regarding the functioning of the Board;
2. information regarding the nature and operation of the business of the Corporation;
3. access to recent, publicly filed documents of the Corporation; and
4. access to management.

New directors of the Corporation are also provided with insight from other Board members and management regarding the contribution which they are expected to make to the Board in terms of both time and resource commitments. Board members are also encouraged to communicate with management, auditors, technical experts and consultants to keep themselves current with industry trends and developments and changes in legislation; and to attend related industry seminars and visit the Corporation's operations, to ensure that each member of the Board maintains the skill and knowledge necessary to meet their obligations as directors.

Ethical Business Conduct

All directors of the Corporation have the obligation to perform their duties and assume their responsibilities in the best interests of the Corporation. The Corporation expects all of its directors to comply with the laws and regulations governing its conduct and further is committed to promoting integrity and maintaining the highest standard of ethical conduct in all of its activities. The Board views good corporate governance as an integral component to the success of the Corporation and to meet its responsibilities to Shareholders. It is a requirement of applicable corporate law that directors and senior officers who have an interest in a transaction or agreement with the Corporation promptly disclose that interest at any meeting of the Board at which the transaction or agreement will be discussed and, in the case of directors, abstain from discussions and voting in respect to same if the interest is material. These requirements are made clear to all directors and senior officers of the Corporation.

Nomination of Directors

The Corporation does not have a stand-alone nomination committee. The full Board has the responsibility for identifying potential Board candidates. The Board monitors and assesses the mix of skills and competencies required in order for the Board to fulfil its role effectively. In addition, the Board discusses with each individual Board member his intention to continue to serve as a Board member in order to plan and prepare for succession at the Board level in a seamless manner.

Compensation of Directors and Officers

The Corporation does not have a stand-alone compensation committee. The full Board has the responsibility for determining compensation for directors. The Board ensures that compensation is competitive within the industry and aligns the interests of such individuals with those of the Corporation. In addition, the Board discusses with each individual Board member his intention to continue to serve as a Board member in order to plan and prepare for succession at the Board level in a seamless manner. Please see “*Executive Compensation – Compensation Governance*” for the process of determining compensation.

Other Board Committees

As the Corporation’s Board is small, it currently has only two (2) committees: the Audit Committee and the Disclosure Committee. The Board of Directors has established these committees to assist it in fulfilling its mandate and to satisfy various regulatory obligations. The Board of Directors oversees the operations of both the Audit Committee and the Disclosure Committee, namely with respect to the appointment of its members, their compensation, if any, their conduct and the execution of their mandates.

Audit Committee

The overall purpose of the Audit Committee is to assist the Board in its oversight of the integrity of the Corporation’s financial statements and other relevant public disclosures, the Corporation’s compliance with legal and regulatory requirements relating to financial reporting, the external auditors’ qualifications and independence and the performance of the internal audit function and the external auditors.

Charter and Composition of the Audit Committee

The text of the Audit Committee’s Charter may be found in the attached Schedule “B”. As of August 17, 2020, the current members of the Audit Committee are Messieurs Radin, and Abdalla, all of whom are independent directors in accordance with National Instrument 52-110 – *Audit Committee Governance* (“**NI 52-110**”). In addition, all members of the Committee are “financially literate” within the meaning of Section 1.6 of NI 52-110 as a result of their prior financial experience in a management capacity or as a member of an audit committee of public companies or as a certified accountant performing audit services (see “*Election of Directors – Biographies*”).

The Audit Committee held four (4) meetings relating to the financial year ended December 31, 2019. The members of the Audit Committee and their attendance at those meetings are set forth below.

| Audit Committee | | |
|---|---|---------------------------|
| Name of Director | Independent/Financially Literate⁽²⁾ (3) | Meeting Attendance |
| Andrew Abdalla ⁽¹⁾ | Yes/Yes | [4 of 4] |
| Robert Radin | Yes/Yes | [4 of 4] |
| Christopher Twigge-Molecey ⁽⁴⁾ | Yes/Yes | [3 of 4] |
| Michael Blank | No/Yes | [1 of 4] |

Notes:

- (1) Chair of the Audit Committee.
- (2) To be considered independent, a member of the Board must not have any direct or indirect or “material relationship” with the Corporation. A material relationship is a relationship which could, in the view of the Board, be reasonably expected to interfere with the exercise of a member’s independent judgment.
- (3) To be considered financially literate, a member of the Committee must have the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of the issues that can reasonably be expected to be raised by the Corporation’s financial statements.
- (4) Mr. Twigge-Molecey is no longer a Director of the Corporation

Relevant Education and Experience

For a description of the education and experience of the three (3) Audit Committee members please see their respective biographies under “*Election of Directors – Biographies*” above. Their combined experience provides a valued contribution to the Audit Committee.

Each member of the Audit Committee has:

- (a) an understanding of the accounting principles used by the Corporation to prepare its financial statements and the ability to assess the general application of those principles in connection with estimates, accruals and reserves;
- (b) experience preparing, auditing, analyzing or evaluating financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of issues that can reasonably be expected to be raised by the Corporation’s financial statements, or experience actively supervising individuals engaged in such activities; and
- (c) an understanding of internal controls and procedures for financial reporting.

Audit Committee Oversight

At no time since the commencement of the Corporation’s year ended December 31, 2019 was a recommendation of the Audit Committee to nominate or compensate an external auditor not adopted by the Board of Directors.

Reliance on Certain Exemptions

The Corporation is not required to comply with Part 3 (Composition of the Audit Committee) and Part 5 (Reporting Obligations) of NI 52-110 given that it is a venture issuer as defined in NI 52-110. The Board of Directors has adopted the recommendation of the Audit Committee on the compensation of the external auditor.

Pre-Approval Policies and Procedures

The Audit Committee of the Corporation has not adopted specific policies and procedures for the engagement of non-audit services as described in the Audit Committee’s Charter attached hereto as Schedule “B”.

Report on Auditor’s Fees

The audit for the financial year ended December 31, 2019 was conducted by KPMG. The Corporation paid or accrued the following fees in the most recently completed financial year and the previous financial year ended December 31, 2018:

| Fees | Financial Year Ended December 31, 2019 \$ | Financial Year Ended December 31, 2018 \$ |
|-----------------------------------|---|---|
| Audit Fees ⁽¹⁾ | \$ 333,209 | \$ 87,000 |
| Audit Related Fees ⁽²⁾ | \$ 4,038 | \$ 14,000 |
| Tax Fees ⁽³⁾ | \$ 11,235 | \$ 16,550 |
| All other Fees ⁽⁴⁾ | \$ 1,000 | Nil |
| Total Fees | \$ 348,482 | \$ 117,550 |

Notes:

- (1) Audit Fees consist of fees paid or accrued for the annual audit of the Corporation's financial statements or services that are normally provided by the external auditor in connection with statutory and regulatory filings or engagements. They also include fees billed for other audit services, which are those services that only the external auditor reasonably can provide, and include the provision of comfort letters and consents, the consultation concerning financial accounting and reporting of specific issues and the review of documents filed with regulatory authorities.
- (2) Other Audit Related Fees consist of fees paid or accrued for assurance and related services that are reasonably related to the performance of the audit or review of the Corporation's financial statements or that are traditionally performed by the external auditor, and include consultations concerning financial accounting and reporting standards; the Corporation's IFRS transition; review of security controls and operational effectiveness of systems; due diligence related to acquisitions; and employee benefit plan audits.
- (3) Tax Fees include fees paid or accrued for tax compliance services, including the preparation of original and amended tax returns and claims for refund; tax consultations, such as assistance and representation in connection with tax audits and appeals; tax advice related to mergers and acquisitions, and requests for rulings or technical advice from taxing authorities; tax planning services; and consultation and planning services.
- (4) Other fees include fees for products and services other than the services reported in Audit Fees, Audit Related Fees and Tax Fees.

Disclosure Committee

The Disclosure Committee is governed by the Corporation's Timely Disclosure, Confidentiality and Insider Trading Policy (the "Policy"), the text of which is reproduced in Schedule "C" attached hereto. The current members of the Disclosure Committee are Messieurs Pascali, Blank and Mtre Sara-Catherine L. Tolszczuk, Legal Counsel and Corporate Secretary of the Corporation. The Disclosure Committee is responsible for the implementation of the Policy, with such functions as evaluating and determining the content and necessity for public disclosures, designing and evaluating the procedures and controls for timely disclosure of material information, and ensuring that all persons to whom the Policy applies understand their respective obligations to preserve the confidentiality of all undisclosed material information of the Corporation.

Compensation Committee

The Corporation does not have a stand-alone compensation committee. The full Board has the responsibility for determining compensation for directors and members of senior management. The Board ensures that compensation is competitive within the industry and aligns the interests of such individuals with those of the Corporation. In addition, the Board discusses with each individual Board member his intention to continue to serve as a Board member in order to plan and prepare for succession at the Board level in a seamless manner. Please see "*Executive Compensation – Compensation Governance*" for details with respect to the function of the Compensation Committee.

Assessments

The Board monitors the adequacy of information given to directors, the communication between the Board and management and the strategic direction and processes of the Board and its Committees, to satisfy itself that the Board, its Committees and individual directors are performing effectively. As part of their review, the Board may review Committees' respective mandates/charters and applicable corporate policies.

INDEBTEDNESS OF MANAGEMENT AND DIRECTORS

During the financial year ended December 31, 2019, no director, executive officer, proposed management nominee for director or associate of any director, executive officer or proposed management nominee for director of the Corporation was indebted to the Corporation, nor were any of these individuals indebted to any other entity which indebtedness was the subject of a guarantee, support agreement, letter of credit or similar arrangement or understanding provided by the Corporation, including any securities purchase or program.

MANAGEMENT CONTRACTS

Management functions of the Corporation or any of its subsidiaries are not, to any substantial degree, performed by persons other than the directors and senior officers of the Corporation and its subsidiaries.

INTEREST OF INFORMED PERSONS IN MATERIAL TRANSACTIONS

No director, officer, proposed management nominee for director or person who, to the knowledge of the directors or officers of the Corporation, beneficially owns, directly or indirectly, or exercises control or direction over more than 10% of the votes attached to all outstanding Common Shares of the Corporation, informed person or any associate or affiliate of the foregoing has any material interest, direct or indirect, in any transaction since the commencement of the Corporation's last financial year or in any proposed transaction, which, in either case, has materially affected or will materially affect the Corporation.

ADDITIONAL INFORMATION AND AVAILABILITY OF DOCUMENTS

Additional information relating to the Corporation may be found under the Corporation's profile on SEDAR at www.sedar.com. Inquiries including requests for copies of the Corporation's financial statements and management's discussion and analysis for the financial year ended December 31, 2019 may be directed to Mr. Pascali, President and CEO of the Corporation, at 514-937-0002.

Additional financial information is provided in the Corporation's comparative financial statements and management's discussion and analysis for the financial year ended December 31, 2019 which is also available on SEDAR.

APPROVAL

The contents and sending of this Information Circular have been approved by the Board of Directors of the Corporation.

DATED this 17th day of August, 2020.

**BY ORDER OF THE BOARD OF DIRECTORS OF
PYROGENESIS CANADA INC.**

(signed) "P. Peter Pascali"

P. Peter Pascali
Chair

SCHEDULE A
OPTION PLAN

PYROGENESIS CANADA INC.

(the "Corporation")

STOCK OPTION PLAN

1. The Plan

A stock option plan (the "**Plan**") pursuant to which options (hereinafter, an "Option" or "**Options**") to purchase Common Shares or such other shares or other securities as may be substituted therefor or may be acquired by a Participant (as defined in Section 6 hereof) upon the exercise of an Option the terms of which have been modified in accordance with section 15 below (collectively, the "**Shares**") in the capital of the "**Corporation**" may be granted to the Participants is hereby established on the terms and conditions herein set forth.

2. Purpose

The purpose of this Plan is to advance the interests of the Corporation by encouraging the directors, officers and key employees of the Corporation (including any subsidiaries) and consultants retained by the Corporation to acquire Shares, thereby:

- (a) increasing the proprietary interests of such persons in the Corporation;
- (b) aligning the interests of such persons with the interests of the Corporation's shareholders generally;
- (c) encouraging such persons to remain associated with the Corporation; and
- (d) furnishing such persons with an additional incentive in their efforts on behalf of the Corporation.

3. Administration

- (a) This Plan shall be administered by the board of directors of the Corporation (the "**Board**").
- (b) Subject to the terms and conditions set forth herein, the Board is authorized to provide for the granting, exercise and method of exercise of Options, all on such terms as it shall determine in its sole discretion. In addition, the Board shall have the authority to:
 - (i) construe and interpret this Plan and all option agreements entered into hereunder;
 - (ii) prescribe, amend and rescind rules and regulations relating to this Plan; and
 - (iii) make all other determinations necessary or advisable for the administration of this Plan. All determinations and interpretations made by the Board shall be binding on all Participants (as hereinafter defined) and on their legal, personal representatives and beneficiaries.
- (c) Notwithstanding the foregoing or any other provision contained herein, the Board shall have the right to delegate the administration and operation of this Plan, in whole or in part, to a committee of the Board or to the President or any other officer of the Corporation. Whenever used herein, the term "Board" shall be deemed to include any committee or officer to which the Board has, fully or partially, delegated responsibilities and/or authority relating to the Plan or the administration and operation of the Plan pursuant to this section 3.

(d) Options to purchase the Shares granted hereunder shall be evidenced by an agreement, signed on behalf of the Corporation and by the person to whom an Option is granted, which agreement shall be in such form as the Board shall approve, as amended from time to time by the Board.

4. Shares Subject to Plan

(a) Subject to section 15 below, the securities that may be acquired by Participants under this Plan shall consist of authorized but unissued Common Shares.

(b) The aggregate number of Shares reserved for issuance under this Plan, or any other plan or agreement of the Corporation, shall not exceed ten percent (10%) of the total number of issued and outstanding Shares from time to time (calculated on a non-diluted basis).

(c) If any Option granted under this Plan shall expire or terminate for any reason without having been exercised in full, any unpurchased Shares to which such Option relates shall be available for the purposes of the granting of Options under this Plan.

5. Maintenance of Sufficient Capital

The Corporation shall at all times during the term of this Plan ensure that the number of Shares it is authorized to issue shall be sufficient to satisfy the requirements of this Plan.

6. Eligibility and Participation

(a) The Board may from time to time, in its sole discretion, grant an Option to any Participant, upon such terms, conditions and limitations as the Board may determine, including the terms, conditions and limitations set forth herein and pursuant to the terms and conditions of an individual option agreement set forth as Schedule "A", provided that Options granted to any Participant or a reduction in the exercise price of a previously granted Option shall be approved by the applicable shareholders of the Corporation if the rules of the Exchange require such approval.

(b) The Board may, in its discretion, select any of the following Persons to participate in this Plan, provided that any such Person, at the time of issuance, was:

- (i) a member of the Board or the board of directors of any subsidiary of the Corporation;
- (ii) a senior officer of the Corporation or any subsidiary of the Corporation;
- (iii) an Employee of the Corporation or any subsidiary of the Corporation;
- (iv) a Management Company Employee of the Corporation or any subsidiary of the Corporation; or
- (v) a Consultant retained by the Corporation or any subsidiary of the Corporation;
- (vi) a Consultant retained to carry out Investor Relations Activities for the Corporation.

Any such person having been selected for participation in this Plan by the Board is herein referred to as a "Participant".

(c) Where used herein:

"Consultant" means an individual (or a company controlled by such individual) who:

- (i) provides ongoing consulting services to the Corporation or any subsidiary of the Corporation under a written contract, and
- (ii) possesses technical, business or management expertise of value to the Corporation or any subsidiary of the Corporation, and
- (iii) spends a significant amount of time and attention on the business and affairs of the Corporation or any subsidiary of the Corporation; and
- (iv) has a relationship with the Corporation or any subsidiary of the Corporation that enables the individual to be knowledgeable about the business and affairs of the Corporation.

"Employee" means:

- (i) an individual who is considered an employee under the Income Tax Act (I.e. for whom income tax, employment insurance and CPP deductions must be made at source); or
- (ii) an individual who works full time for the Corporation or a subsidiary, as applicable, providing services normally provided by an employee and who is subject to the same control and direction by the Corporation or a subsidiary, as applicable, over the details and methods of work as an employee of the Corporation or a subsidiary, as applicable, but for whom income tax deductions are not made at source; or
- (iii) an individual who works for the Corporation or a subsidiary, as applicable, on a continuing and regular basis for a minimum amount of time per week providing services normally provided by an employee and who is subject to the same control and direction of the Corporation or a subsidiary, as applicable, over the details and methods of work as an employee of the Corporation or a subsidiary, as applicable, but for whom income tax deductions are not made at source.

"Investor Relations Activities" means activities or oral or written communications, by or on behalf of the Corporation or a shareholder of the Corporation, that promote or reasonably could be expected to promote the purchase or sale of securities of the Corporation, but does not include:

- (i) the dissemination of information provided, or records prepared, in the ordinary course of business of the Corporation: to promote the sale of products or services of the Corporation; or to raise public awareness of the Corporation that cannot reasonably be considered to promote the purchase or sale of securities of the Corporation;
- (ii) activities or communications necessary to comply with the requirements of: any and all securities laws applicable to the Corporation; or requirements of the Exchange or the by-laws, rules or other regulatory instruments of any other self regulatory body or exchange having jurisdiction over the Corporation;
- (iii) communications by a publisher of, or writer for, a newspaper, magazine or business or financial publication, that is of general and regular paid circulation, distributed only to subscribers to it for value or to purchaser of it, if: the communication is only through the newspaper, magazine or publication; and the publisher or writer receives no commission or other consideration other than for acting in the capacity of publisher or writer; or
- (iv) activities or communications that may be otherwise specified by the Exchange.

"**Management Company Employees**" means individuals employed by a Person providing management services to the Corporation, which are required for the ongoing successful operation of the business enterprise of the Corporation, but excluding a Person engaged in Investor Relations Activities;

"**Person**" means a corporation, incorporated association or organization, body corporate, partnership, trust, association or other entity other than an individual, or an individual.

(d) The granting of an Option to an Employee, Consultant or Management Company Employee constitutes a representation by the Corporation that such Participant is a *bona fide* Employee, Consultant or Management Company Employee, as the case maybe.

7. Exercise Price

The Board shall, at the time an Option is granted under this Plan, fix the exercise price at which Common Shares may be acquired upon the exercise of such Option provided that the minimum exercise price shall not be less than the Discounted Market Price. The Discounted Market Price is the Market Price of the Shares, less a discount which shall not exceed 25% if the Market Price is \$0.50 or less, 20% if the Market Price is from \$0.51 to \$2.00 and 15% if the Market Price is above \$2.00. Where used herein "**Market Price**" means, subject to certain exceptions required by the rules of the Exchange, the last daily closing price of the Shares before either the issuance of the news release or the filing of a price reservation form (Form 4N) required to fix the price at which the securities are issued or deemed to be issued.

Any reduction in the exercise price of an Option held by an Insider of the Corporation at the time of the proposed amendment shall be subject to disinterested shareholder approval.

8. Number of Optioned Shares

The number of Shares that may be acquired under an Option granted to a Participant shall be determined by the Board as at the time the Option is granted, provided that the aggregate number of Shares reserved for issuance to:

(a) anyone Participant (other than a Consultant or a person employed in Investor Relations Activities, as hereinafter defined) together with such Participant's participation in any other plan of the Corporation, shall not exceed five percent (5%) of the total number of issued and outstanding Shares on a yearly basis (calculated on a non-diluted basis);

(b) all Consultants or persons employed in Investor Relations Activities shall not exceed two percent (2%) of the total number of issued and outstanding Shares (calculated on a non-diluted basis); and

(c) all Insiders (as a group) shall not exceed ten percent (10%) of the issued and outstanding shares on a yearly basis (calculated on a non-diluted basis);

9. Term

The period during which an Option may be exercised (the "**Option Period**") shall be determined by the Board at the time the Option is granted, subject to any vesting limitations which may be imposed by the Board in its sole unfettered discretion at the time such Option is granted, provided that:

(a) for a Participant other than a person employed in Investor Relations Activities, no Option shall be exercisable for a period exceeding five (5) years from the date the Option is granted unless otherwise specifically provided by the Board and authorized by the Exchange, if applicable;

(b) for a Participant employed in Investor Relations Activities, no Option shall be exercisable for a period exceeding twelve (12) months from the date the Option is granted, with no more than one-fourth (1/4) of the Options vesting in any three (3) month period;

(c) the Option Period shall be automatically reduced in accordance with Sections 11 and 12 below upon the occurrence of any of the events referred to therein; and

(d) no Option in respect of which shareholder approval is required under the rules of any Exchange shall be exercisable until such time as the Option has been approved by the shareholders of the Corporation.

10. Method of Exercise of Option

(a) Except as set forth in Sections 11 and 12 below or as otherwise determined by the Board, no Option may be exercised unless the holder of such Option is, at the time the Option is exercised, a Participant.

(b) Options may be exercised in whole or in part and may be exercised on a cumulative basis where a vesting limitation has been imposed at the time of grant.

(c) Any Participant (or his legal, personal representative) wishing to exercise an Option shall deliver to the Corporation, at its principal office in the City of Montreal, Quebec:

(i) a written notice set forth as Schedule "B" expressing the intention of such Participant (or his or her legal, personal representative) to exercise his or her Option and specifying the number of Shares in respect of which the Option is exercised; and

(ii) a cash payment, cheque or bank draft, representing the full purchase price of the Shares in respect of which the Option is exercised.

(d) Upon the exercise of an Option as aforesaid, the Corporation shall use its reasonable efforts to forthwith deliver or cause the registrar and transfer agent of the Shares to deliver, to the relevant Participant (or his or her legal, personal representative) or to the order thereof, a certificate representing the aggregate number of fully paid and non-assessable Shares as the Participant (or his or her legal, personal representative) shall have then paid for.

11. Ceasing to be a Director, Officer, Employee or Consultant

If any Participant shall cease to be a member of the Board, senior officer, Employee, Management Company Employee or Consultant of the Corporation or any subsidiary of the Corporation for any reason other than death, permanent disability or normal retirement, his or her Option vested will terminate at 5:00 p.m. (Montreal time) on the earlier of the date of the expiration of the Option Period and:

(a) for Participants other than those employed in Investor Relations Activities, 90 days after the date such Participant ceases to be a member of the Board, senior officer, Employee, Management Company Employee or Consultant of the Corporation, or any subsidiary of the Corporation; and

(b) for Participants employed in Investor Relations Activities, 30 days after the date such Participant ceases to be employed in Investor Relations Activities.

If such cessation or termination is by reason of substantial breach or cause on the part of the Participant, the Options shall be automatically terminated forthwith and shall be of no further force or effect. Neither the selection of any person as a Participant nor the granting of an Option to any Participant under this Plan shall:

(a) confer upon such Participant any right to continue as a director, senior officer, Employee, Management Company Employee or Consultant of the Corporation, or any subsidiary of the Corporation as the case may be, or

(d) be construed as a guarantee that the Participant will continue as a member of the Board, senior officer, Employee, Management Company Employee or Consultant of the Corporation, or any subsidiary of the Corporation as the case may be.

12. Death, Permanent Disability or Normal Retirement of a Participant

In the event of the death, permanent disability or normal retirement of a Participant, any Option previously granted to such Participant shall be exercisable until the end of the Option Period or until the expiration of 12 months or a period determined by the board, after the date of death, permanent disability or normal retirement of such Participant, whichever is earlier, and then, in the event of death or permanent disability, only:

(a) by the Participant or person or persons to whom the Participant's rights under the Option shall pass by the Participant's Will or by applicable law; and

(b) to the extent that the Participant was entitled to exercise the Option as at the date of his death or permanent disability.

13. Rights of Participants

No person entitled to exercise any Option granted under this Plan shall have any of the rights or privileges of a shareholder of the Corporation in respect of any Shares issuable upon exercise of such Option until such Shares have been paid for in full and issued to such person.

14. Proceeds from Exercise of Options

The proceeds from any sale of Shares issued upon the exercise of Options shall be added to the general funds of the Corporation and shall thereafter be used from time to time for such corporate purposes as the Board may determine and direct.

15. Adjustments

(a) The number of shares subject to the Plan shall be increased or decreased proportionately in the event of the subdivision or consolidation of the outstanding Shares of the Corporation, and in any such event a corresponding adjustment shall be made changing the number of Shares deliverable upon the exercise of any Option granted prior to such event without any change in the total price applicable to the unexercised portion of the Option, but with a corresponding adjustment in the price for each Share covered by the Option. In case the Corporation is reorganized or merged or consolidated or amalgamated with another corporation, appropriate provisions shall be made for the continuance of the Options outstanding under this Plan and to prevent their dilution or enlargement.

(b) Adjustments under this section 15 shall be made by the Board, whose determination as to what adjustments shall be made, and the extent thereof, shall be final, binding and conclusive. No fractional Shares shall be issued under this Plan on any such adjustment.

16. Transferability

All benefits, rights and Options accruing to any Participant in accordance with the terms and conditions of this Plan shall not be transferable or assignable except, where qualified, to a Registered Retirement or similar plan where the Participant is the annuitant thereof, or to a family trust controlled by the Participant. During the lifetime of a Participant, any Options granted hereunder may only be exercised at the direction of the Participant and in the event of the death or permanent disability of a Participant, by the person or persons to whom the Participants rights under the Option pass by the Participant's Will or by applicable law.

17. Amendment and Termination of Plan

(a) The Board may amend the Plan at any time, provided however, that no such amendment may materially and adversely affect any Option previously granted to a Participant without the consent of the Participant, except to the extent required by law. Any such amendment shall, if required, be subjected to the prior approval of, or acceptance by, the Exchange.

(b) Notwithstanding anything contained to the contrary in this Plan or in any resolution of the Board in implementation thereof:

(i) in the event the Corporation accepts an offer to amalgamate, merge or consolidate with any other corporation (other than a wholly-owned subsidiary) or in the event that holders of greater than 50% of the Corporation's outstanding Shares accept an offer made to all or substantially all of the holders of the Shares to purchase in excess of 50.1 % of the current issued and outstanding Shares, then all of the vested Options shall, without any further action on behalf of the Corporation, be automatically vested. Each Participant shall thereafter be entitled to exercise all of such Options within the twenty (20) day period next following the date of acceptance by the Corporation and to determine that upon the expiration of such twenty (20) day period, all rights of the Participant to such Options or to the exercise of same (to the extent not theretofore exercised) shall ipso facto terminate and have no further force or effect whatsoever;

(ii) in the event of the sale by the Corporation of all or substantially all of the assets of the Corporation as an entirety or substantially as an entirety so that the Corporation shall cease to operate as an active business, any outstanding Option may be exercised as to all or any part of the Optioned Shares in respect of which the Participants would have been entitled to exercise the Option in accordance with the provisions of the Plan at the date of the Plan of any such sale at any time up to and including, but not after the earlier of: (A) the close of business on that date which is thirty (30) days following the date of completion of such sale; and (B) the close of business on the expiration date of the Option; but the Participant shall not be entitled to exercise the Option with respect to any other Optioned Shares;

(c) Notwithstanding the provisions of this Article 17, should changes be required to the Plan by any securities commission, stock exchange or other government or regulatory body of any jurisdiction to which the Plan or the Corporation now is or hereafter becomes subject, such changes shall be made to the Plan as are necessary to conform with such requirements and, if such changes are approved by the Board, the Plan, as amended, shall be filed with the records of the Corporation and shall remain in full force and effect in its amended form as of and from the date of its adoption by the Board.

(d) Notwithstanding any other provisions of this Plan, the Board may at any time by resolution terminate this Plan. In such event, all Options then outstanding and granted to a Participant may be exercised by the Participant for a period of thirty (30) days after the date on which the Corporation shall have notified all Participants of the termination of this Plan, but only to the same extent as the Participants could have exercised such Options immediately prior to the date of such notification.

18. Necessary Approvals

The obligation of the Corporation to issue and deliver Shares in accordance with this Plan is subject to applicable securities legislation and to the receipt of any approvals that may be required from any regulatory authority to stock exchange having jurisdiction over the securities of the Corporation. If Shares cannot be issued to a Participant upon the exercise of an Option (for any reason whatsoever) the obligation of the Corporation to issue such Shares shall terminate and any funds paid to the Corporation in connection with the exercise of such Option will be returned to the relevant Participant as soon as practicable.

SCHEDULE B
AUDIT COMMITTEE CHARTER

PYROGENESIS CANADA INC.
(the “Company”)

**AUDIT COMMITTEE
CHARTER**

Approved by the Board of Directors
and effective as of October 25th, 2011

PREAMBLE

The Audit Committee’s (the “Committee”) Charter clarifies its responsibilities delegated by the Board of Directors (the “Board”). The Charter is used by the Committee to guide the planning and the performance of its work. The Charter also clarifies the understanding the Committee has with the Company’s auditors and with management about the nature of their involvement with the Committee and its work.

OVERALL MANDATE

Generally, the Committee promotes and ensures a high standard of financial reporting, risk management and ethical behavior for the Company and in doing so shall carry out the duties and responsibilities as set out in this Charter.

COMPOSITION

The Committee shall consist of at least three Directors appointed by the Board who will serve at the pleasure of the Board and, in any event, only so long as he/she shall be a Board member. The Committee will have an appropriate representation of independent directors as required by law. The composition of the Committee shall comply with the rules and regulations of the stock exchange on which the shares of the Company are listed as well as the Canadian Securities Administrators “Instruments”. The Board may fill vacancies in the Committee by election from their number. The Board shall elect the Chairperson of the Committee. In the absence of the Chairperson, the members of the Committee shall appoint an Acting Chairperson. The President of the Company shall not be an ex-officio member of the Committee but the Chairperson of the Board may, at his/her discretion, attend meetings as an ex-officio member. An ex-officio member shall be vested with all of the rights and powers of appointed members.

To ensure the Committee’s effectiveness, each member will be financially literate and be prepared to spend the time necessary to address complex issues and to challenge both management and the auditors, where necessary.

A quorum of the Committee shall consist of at least two members of the Committee (for this purpose the Committee shall be deemed to consist of at least three members, two being appointed by the Board as aforesaid and one being an ex-officio member as aforesaid). Notwithstanding any vacancy on the Committee, a quorum may exercise all of the powers of the Committee.

The Secretary shall be selected from its members, or shall be the Corporate Secretary. The Secretary of the Committee shall ensure that minutes of meetings are prepared for distribution to Committee members.

DUTIES AND RESPONSIBILITIES

The Committee shall have the following duties and responsibilities:

OVERSEEING STANDARDS OF INTEGRITY AND BEHAVIOUR

Management is responsible for the Company's standards of behavior. The Committee assists the Board in obtaining assurances that management is operating the Corporation in an ethical manner and encourages management to demonstrate a strong commitment to integrity.

The Committee requests that management report periodically on how the Company's systems, practices and controls encourage, monitor and provide assurance of compliance with laws, regulations and standards of ethical conduct, including the control of expenses such as perquisites, expense accounts and out-of-pocket expenses for officers and directors.

The Committee seeks the views of the auditors about the Company's standards of behavior. It discusses with the auditors the adequacy of the systems and controls, and the details of any practices or transactions identified by the auditors as being in potential violation of the legal authorities, as well as the details of any "other matters" they consider bringing to the attention of the Board. The committee seeks the views of auditors on remedies to curtail inappropriate practices and behaviors, as well as alternative remedies to rectify those matters that are not in the Company's best interest.

The Committee values financial integrity and credibility. It actively promotes an overall corporate "tone" for quality financial reporting, sound business risk practices, and ethical behavior.

OVERSEEING FINANCIAL REPORTING

Management is responsible for the Company's financial reporting. This includes preparation of accurate, fair and complete financial reports, the selection of the most appropriate accounting principles and practices, formulation of accounting judgments and estimates, and preparation of the annual report including its management's discussion and analysis (MD&A), budgets and other such reports.

The Committee shall provide assistance to the Board in fulfilling its financial reporting and control responsibilities to the shareholders of the Company and to the investment community. The Committee's primary duties and responsibilities in this regard are to:

- (a) oversee the accounting and financial reporting processes of the Company and the audit of its financial statements including:
 - i. the integrity of the Company's financial statements;
 - ii. the compliance with legal and regulatory requirements; and,
 - iii. the independent auditor's qualifications and independence;
- (b) serve as an independent and objective party to monitor the Company's financial reporting process and internal control systems;
- (c) review and appraise the audit activities of the Company's independent auditors;
- (d) provide open lines of communication among the independent auditors, financial and senior management and the Board for financial reporting and control matters and meet periodically with management and with the independent auditors.

The Committee assesses the relevance and the reliability of the financial reports to ensure that they portray, in the clearest light possible, the underlying economic circumstances and financial performance of the Company.

The Committee promotes accuracy, truthfulness, integrity and credibility in financial reporting.

The Committee discusses with management and auditors the inherent fairness, accuracy and completeness of financial disclosures as well as the Company's compliance with legal and regulatory requirements and may request attestation to this effect from them.

The Committee reviews the key accounting principles and the significant judgments and estimates with management and auditors. It seeks their views with respect to the appropriateness and consistency of the accounting principles and practices, not just their acceptability, and the degree of aggressiveness or conservatism in determining estimates.

As integral components of its financial review processes, the Committee reviews the operating and capital budgets, the borrowing plan, summaries of the corporate plan and budgets, the annual and quarterly financial statements, including the MD&A sections, and any other financial information which will be distributed to the public and requiring approval of the Board.

The Committee assesses how well the Company's financial information reporting package meets the Board's needs by reviewing its form, content and level of details.

OVERSEEING MANAGEMENT CONTROL PRACTICES

Management is responsible for maintaining records and financial management and control systems that provide reasonable assurance that assets are safeguarded and maintained, that Intellectual Property (IP) is identified, protected and secured, that transactions are in accordance with regulations and any government directives issued and that financial, human and physical resources are managed economically and efficiently and that operations are carried out effectively.

Management is responsible for identifying the principal business risks facing the Company and formulating the Company's risk tolerance levels and risk management policies for consideration and approval by the Board. The Committee assists the Board in this function, focusing on the financial risks.

The Committee holds management accountable for the design and functioning of the Company's control framework in order to monitor, assess and mitigate the Corporation's business risks and uncertainty, as well as legal, environmental, social responsibility and ethical compliance. Periodically, the Committee requests that management provides it with an assessment of the effectiveness of the internal control structure and procedures, and, if warranted, with plans for improving its effectiveness.

The Committee reviews with the auditors (internal, external and special examiners when applicable) their assessments of the design and functioning of the control framework and the systems in place for ensuring that the business risks are identified, monitored, controlled and within the Company's limit of tolerance, and their views on management's plans for improvements.

OVERSEEING WORK OF AUDITORS

The Committee recognizes that the Company's auditors possess substantial expertise and have significant professional responsibilities. It holds the auditors accountable for fulfilling their respective responsibilities.

The Internal auditor (when established) will be accountable to the Committee, in its capacity as a committee of the Board.

The Committee demands independent and objective assessments of the Company's standards of behavior, its compliance with authorities, its financial reporting, and its business risks systems, practices and controls from the auditors.

The Committee oversees audit activities with respect to the following two (2) types of audits:

- (a) the annual audit deals with the fairness of the statements, compliance of transactions with specified legal authorities, and any other matter identified by the external auditor as important,
- (b) the internal audit (when established), which is a part of management's system of internal control, deals with matters similar to those of the annual audit.

The Committee reviews and follows the five (5) generic phases of each of the two (2) types of audits:

- (a) establishing the purpose and terms of reference for the audit;
- (b) selection and organization of a team of experienced professionals to plan and conduct the audit;
- (c) conduct of the audit; and
- (d) reviews all of the audit results and findings, and reports to the Board.

The Committee shall review management's plans to correct any significant problems raised by the internal and external auditors. It shall monitor and review management's progress in implementing its response plan.

The Committee ensures that management has not placed any inappropriate restrictions on the audits and confirms that the external auditor is independent and able to maintain its objectivity.

The Committee approves the mandate of the internal audit function, monitors the long-term internal audit plan and ensures that the internal auditor has adequate resources to perform its responsibilities and has direct and open communication with the Committee. It reviews the reporting relationship of the internal auditor to ensure that an appropriate segregation of duties is maintained and that the internal auditor has an obligation to report directly to the Committee on matters affecting its duties, irrespective of his or her reporting relationships.

The Committee evaluates the work of each of the auditors with a view to determining the level of assurance that can be derived from their work.

Periodically, the Committee evaluates the performance of each auditor.

The Committee shall establish effective communication processes with management and the Company's auditors, to assist it in monitoring objectively the quality and effectiveness of the relationship among the auditors, management and the Audit Committee. It shall be responsible for the resolution of disagreements between management and auditors.

OPERATIONAL RESPONSIBILITIES

Each new member will receive an orientation about the Committee's work and responsibilities and all members are encouraged to keep current about accounting, auditing and financial reporting standards and practices. In recognition of the importance of the financial literacy skills of its members, the Committee relies on the full support of the Board in acquiring and in developing an approach to improve the necessary skills, when required.

Annually, the Committee reviews the Charter setting out the scope of its responsibilities, and, where in the opinion of the Committee, amendments to the Charter are required, may propose such amendments to the Board for consideration and approval.

Annually, the Committee will consider the appropriateness of preparing a report to the Board describing its work.

OTHER RESPONSIBILITIES

Periodically, in consultation with the Chief Financial Officer and the auditors, the Committee seeks reasonable assurance of the quality and sufficiency of the Company's accounting and financial personnel and other resources.

The Committee shall discuss or review in advance the appointment of the Chief Financial Officer.

The Committee shall review procedures established by management for dealing with complaints from employees related to financial reporting, controls and corporate conduct.

The Committee may investigate any matters that, at the Committee's discretion, fall within its duties.

The Committee shall perform such other functions as are assigned to it by law or by the Board.

The Committee shall review with the general counsel, legal and regulatory matters that, in the opinion of management, may have a material impact on the financial statements, related organization compliance policies, and program and reports received from regulators.

OPERATING PROCEDURES

The Committee shall meet quarterly, or more frequently as appropriate, in advance of regularly scheduled Board meetings. Committee meetings shall be called by the Committee Chair or requested by any Committee member or by the Board Chair.

Notice of each meeting of the Committee shall be given to each member of the Committee (including the Chair of the Board as an ex-officio member of the Committee), and except in the case of an in-camera meeting, also to the Auditors, the Chief Executive Officer and the Chief Financial Officer of the Company. Notice of the meeting shall be given either orally or by electronic mail, not less than 48 hours before the time fixed for the meeting. Members may waive notice of a meeting.

Meeting discussions may take place face to face, by teleconference or through a reciprocal interchange of emails.

The agenda for each meeting will be established by the Chair of the Committee.

Any decision made by the Committee shall be determined by a majority vote of the members of the Committee present. A member will be deemed to have consented to any resolution passed or action taken at a meeting of the Committee unless the member dissents.

The Chief Executive Officer and the Chief Financial Officer of the Corporation shall attend all Audit Committee meetings, with the exception of in-camera meetings.

A matter put to vote at a meeting of the Committee shall be decided by a majority of the votes cast, and in the event of an equality of votes, the Chair has a deciding vote.

The Secretary of the Committee shall ensure that minutes of meetings are prepared for distribution to Committee members, and, except for in-camera meetings, to the Auditors, the Chief Executive Officer and the Chief Financial Officer of the Corporation.

The Chair of the Committee will report to the Board on proceedings and deliberations of the Committee, either orally or in writing, at the first subsequent meeting of the Board or at such earlier time as the Committee in its discretion may consider advisable.

The Committee may retain at the Corporation's expense, with prior Board approval, independent consultants and such other persons as the Committee shall determine necessary to fulfill its duties and responsibilities.

LIMITATION ON THE COMMITTEE'S DUTIES

In contributing to the Committee's discharging of its duties under this Charter, each member of the Committee shall be obliged only to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Nothing in this mandate is intended, or may be construed, to impose on any member of the Committee a standard of care or diligence that is in any way more onerous or extensive than the standard to which all Board members are subject. The essence of the Committee's purpose is to monitor, review and when appropriate, recommend changes to financial and corporate operating standards as they are practiced by the Company's management to gain reasonable assurance (but not to ensure) about fundamental activities of the Company.

SCHEDULE C
TIMELY DISCLOSURE, CONFIDENTIALITY, AND INSIDER TRADING POLICY

PYROGENESIS CANADA INC.
(the “Company”)

**TIMELY DISCLOSURE, CONFIDENTIALITY
AND INSIDER TRADING
POLICY**

Approved by the Board of Directors

and effective as of February 18, 2015

1. PURPOSE OF THIS POLICY

The purpose of this timely disclosure, confidentiality and insider trading policy (the “Policy”) is to ensure that PyroGenesis Canada Inc. (the “Company”) and all persons to whom this Policy applies meet their obligations under the provisions of securities laws and stock exchange rules by establishing a process for the timely disclosure of all Material Information (as defined herein) and ensuring that all persons to whom this Policy applies understand their obligations to preserve the confidentiality of Undisclosed Material Information (as defined herein). This Policy covers disclosures in documents filed with the securities regulators and written statements made in the Company’s annual and quarterly reports, press releases, letters to shareholders, presentations by senior management and information contained on the Company’s web site and other electronic communications. It extends to oral statements made in meetings and telephone conversations with analysts and investors, interviews with the media as well as speeches, press conferences and conference calls.

2. TO WHOM THIS POLICY APPLIES

The main groups to whom this Policy applies are set forth in Schedule “A” attached hereto (“**Schedule “A”**”). Each section of the Policy that imposes restrictions and obligations will describe which groups of persons are subject to that section. References in this Policy to “**any person to whom this Policy applies**” or similar references are intended to include persons in all of the groups described in Schedule “A”.

3. RESPONSIBILITY FOR THIS POLICY

3.1 Structure of the Disclosure Committee

The board of directors of the Company (the “**Board**”) has created a corporate disclosure committee (the “**Disclosure Committee**”) which is responsible for the implementation of this Policy. The Disclosure Committee shall consist of the President and Chief Executive Officer, the Chief Financial Officer and the Legal Counsel of the Company, as well as all such other persons as may be designated by the President and Chief Executive Officer. Notwithstanding the foregoing, the composition of the Disclosure Committee may change from time to time and the Company shall advise all persons to whom this Policy applies of any such changes. A majority of the members of the Disclosure Committee present in person or by conference call at the time a meeting is convened shall constitute a quorum for all purposes. The Disclosure Committee may adopt disclosure controls and procedures in addition to those set out herein.

3.2 Responsibilities of the Disclosure Committee

The responsibility for the adequacy and accuracy of the content of written statements rests with the Board, unless otherwise delegated to the Disclosure Committee.

The Disclosure Committee shall have the responsibility to:

- (a) evaluate the necessity of making public disclosures;
- (b) determine the content of public disclosures;
- (c) review and approve, before they are Generally Disclosed (as defined herein), each Document (as defined herein) to assess the quality of the disclosures made in the Document including, but not limited to, whether the Document is accurate and complete in all material respects;
- (d) review and approve the guidelines and procedures to be distributed to appropriate management and other Company personnel designed to gather the information required to be disclosed in Core Documents (as defined herein);
- (e) establish timelines for the preparation of Core Documents, which timelines shall include critical dates and deadlines during the disclosure process relating to the preparation of drafts, the circulation of drafts to appropriate Company personnel, the Company's independent auditors, and the Audit Committee of the Board, the receipt of comments and the review of the comments by the Disclosure Committee. Such timetables should allow for circulation of draft Core Documents to the Chief Executive Officer, the Chief Financial Officer, the Audit Committee of the Board and the Board sufficiently in advance of the applicable filing deadline in order to enable such persons to review carefully the filing and discuss any questions and comments related thereto;
- (f) make determinations about whether:
 - (i) a "Material Change" (as defined herein) has occurred;
 - (ii) selective disclosure has been or might be made; or
 - (iii) a misrepresentation has been made;
- (g) oversee the design and implementation of this Policy and the Company's "disclosure controls and procedures," which are defined as controls and procedures that are designed to ensure that information required to be disclosed by the Company in its Core Documents is recorded, processed, summarized and reported within the specified time periods;
- (h) periodically evaluate the effectiveness of the Company's disclosure controls and procedures, particularly prior to the filing of each Core Document. The Disclosure Committee's evaluation shall include but not be limited to assessing the adequacy of the controls and procedures in place to ensure that Material Information required to be disclosed in the Company's Core Documents is being recorded, processed, summarized and reported;

- (i) in its discretion, conduct interim evaluations of the Company's disclosure controls and procedures in the event of significant changes in securities regulatory requirements, IFRS, legal, or other regulatory policies, or stock exchange requirements, or if it otherwise considers such evaluations appropriate;
- (j) educate the Directors, Officers, Employees and Contractors, as defined in Schedule "A", about the matters contemplated by this Policy;
- (k) monitor the effectiveness of, and compliance with, this Policy and report to the Audit Committee of the Board on the operation of this Policy and the Disclosure Committee's assessment of the quality of the disclosures made in Documents, and recommend any necessary changes to this Policy;
- (l) annually review and reassess the adequacy of this Policy and, if necessary, recommend any proposed changes to the for approval such that it complies with changing requirements and best practices;
- (m) accumulate information which may be required to be reported upon or disclosed and communicated to the executive officers of the Company to allow the Company to meet its disclosure obligations on a timely basis;
- (n) any other responsibilities that the Board may choose to delegate to the Disclosure Committee.

3.3 Meetings of the Disclosure Committee

The Disclosure Committee shall meet informally as circumstances dictate and minutes of such meetings shall be maintained by the Legal Counsel of the Company. Any member of the Disclosure Committee may call a meeting of the Disclosure Committee, with or without notice as circumstances dictate, to consider any matter within the mandate of the Disclosure Committee. Unless otherwise set out in this Policy, or as established by the Disclosure Committee from time to time, all of the rules of procedure with respect to meetings and other activities of the Board shall apply to the Disclosure Committee.

3.4 Consulting Outside Advisors

Any member of the Disclosure Committee may consult with the Company's external legal counsel and other appropriate expert advisors as it considers necessary in connection with this Policy.

3.5 Documents

A "**Document**" means any public written communication, including a communication prepared and transmitted in electronic form:

- that is required to be filed with the Autorité des marchés financiers, or any other securities regulatory authority in Canada, on the System for Electronic Document Analysis and Retrieval (**SEDAR**) or otherwise;
- that is required to be filed with a government or an agency of a government under applicable securities or corporate law or with any stock exchange or similar institution under its by-laws, rules or regulations; or
- the content of which would reasonably be expected to affect the market price or value of the securities of the Company.

3.6 Core and Non-Core Documents

The *Securities Act* (Québec) distinguishes between “core documents” and “non-core documents.” For the purpose of this policy, the following documents are core documents “**Core Documents**”:

- prospectuses;
- take-over bid circulars;
- issuer bid circulars;
- directors' circulars;
- rights offering circulars;
- management's discussion and analysis;
- annual information forms;
- information circulars;
- annual financial statements;
- interim financial statements; and
- material change reports.

4. INDIVIDUALS WHO ARE AUTHORIZED TO SPEAK ON BEHALF OF THE COMPANY

- 4.1 Unless otherwise authorized by the Disclosure Committee, only the President and Chief Executive Officer and the Chief Financial Officer, and the Vice President, Investor Relations and Communication are authorized to initiate contacts with analysts, the media and investors. The President and Chief Executive Officer of the Company may, from time to time, designate in writing (1) other Board Members, Officers, Employees or Contractors, or (2) with the approval of the Disclosure Committee, any other person, to speak on behalf of the Company as back-ups or to respond to specific inquiries.
- 4.2 Any person to whom this Policy applies who is approached by the media, an analyst, investor or any other member of the public to comment on the affairs of the Company, must refer all inquiries to the President and Chief Executive Officer and must immediately notify the President and Chief Executive Officer that the approach was made.

5. TIMELY DISCLOSURE OF MATERIAL INFORMATION

- 5.1 “**Material Information**” consists of both “**Material Facts**” and “**Material Changes**”. A Material Fact means a fact that significantly affects, or would reasonably be expected to have a significant effect on, the market price or value of the securities of the Company. A Material Change means a change in the business, operations or capital of the Company that would reasonably be expected to have a significant effect on the market price or value of any of the securities of the Company and includes a decision to implement such a change if such a decision is made by the board of directors or by senior management of the Company who believe that confirmation of the decision by the board of directors is probable. For the purposes of this Policy, “Material Information” also includes information that a reasonable investor would consider important to a decision to buy or sell securities of the Company.
- 5.2 Any person to whom this Policy applies who becomes aware of information that has the possibility of being Material Information must immediately disclose that information to any member of the Disclosure Committee. Schedule “B” attached hereto lists examples of Material Information (“**Schedule “B”**”).

- 5.3 Material Information is required to be disclosed immediately, except in circumstances where: (i) in the opinion of the Disclosure Committee, immediate release of the information would be unduly detrimental to the interests of the Company; (ii) the Company is permitted by applicable securities laws and stock exchange requirements to delay the disclosure of such Material Information; and (iii) the Company maintains confidentiality of such Material Information and complies with any applicable confidential material change report filing requirement. The Disclosure Committee, in consultation with the Board and others as appropriate, shall determine what is deemed to be Material Information and the appropriate public disclosure. Disclosure must be corrected immediately if the Company subsequently learns that earlier disclosure by the Company contained a material error at the time it was given.
- 5.4 Press releases disclosing Material Information will be transmitted to the TSX Venture Exchange or any other stock exchanges on which the Company's securities may be listed (the "**Exchange**") and relevant regulatory bodies, and disseminated through a widely circulated newswire service company.

6. INTERNET CHAT ROOMS AND BULLETIN BOARDS

- 6.1 Board Members, Officers, Employees and Contractors must not discuss or post any information relating to the Company or any of its subsidiaries or trading in securities of the Company in Internet chat rooms, blogs, social networking websites, newsgroups or bulletin boards, unless in accordance with the Company's governance policies, i.e. provided that the Company has previously discussed, posted, or published publicly such information in any chat room, bulletin board or on any of its blogs or social network/media accounts.
- 6.2 Board Members, Officers, Employees and Contractors must advise the President and Chief Executive Officer if they are aware of any discussion of information of the Company in a chat room, blog, social networking website, newsgroup or bulletin board.

7. RUMOURS

The Company shall not comment, affirmatively or negatively, on rumors. This also applies to rumors on the Internet. The Company's spokespersons ("Spokespersons") will respond consistently to those rumors, saying "*It is our policy not to comment on market rumors or speculation.*" If the Exchange, or a securities regulatory authority, requests that the Company make a statement in response to a market rumor, the Disclosure Committee will consider the matter and make a recommendation to the President and Chief Executive Officer as to the nature and context of any response.

8. CONFIDENTIALITY OF UNDISCLOSED MATERIAL INFORMATION

- 8.1 "**Undisclosed Material Information**" of the Company is Material Information about the Company that has not been "**Generally Disclosed**"; that is, disseminated to the public by way of a press release together with the passage of a reasonable amount of time, being generally at least [24] hours, unless otherwise advised by the Disclosure Committee that the period is longer or shorter, depending on the circumstances) for the public to analyze the information.
- 8.2 Any person to whom this Policy applies and who has knowledge of Undisclosed Material Information must treat the Material Information as confidential until the Material Information has been Generally Disclosed.
- 8.3 Undisclosed Material Information shall not be disclosed to anyone except in the necessary course of business. If Undisclosed Material Information has been disclosed in the necessary course of business, anyone so informed must clearly understand that it is to be kept confidential, and, in appropriate circumstances, execute a confidentiality agreement. Schedule "C" attached hereto lists circumstances where securities regulators believe disclosure may be in the necessary course of business ("**Schedule "C"**"). When in doubt, all persons to whom this Policy applies must consult with legal counsel of the Company to determine whether disclosure in a particular circumstance is in the necessary course of business. For greater certainty, disclosure to analysts, institutional investors, other market professionals and members of the press and other media will not be considered to be in the necessary course of business. Tipping ("**Tipping**"), which refers to the disclosure of Undisclosed Material Information to third parties outside the necessary course of business, is prohibited.

- 8.4 In order to prevent the misuse of inadvertent disclosure of Undisclosed Material Information, the procedures set forth below should be observed at all times:
- (a) Documents and files containing confidential information be kept in safe place to which access is restricted to individuals who need to know that information in the necessary course of business and code names should be used if necessary ;
 - (b) Confidential matters should not be discussed in places where the discussion may be overheard;
 - (c) transmission of documents containing Undisclosed Material Information by electronic means will be made only where it is reasonable to believe that the transmission can be made and received under secure conditions such as a dedicated server; and
 - (d) unnecessary copying of documents containing Undisclosed Material Information must be avoided and extra copies of documents must be promptly removed from meeting rooms and work areas at the conclusion of the meeting and must be destroyed if no longer required.

9. QUIET PERIOD

Each period (1) beginning on the **[fifteenth]** day following the end of each fiscal quarter and each fiscal year, and (2) ending two trading days following the issuance of the press release disclosing the financial results for such period, will be a quiet period (“**Quiet Period**”). During a Quiet Period, except as otherwise authorized by the President and Chief Executive Officer, the Company will not initiate any meetings or telephone contacts with analysts and investors but will respond to unsolicited inquiries regarding factual matters. If the Company is invited to participate, during the Quiet Period when the Forward Looking Information constitutes, in investment meetings or conferences organized by others, the Disclosure Committee will determine, on a case-by-case basis, if it is advisable to accept these invitations. If authorized or accepted, extreme caution will be exercised to avoid selective disclosure of any Undisclosed Material Information.

10. TRADING IN SECURITIES OF THE COMPANY

- 10.1 No person in a Special Relationship with the Company (as defined in Schedule “A”) shall purchase or sell or otherwise monetize securities of the Company (including by changing an economic interest in a related financial instrument) while in possession of Undisclosed Material Information.
- 10.2 Directors and Officers and those Employees and Contractors who participate in the preparation of the Company’s financial statements or who are privy to material financial information relating to the Company are prohibited from purchasing or selling securities of the Company from the moment they are in receipt of such information (the “**Executive Blackout**”).

- 10.3 All Employees and Contractors who are not subject to the Executive Blackout are prohibited from purchasing or selling securities of the Company during the Quiet Period so long as they are not in possession of material information (the “**General Blackout**”).
- 10.4 All Directors, Officers, Employees and Contractors who are so advised by the Disclosure Committee, shall be prohibited from purchasing or selling securities of the Company during any other period designated by the Disclosure Committee (the “**Specific Blackout**”).
- 10.5 Notwithstanding Sections 10.2, 10.3 and 10.4, a Director, Officer, Employee and Contractor may, provided such person is not in possession of Undisclosed Material Information, purchase or sell securities during any blackout period (an Executive Blackout, a General Blackout, or Specific Blackout as may be applicable) with the prior written consent of the President and Chief Executive Officer. The President and Chief Executive Officer will grant permission to purchase or sell during a blackout period only in the case of unusual, exceptional circumstances. Unusual, exceptional circumstances may include the sale of securities in the case of severe financial hardship or where the timing of the sale is critical for significant tax planning purposes.
- 10.6 The trading prohibitions in Sections 10.1, 10.2, 10.3 and 10.4 do not apply to the acquisition of securities through the exercise of share options but do apply to the sale of the securities acquired through the exercise of share options.

11. **INSIDER REPORTS**

- 11.1 A Reporting Insider (as defined in Schedule “A”) of the Company is required to file an initial insider report within ten (10) days of becoming an Reporting Insider and subsequent insider reports within five (5) days following any change in their previously reported ownership position in any securities of the Company. This includes any trade of shares of the Company and the grant of options and other equity-based awards, as well as the exercise of options and the settlement of equity-based awards, whether through the issuance of shares or payment of cash. If a Reporting Insider does not own or have control over or direction over securities of the Company, or if ownership or direction or control over securities of the Company remains unchanged from the last report filed, a report is not required.
- 11.2 If a Reporting Insider has questions or requires assistance with the filing of an insider report, such Reporting Insider may contact the Legal Counsel.

12. **AVOIDING SELECTIVE DISCLOSURE**

- 12.1 When participating in shareholder meetings, press conferences, analysts’ conferences and private meetings with analysts, Spokespersons must only disclose information that either (1) is not Material Information, or (2) is Material Information but has previously been Generally Disclosed. For greater certainty, acceptable topics of discussion include the Company’s business prospects (subject to the provisions of Section **Error! Reference source not found.** of this Policy), the business environment, management’s philosophy and long-term strategy. Any selective disclosure of Undisclosed Material Information, including Forward-Looking Information, is not permitted.
- 12.2 To protect against selective disclosure, the following procedures should be followed:
- (a) Spokespersons who are participating in shareholder meetings, news conferences, analysts’ conferences and private meetings with analysts should normally script their comments and prepare answers to anticipated questions in advance of the meeting or conference; and
 - (b) Those scripts should normally be reviewed by the Disclosure Committee before the meeting or conference and any Undisclosed Material Information that is contained in the script must be Generally Disclosed before the meeting or conference or deleted from the script if it is premature for the information to be Generally Disclosed.

- 12.3 After each shareholder meeting, news conference, analysts' conference or private meeting with analysts, the Company's participants should normally meet and review the disclosures made during the course of the meeting or conference to determine if any Undisclosed Material Information was unintentionally disclosed.
- 12.4 If Undisclosed Material Information was disclosed, the participants must advise a member of the Disclosure Committee, who shall take immediate steps to ensure that the information is Generally Disclosed.
- 12.5 Pending the Material Information being Generally Disclosed, the Company must contact the parties to whom the Material Information was disclosed and inform them (1) that the information is Undisclosed Material Information and (2) of their legal obligations with respect to the Material Information.

13. FORWARD-LOOKING INFORMATION

- 13.1 Subject to the approval and disclosure procedures provided elsewhere in this Policy, and any additional policies and procedures established by the Disclosure Committee, the Company may provide forward-looking information to enable shareholders and the investment community to better evaluate the Company and its strategy, prospects and opportunities. The Company will ensure that such statements are identified as forward-looking, are based on reasonable assumptions and are made in good faith. Disclosure of material future-oriented financial information or financial outlook shall be subject to authorization from the Board's Audit Committee, and the Audit Committee will endeavor to ensure that there is a reasonable basis for drawing any conclusions or making any forecasts and projections set out in such disclosures.
- 13.2 Documents containing forward-looking information shall contain, proximate to the forward-looking information: (i) reasonable cautionary language clearly identifying the forward-looking information as such; (ii) a statement that actual results could differ materially from any conclusion, forecast or projection in the forward-looking information and identifying the material factors that could lead to such a result; and (iii) a statement of the material factors or assumptions that were applied in drawing such conclusion or making such forecast or projection.
- 13.3 In the case of public oral statements containing forward-looking information, the person making such a statement shall endeavor to state that: (i) the oral statement contains forward-looking information; (ii) the actual results could differ materially from any conclusion, forecast or projections in the forward-looking information; (iii) certain material factors or assumptions were applied in drawing such conclusion or making such forecast or projection; and (iv) additional information is contained in a readily-available document (and the person making this statement shall confirm that such document has been previously filed with applicable securities regulators or generally disclosed and shall identify such document) regarding the material factors or other risks that could cause actual results to differ materially from any conclusion, forecast or projections in the forward-looking information and the material factors and assumptions that were applied in drawing such conclusion or making such forecast or projection.
- 13.4 For both documents and public oral statements, and subject to applicable securities laws, the disclosure should include a statement that disclaims the Company's intention or obligation to update or revise the forward-looking information, whether as a result of new information, future events or otherwise.

14. FORWARD-LOOKING INFORMATION

- 14.1 When reviewing analysts' reports in accordance with the procedure set out below, comments of Board Members, Officers, Employees and Contractors must be limited to identifying factual information that has been Generally Disclosed that may affect an analyst's model and pointing out inaccuracies or omissions with respect to information that has been Generally Disclosed.
- 14.2 Any comments must contain a disclaimer that the report was reviewed for factual accuracy only. No comfort or guidance shall be expressed on the analysts' earnings models or earnings estimates and no attempt shall be made to influence an analyst's opinion or conclusion.
- 14.3 Analysts' reports must not be circulated by Board Members, Officers, Employees and Contractors, except when in the necessary course of business, nor shall they be posted on, nor linked from the Company's website.

[Non-compliance with these policies is a serious breach of the terms and conditions of this Policy and will be dealt with accordingly.]

SCHEDULE "A"

INDIVIDUALS AND ENTITIES TO WHOM THIS POLICY APPLIES

“Board Members, Officers, Employees and Contractors” means a Board member, an Officer, an Employee or an independent contractor (who is engaged in an employee-like capacity) of the Company or any of its subsidiaries. As described below, all Board Members, Officers, Employees and Contractors are also Persons in a Special Relationship with the Company.

“Employee” means a full-time, part-time, contract or secondment employee of the Company or any of its subsidiaries.

“Insider” means:

- (1) a Board Member or an Officer of the Company;
- (2) a person who beneficially owns, directly or indirectly, more than 10% of the voting securities of the Company or who exercises control or direction over more than 10% of the votes attached to the voting securities of the Company (a "10% Shareholder");
- (3) a Board Member or an Officer of a subsidiary of the Company; or
- (4) a Board Member or an Officer of a 10% Shareholder of the Company.

As described herein, all Insiders are also (1) Board Members, Officers, Employees and Contractors and (2) Persons in a Special Relationship with the Company .

"Officer" means:

- (1) the chairman or a vice-chairman of the Board of the Company or any of its subsidiaries, the Chief Executive Officer, Chief Operating Officer, Chief Financial Officer, President, an Executive Vice-President, a Vice-President, Corporate Secretary or the Treasurer of the Company or any of its subsidiaries or any of their operating divisions; or
- (2) every individual who is designated as an officer under a by-law or similar authority of the Company; or
- (3) any other individual who performs functions for the Company or any of its subsidiaries similar to those normally performed by an individual occupying any of the offices listed in (1) or (2) above.

As described herein, all Officers are also (1) Insiders and (2) persons in a Special Relationship with the Company .

"Persons in a Special Relationship with the Company" means:

- (1) each Board Member, Officer, Employee and Contractor;
- (2) each 10% Shareholder;
- (3) each Board Member, officer, employee or contractor of a 10% Shareholder;
- (4) each member of an operating or advisory committee of the Company or its subsidiaries;
- (5) each Board Member, officer, partner and employee of a company that is engaging in any business or professional activity with the Company or its subsidiaries and who routinely comes into contact with Material Information;
- (6) each person or company that learned of Material Information with respect to the Company from a person or company described in (1) through (5) of this definition and knew or ought reasonably to have known that the other person or company was in such a special relationship; and
- (7) any spouse, live-in partner or relative of any of the individuals referred to in (1) through (6) who resides in the same household as that individual.

A company is considered to be a “**Subsidiary**” of another company if it is controlled by (1) that other, (2) that other and one or more companies, each of which is controlled by that other, or (3) two or more companies, each of which is controlled by that other; or it is a subsidiary of a company that is that other’s subsidiary. In general, a company will control another company when the first company owns more than 50% of the outstanding voting securities of that other company.

“**Reporting Insider**” means:

- (1) the chief executive officer, chief financial officer, or chief operating officer of the Company;
- (2) a Significant Shareholder of the Company or of a major subsidiary of the Company;
- (3) a director of the Company, or a Significant Shareholder of the Company or of a major subsidiary of the Company
- (4) a person or company responsible for a principal business unit, division or function of the Company;
- (5) a Significant Shareholder of the Company;
- (6) a management company that provides significant management or administrative services to the Company or a major subsidiary of the Company, every director of the management company, every chief executive officer, chief financial officer, chief technology officer or chief operating officer of the management company, and every significant shareholder of the management company;
- (7) an individual performing function similar to the functions performed by any of the insiders described in paragraphs (1) to (5);
- (8) the Company itself, if it has purchased, redeemed or otherwise acquired a security of its own issue, for so long as it continues to hold that security; or
- (9) any other insider that: (a) in the ordinary course receives or has access to information as to any material facts or material changes concerning the Company before the material facts or material changes are generally disclosed; and (b) directly or indirectly exercises, or has the ability to exercise, significant power or influence over the business, operations, capital or development of the Company.

“**Significant Shareholder**” means a person or company that has beneficial ownership of, or control or direction over, whether direct or indirect, or a combination of beneficial ownership of, and control or direction over, whether direct or indirect, securities of the Company carrying more than 10 per cent of the voting rights attached to all the Company’s outstanding voting securities, excluding, for the purpose of the calculation of the percentage held, any securities held by the person or company as underwriter in the course of a distribution.

SCHEDULE "B"

EXAMPLES OF INFORMATION THAT MAY BE MATERIAL

It is the responsibility of the Company to determine what information is material in the context of its affairs. The materiality of information may vary from one issuer to another according to the size of its profits, assets and capitalization, the nature of its operations and other factors.

Changes in corporate structure

- changes in share ownership that may affect control of the Company
- changes in corporate structure such as major reorganizations, amalgamations, or mergers
- take-over bids, issuer bids, or insider bids

Changes in capital structure

- the public or private sale of additional securities
- planned repurchases or redemptions of securities
- planned splits of common shares or offerings of warrants or rights to buy shares
- any share consolidation, share exchange, or stock dividend
- changes in a Company's dividend payments or policies
- the possible initiation of a proxy fight
- material modifications to the rights of security holders

Changes in financial results

- a significant increase or decrease in near-term earnings prospects
- unexpected changes in the financial results for any period
- shifts in financial circumstances, such as cash flow reductions, major asset write-offs or write-downs
- changes in the value or composition of the Company's assets
- any material change in the Company's accounting policies

Changes in business and operations

- any development that affects the Company's resources, technology, products or markets
- a significant change in capital investment plans or corporate objectives
- major labour disputes or disputes with major contractors or suppliers
- significant new contracts, products, patents, or services or significant losses of contracts or business
- significant discoveries by resource companies
- changes to the Board or executive management, including the departure of the Company's Chairman, CEO, CFO, COO or President (or persons in equivalent positions)
- the commencement of, or developments in, material legal proceedings or regulatory matters
- waivers of corporate ethics and conduct rules for officers, directors, and other key employees
- any notice that reliance on a prior audit is no longer permissible
- de-listing of the company's securities or their movement from one quotation system or exchange to another

Acquisitions and dispositions

- significant acquisitions or dispositions of assets, property or joint venture interests
- acquisitions of other companies, including take-over bid for, or merger with, another company

Changes in credit arrangements

- the borrowing or lending of a significant amount of money
- any mortgaging or encumbering of the company's assets
- defaults under debt obligations, agreements to restructure debt, or planned enforcement procedures by a bank or any other creditors
- changes in rating agency decisions
- significant new credit arrangements

Other

- any other developments relating to the business and affairs of the company that would reasonably be expected to significantly affect the market price or value of any of the company's securities or that would reasonably be expected to have a significant influence on a reasonable investor's investment decisions.

SCHEDULE "C"

**EXAMPLES OF DISCLOSURES THAT MAY BE NECESSARY
IN THE COURSE OF BUSINESS
(REPRODUCED FROM NATIONAL POLICY 51-201 *DISCLOSURE STANDARDS*)**

(1) Disclosure to:

- vendors, suppliers, or strategic partners on issues such as research and development, sales and marketing, and supply contracts;
- employees, officers and board members;
- lenders, legal counsel, auditors, underwriters, and financial and other professional advisors to the Company;
- parties to negotiations;
- labour unions and industry associations;
- government agencies and non-governmental regulators;
- credit rating agencies (provided that the information is disclosed for the purpose of assisting the agency to formulate a credit rating and the agency's ratings generally are or will be publicly available);

(2) Disclosures in connection with a private placement

(3) Communications with controlling shareholders, in certain circumstances

RECEIPT AND ACKNOWLEDGEMENT

I, _____, hereby acknowledge that I have received and read a copy of the

(Print Name)

"Timely Disclosure, Confidentiality and Insider Trading Policy" of PyroGenesis Canada Inc. and agree to comply with its terms. I understand that violation of tipping laws or regulations may subject me to severe civil and/or criminal penalties, and that violation of the terms of the above-noted policy may subject me to discipline by the Company up to and including termination.

Signature

Date

Print Name



**PyroGenesis Signs \$3M Contract with HPQ Subsidiary;
Includes IP Sale of \$2.4MM**

MONTREAL, QUEBEC (GlobeNewswire – August 18, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today that it has signed a contract for approx. \$3MM (the "Contract") with HPQ Nano Silicon Powders Inc ("HPQ NANO" or the "Client"), a wholly owned subsidiary of HPQ Silicon Resources Inc ("HPQ").

This Contract has been developed to exploit the benefits of the novel PUREVAP™ Nano Silicon Reactor (NSiR) to make nano Silicon powder with the battery market as a principle target. Specifically, this program has been divided into two phases; i) to modify the existing GEN2 PUREVAP™ QRR in order to produce silicon nano powders and nanowires needed for the next generation of Lithium-ion (Li-ion) Si batteries, and ii) to design and manufacture a semi-continuous process system with a commercial production capacity of at least 300 kg/month (or about 3.5 MT/year) of nano silicon powders.

Research¹ indicates that replacing graphite with nano silicon powders could allow the manufacturing of high-performance Li-ion batteries with the capability of delivering an almost tenfold (10x) increase in anode capacity, inducing a 20-40% gain in the energy density of the next generation of Li-Ion batteries. The Li-ion battery market size is estimated to grow from USD 44.2 billion in 2020 to USD 94.4 billion by 2025, equivalent to a CAGR of 16.4%.² Manufacturing of Si nano powders is not yet commercially feasible with selling prices of US\$ 30,000/kg.³ *(Please refer to HPQ press release dated August 18th, 2020 for further details).*

This Agreement includes \$2.4MM for the sale of the intellectual property (IP) rights to the PUREVAP™ NSiR process, together with a 10 % royalty on the Client's future sales ("Royalty") (with set minimums). The IP sold relates exclusively to the manufacturing of nano silicon powders and wires by HPQ NANO. PyroGenesis will retain a royalty-free, exclusive, irrevocable, worldwide license to use the System for all other purposes. This Royalty stream can at any time be converted by PyroGenesis into a 50% ownership of the Client.

"This Agreement represents another significant milestone in our relationship with HPQ. Battery storage is the future and it is indeed exciting for us to now be using our plasma expertise in addressing the challenges facing the lithium battery market," said M. P Peter Pascali, President and CEO of PyroGenesis. "This milestone is also a testament to what can be achieved when two companies, and their Boards, work together with a common purpose and a clear understanding of the many unforeseen challenges in bringing such product lines to fruition."

¹ <https://cen.acs.org/materials/energy-storage/battery-materials-world-anodes-time/97/i14>

² <https://www.marketsandmarkets.com/Market-Reports/lithium-ion-battery-market-49714593.html#:~:text=Lithium%2DIon%20Battery%20Market%20size,at%20a%20CAGR%20of%2016.4%25>

³ HPQ Corporate presentation 2020-06-30 https://hpqsilicon.com/wp-content/uploads/2020/06/HPQ-NEW-FULL-SIZE-VER_JUNE_30_2020.pdf

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m2 manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws.

Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Comments on Recent Trading Activity;
Military, Tunneling, Drosrite™, Pelletization, PUREVAP™
All on Track**

MONTREAL, Quebec (GlobeNewswire – August 24th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, issues this press release in response to this morning's trading activity, and the sudden decline in its stock price. The Company wishes to reassure investors that all projects (Military, Tunneling, Drosrite™, Pelletization, PUREVAP™, etc...) are all on track and there are no undisclosed events to warrant this morning's decline.

The Company does not usually opine on stock price and trading activity, however, given the recent decline, and inquiries from investors, the Company confirms the following:

Everything material has been disclosed by the Company in either its press releases or financial reports. PyroGenesis further confirms that none of the contracts press released are at risk. Last but not least, the Company wishes to reassure PyroGenesis' shareholders that we remain on track with our current and prospective projects.

"I just wanted to take the time to reassure investors that the precipitous decline in stock price today cannot be explained by any undisclosed developments at the Company," said Mr. P. Peter Pascali, CEO and President of PyroGenesis. "To the contrary, all of our projects are moving ahead and are closer to completion than before. The potential contracts previously announced are not in jeopardy and are moving ahead. Regretfully, to those looking from the outside, it always seems to take longer than expected, however, nothing can be further from the truth and, in certain instances, are proceeding with lightning speed particularly given the entities we are talking to and the significance of the contracts under discussion."

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m2 manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development,

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Participates in HPQ Non-Brokered Private Placement;
Increases Ownership by 4 Million Shares**

MONTREAL, Quebec (GlobeNewswire – September 1st, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that it has participated in an HPQ Silicon Resources Inc ("HPQ") non-brokered private placement by acquiring 4,000,000 units (the "Unit") of HPQ, of a total 4,500,000 Units offered, at a price of 0.60\$ per Unit for a total investment of \$2,400,000. Each Unit consists of one common share (a "Common Share") of HPQ and one Common Share purchase warrant (a "Warrant"). Each Warrant entitles the Company to purchase one Common Share at a price of \$0.61 for a period of 36 months from the date of closing of the private placement.

"It is indeed a pleasure to participate in this private placement and increase our position in HPQ," said P. Peter Pascali CEO and Chairman of PyroGenesis Canada Inc. "Not only do we find this to be a unique opportunity to invest in a business that has enormous potential for growth, but one that is supported by a visionary management and Board. We are confident that this investment, which has played out quite nicely to date, will continue to play out well for us and our investors. We look forward to considering opportunities to add to our position should the opportunity arise in the future."

About HPQ Silicon

HPQ Silicon Resources Inc. (TSX-V: HPQ) is a Canadian producer of Innovative Silicon Solutions, based in Montreal, building a portfolio of unique high value specialty silicon products. Working with PyroGenesis, HPQ is developing:

- The PUREVAP™ "Quartz Reduction Reactors" (QRR), an innovative process (patent pending), which will permit the one step transformation of quartz (SiO₂) into high purity silicon (Si) at reduced costs, energy input, and carbon footprint that will propagate its considerable renewable energy potential;
- The PUREVAP™ Nano Silicon Reactor (NSiR), a new proprietary process that can use different purities of silicon (Si) as feedstock, to make spherical silicon nanopowders and nanowires;

HPQ is also working with industry leader Apollon Solar of France to use their patented process and develop a capability to produce commercially porous silicon (Si) wafers and porous silicon (Si) powders.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m2 manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

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For further information please contact:

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Signs \$11.5MM Contract for US Navy's
Two Ship Build;
\$4.8MM Down Payment; Backlog Increases to \$40MM**

MONTREAL, Quebec (GlobeNewswire – September 4th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce that, further to its press release dated July 9th, 2020, it has signed an \$11.5MM contract (the "Contract") to provide PyroGenesis' waste destruction systems (the "Systems"). This Contract is for two Systems, one for each ship in the US Navy's two-ship build.

This Contract includes a first payment ("Down Payment") of approx. \$4.8MM. This project should be completed within 18 months. With this additional Contract in hand, the resulting backlog is expected to be approx. \$40MM.

The Systems are expected to be built within the next 18 months, and are to be installed on the next Gerald R. Ford-class US aircraft carriers; the USS Enterprise (CVN-80) and the USS Doris Miller (CVN-81).

"It is indeed an honor to supply our high-tech products to such a prestigious client as the US Navy. It speaks to our credibility as an innovator with a proven capability of delivering proprietary plasma processes to high value niche markets. Furthermore, it is also a testimony to the fact that PyroGenesis continues to develop commercial cutting-edge applications," said P. Peter Pascali, President and CEO of PyroGenesis. "This backlog is quite significant particularly when taken in the context of the Company's previous revenues (2019: \$4.8MM, 2018: \$5.0MM), and we look forward to adding to this in the very near future."

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development,

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Comments on Recent Trading Activity;
Provides Additional Insight to Pending Torch Orders**

MONTREAL, Quebec (GlobeNewswire – September 11th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, issues this press release in response to a sudden decline in its stock price this afternoon.

Given the recent decline, and inquiries from investors, the Company confirms the following:

Everything material has been disclosed by the Company in either its press releases or financial reports. PyroGenesis further confirms that none of the contracts press released are at risk. Last but not least, the Company wishes to reassure PyroGenesis' shareholders that we remain on track with our current and prospective projects.

“There seems to be an indication that certain comments made by a fund manager in the course of an interview lead to this decline. In the interview it appears that one could conclude that he suggested that he did not expect more than 1 to 2 torches to be sold by PyroGenesis within the next 3-6 months,” said Mr. P. Peter Pascali, CEO and President of PyroGenesis. “Although I respect analysis done by third parties, I am also aware of the challenges that this presents to these same very same analysts who, by the very nature of the job, are always on the outside looking in. This is also exasperated by the pressure they have of providing insight within sound bites. Having said that I can confirm that the Company has visibility on more torch orders than that alluded to in the interview. In fact, I can confirm that the current status of torch negotiations with various clients anticipate closing more than 1-2 torch deals in well under 3 months, let alone 3-6 months. These comments are not meant to reflect badly on the analyst in question, but merely to provide additional insight that only a CEO with full information can, and which I felt, under the circumstances, was necessary.”

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

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Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Unveils Strategy to Become Global On-Site Dross Processor
Delivering Zero-Landfill/Reduced Carbon Solution;
Reduces GHG Emissions;
Provides General DROSRITE™ Update**

MONTREAL, QUEBEC (GlobeNewswire – September 22nd, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, unveils today, at its Annual and Special Meeting of Shareholders, a strategy to become a global on-site dross processor delivering zero-landfill/reduced carbon, and further underscored how DROSRITE™ reduces greenhouse gas (GHG) emissions.

The Company is pleased to provide additional information with respect to this strategy as well as a general DROSRITE™ update in the following Q&A format.

Q. Before we jump into the essence of your announcement, could you once again, for those that are new to the DROSRITE™ story, please describe to us what DROSRITE™ is, and some of its many advantages?

A. Most certainly.

It's simple. Let's take an aluminum smelter as an example. As the hot aluminum is formed, it comes in contact with oxygen, and a dross is formed on the surface. This dross acts like a sponge and it effectively absorbs valuable metal. The smelter skims the dross and puts it aside to cool down. Although dross is considered a waste generated by the metallurgical industry, it contains valuable metal that the smelter would like to reclaim. Typically, the dross is sent off site to be processed by a third party who usually uses a salt-based recovery system. Salt, if it comes in contact with aluminum, could contaminate the batch and, as such, salt is usually prohibited from being on site and, ergo, the need to ship dross off-site to be processed. These third parties, who use salt, generate salt cakes, which are a hazardous by-product of their dross processing technique.

PyroGenesis' DROSRITE™ system is a salt-free, cost-effective, sustainable process for maximizing metal recovery from dross. PyroGenesis' patented process avoids costly loss of metal while reducing a smelter's carbon footprint and energy consumption, thereby providing an impressive return on investment.

With metal manufacturers, such as aluminum, being subjected to increased pressure from regulatory authorities to eliminate landfilling of hazardous salt cakes from traditional recovery operations, combined with tight operating margins, PyroGenesis' DROSRITE™ system is able to (i) increase metal recovery, without producing any hazardous by-products, while at the same time (ii) reducing operating costs.



Figure 1 - PyroGenesis' Drosrite™ System

In short, PyroGenesis' DROSRITE™ system is a proven method of recovering valuable metal from dross that (i) is salt-free, so no hazardous by-products, (ii) can process the dross cheaper than conventional methods, and (iii) has demonstrated higher metal recovery rates. Non-hazardous, cheaper and with higher recovery rates, who could ask for more? The increased recovery rate alone could save an owner/operator over \$1M/year using PyroGenesis' 5000 tons/year DROSRITE™ system.

Our primary target is currently aluminum dross as this was the market, we first introduced the DROSRITE™ process to and, as you can imagine, it is much easier to leverage off of that success than to start marketing to a new sector.

Click on the link below to watch the DROSRITE™ video: <https://www.pyrogenesis.com/products-services/maximizing-aluminum-recovery/>

Since announcing several years ago our intention to enter this marketplace, we have (i) sold the first system for \$600K, (ii) sold the second system to the same client for \$1.02MM, (iii) sold 2 systems to a subsequent client, iv) the technology was used for a 7 system order for over \$20MM, (v) developed a tolling strategy, and (vi) partnered with a Japanese multi-billion dollar trading house to accelerate that very same strategy.

Now that we are inside the fence, we now have the “Golden Ticket” to additional opportunities.

Q. What do you mean by inside the fence and more importantly Golden Ticket opportunities?

A. By inside the fence, we are referring to the fact that DROSRITE™ system operates on site, i.e. inside the smelter’s facility. By Golden Ticket, we mean the opportunity it is created by operating inside the fence. By operating inside the fence, we are able to witness firsthand other challenges facing the industry and to speak to operators and plant managers with respect to these issues, which provide us with an ideal situation in which we can pitch solutions. Having this Golden Ticket essentially is how we came to articulate, and execute, the strategy unveiled today. We are effectively solving a (horizontal) problem we identified inside the fence.

Q. So, the strategy unveiled today was as a result of being inside the fence?

A. Definitely.

We are proud to say that DROSRITE™ has compelling advantages in and of its own right, as is clearly demonstrated by our recent successes. A natural byproduct of treating dross is the creation of residues which have been easily handled in the past. Of late, there has been increased pressure to find alternate methods in handling residuals other than traditional landfilling. It was PyroGenesis’ strategic decision to address this problem through (i) its expertise, (ii) exclusive joint ventures, and/or (iii) acquisitions.

If successful, the combination of treating dross and residues will create what we believe to be one of the first, if not the first, global onsite dross processor delivering a zero-landfill/reduced carbon solution. We know of no other company offering this. We would be offering, in our opinion, the ultimate green solution to this problem. It would effectively be a formattable offering, which would, in our opinion, be difficult to compete against, thereby giving us a distinctive advantage over other options.

Q. Can you explain in more detail the difference between dross and residues?

A. Most certainly.

Dross is 60% metal and 40% residue. DROSRITE™ is recovering the 60% metal and because it does not contaminate the 40% residues with salt, it presents a unique additional value-added opportunity. These residues have the capacity to be converted into chemical and metallurgical products. This would be an easy expansion of our service offering to the aluminum industry such that PyroGenesis would build, install, and operate turn-key plants that are essentially a cradle to grave and zero landfill solution. This should significantly increase revenues and operating margins at a DROSRITE™ plant.

Q. Could you give us an example of what you mean by handling residues other than traditional landfilling?

A. We believe we have clear visibility on creating valuable materials from these residuals which are often times landfilled. One example would be converting a particular residue into ammonium sulphate or aluminum sulphate, both high value chemical products. We effectively would be converting these landfilled products into useful commodities with obvious benefits to the environment. We have already demonstrated to the Board that this can be done economically.

Q. If I understand correctly, DROSRITE™ on its own reduces greenhouse gas emissions and in addressing residues would be an additional environmental benefit?

A. Exactly.

DROSRITE™ has always reduced greenhouse gas emissions.

Let me explain.

There are two main sources of greenhouse gas reduction:

- Direct: mainly due to savings in (i) transportation and (ii) by not burning fossil fuels in a Rotary Salt Furnace (RSF)
- Indirect: mainly due to the increased recovery of aluminum (less emissions than producing aluminum from primary resources)

The following table¹ summarizes the potential emissions reduction assuming all the dross produced in the world² was treated with DROSRITE™.

| Sector | Dross volume (TPY) | Direct reductions (t_eqCO ₂ per year) | Indirect reduction (t_eqCO ₂ per year) | Total (t_eqCO ₂ per year) | Car equivalent (US EPA) |
|------------|--------------------|--|---|--------------------------------------|-------------------------|
| Primary | 600,000 | 199,800 | 864,000 | 1,063,800 | 231,261 |
| Secondary | 1,450,000 | 424,850 | 1,116,500 | 1,541,350 | 335,076 |
| Downstream | 950,000 | 316,350 | 1,102,000 | 1,418,350 | 308,337 |
| TOTAL | 3,000,000 | 941,000 | 3,082,500 | 4,023,500 | 874,674 |

¹ Based on Internal Calculations

² Aluminum Dross Processing; A Global Review, AlCircle.com

Therefore, more than 4 million tonnes of greenhouse gas can be reduced each year (which is the equivalent of removing close to 875,000 cars off the road each year) if the world's aluminum dross was treated with DROSRITE™. According to the USEPA, an average passenger car in the US emits 4.6 tonnes per year of CO₂³. This equates to removing an average of 1,458 cars/year off the road, year in and year out, for each of PyroGenesis' 5 tonnes systems, or close to 3,000 cars/year for each of the Company's 10 tonnes systems.

Q. How does this affect your relationship with the Japanese trading house, and can you update the status with them?

A. That is a very interesting question because the effective implementation of our strategy will make tolling a more compelling option to both us, as a provider and to potential clients, as we become a one-stop-shop/total solution for these problems. Our relationship with the Japanese trading house envisioned developing tolling opportunities by first starting in the Americas and then leveraging off that success worldwide. We are currently redrafting our agreement to address both (i) the impact of the strategy articulated today and (ii) a genuine interest by the Japanese trading house to develop a closer relationship with respect to our DROSRITE™ offerings.

Q. When might you expect further developments with respect to the strategy announced today?

A. As I said, we have clear visibility on putting in place this strategy and expect to announce something before year-end. We are confident enough in the eventual success that we have already proposed this new offering existing clients.

We are also in the process of incorporating this new offering in existing tolling opportunities and we expect it to be a significant differentiating factor in those situations that involved competitive bidding. We are the front runners in a number of tolling opportunities as well as a number of potential outright sales. Without a doubt, COVID-19 has slowed down the business development aspect of completing new contracts as many as our potential clients are managing the ever-changing COVID-19 environment with limited staff as certain facilities slowed down production and/or expansion due to the crisis. Of note, we have seen a turnaround as worldwide aluminum production increase to pre-COVID levels.

³ <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle#:~:text=typical%20passenger%20vehicle%3F-A%20typical%20passenger%20vehicle%20emits%20about%204.6%20metric%20tons%20of%208%2C887%20grams%20of%20CO2>

About PyroGenesis Canada Inc.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President Investors Relations and Strategic Business Development

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



Appointment of Proxyholder

I/We, being holder(s) of common shares of PyroGenesis Canada Inc. (the “Corporation”), hereby appoint: P. Peter Pascali, Chief Executive Officer of the Corporation, or in lieu of the foregoing, Alan Curleigh, Acting Chief Financial Officer of the Corporation OR

Print the name of the person you are appointing if this person is someone other than the individuals listed above

as proxy of the undersigned, to attend, act and vote on behalf of the undersigned in accordance with the below direction (or if no directions have been given, as the proxy sees fit) on all the following matters and any other matter that may properly come before the Annual and Special Meeting of Shareholders of the Corporation to be held online via live audio webcast at <https://web.lumiagm.com/414668875> at 9:30 a.m. (Eastern Time) on September 22, 2020 (the “Meeting”), and at any and all adjournments or postponements thereof in the same manner, to the same extent and with the same powers as if the undersigned were personally present, with full power of substitution.

If you appoint a proxyholder other than the two individuals listed above, you MUST return your proxy by mail, fax or email and have the appointee call AST at 1-866-751-6315 (within North America) or 1 (212) 235-5754 (outside of North America) by no later than 9:30 a.m. (Eastern Time) on September 18, 2020, or 48 hours (excluding Saturdays, Sundays and holidays) prior to the adjournment of the Meeting. Failing to do so will result in the proxyholder not receiving his own 13-digit control number, which is required to vote at the Meeting.

Management recommends voting **FOR** the following Resolutions. Please use a dark black pencil or pen.

1. Election of Directors

1. P. Peter Pascali
2. Robert Radin
3. Andrew Abdalla
4. Dr. Virendra Jha
5. Michael Blank
6. Rodayna Kafal
7. Rodney Beveridge

FOR

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2. Appointment of Auditor

Appointment of KPMG LLP as auditors of the Corporation for the ensuing year and to authorize the directors to fix their remuneration

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3. Stock option plan

To reapprove the stock option plan implemented by the Corporation in June 2011 in which 10% of the issued Common Shares of the Corporation are reserved for issuance to directors, officers, employees and other service providers of the Corporation

FOR

AGAINST

Under Canadian Securities Law, you are entitled to receive certain investor documents. If you wish to receive such material, please tick the applicable boxes below. You may also go to the AST website <https://ca.astfinancial.com/financialstatements> and input code 6035A.

- I would like to receive quarterly financial statements
- I do not want to receive annual financial statements

I/We authorize you to act in accordance with my/our instructions set out above. I/We hereby revoke any proxy previously given with respect to the Meeting. **If no voting instructions are indicated above, this Proxy will be voted FOR a matter by Management's appointees or, if you appoint another proxyholder, as that other proxyholder sees fit. On any amendments or variations proposed or any new business properly submitted before the Meeting, I/We authorize you to vote as you see fit.**

Signature(s)

Date

Please sign exactly as your name(s) appear on this proxy. Please see reverse for instructions. All proxies must be received by September 18, 2020 at 9:30 a.m. (Eastern Time).

Notes to Proxy

1. This proxy must be signed by a holder or his or her attorney duly authorized in writing. If you are an individual, please sign exactly as your name appears on this proxy. If the holder is a corporation, a duly authorized officer or attorney of the corporation must sign this proxy, and if the corporation has a corporate seal, its corporate seal should be affixed.
2. If the securities are registered in the name of an executor, administrator or trustee, please sign exactly as your name appears on this proxy. If the securities are registered in the name of a deceased or other holder, the proxy must be signed by the legal representative with his or her name printed below his or her signature, and evidence of authority to sign on behalf of the deceased or other holder must be attached to this proxy.
3. Some holders may own securities as both a registered and a beneficial holder; in which case you may receive more than one Circular and will need to vote separately as a registered and beneficial holder. Beneficial holders may be forwarded either a form of proxy already signed by the intermediary or a voting instruction form to allow them to direct the voting of securities they beneficially own. Beneficial holders should follow instructions for voting conveyed to them by their intermediaries.
4. If a security is held by two or more individuals, any one of them present or represented by proxy at the Meeting may, in the absence of the other or others, vote at the Meeting. However, if one or more of them are present or represented by proxy, they must vote together the number of securities indicated on the proxy.

All holders should refer to the Proxy Circular for further information regarding completion and use of this proxy and other information pertaining to the Meeting.

This proxy is solicited by and on behalf of Management of the Company.



AST

How to Vote

INTERNET

- Go to www.astvotemyproxy.com
- Cast your vote online
- View Meeting documents

TELEPHONE

Use any touch-tone phone, call toll free in Canada and United States **1-888-489-7352** and follow the voice instructions



To vote using your smartphone, please scan this QR Code

To vote by telephone or Internet you will need your control number. If you vote by telephone or Internet, do not return this proxy.

MAIL, FAX OR EMAIL

- Complete and return your signed proxy in the envelope provided or send to:

AST Trust Company (Canada) ("AST")
P.O. Box 721
Agincourt, ON M1S 0A1

- You may alternatively fax your proxy to 416-368-2502 or toll free in Canada and the United States to 1-866-781-3111 or scan and email to proxyvote@astfinancial.com.

An undated proxy is deemed to bear the date on which it is mailed by Management to you.

All proxies must be received by September 18, 2020 at 9:30 a.m. (Eastern Time).



**PyroGenesis Comments on HPQ Silicon Resources' News Release
Announcing Potential Nano Powder Pre-Order**

MONTREAL, Quebec (GlobeNewswire – September 30, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, comments on HPQ Silicon Resources Inc's ("HPQ") press release earlier today¹ announcing potential nano powder pre-order with major automobile manufacturer.

HPQ announced today that it has received a request for Spherical Nano Silicon powders to be produced by the PUREVAP™ Nano Silicon Reactor ("NSiR") from a major automobile manufacturer which, when concluded, will represent the first pre-order for these powders.

PyroGenesis recently entered into an agreement with HPQ Nano Silicon Powders Inc ("HPQ NANO"), a wholly owned subsidiary of HPQ in which, amongst other things, PyroGenesis benefits from (i) a 10% royalty ("Royalty") on HPQ NANO's future sales (with set minimums), and (ii) the option to convert that Royalty at any time into a 50% ownership in HPQ NANO.

"To receive this type of validation mere weeks after signing a Development Agreement with HPQ Silicon, and mere days after a major Battery Conference, which highlighted the importance of such products, is astounding. We are excited to see HPQ NANO effectively taking pre-orders from giants in the industry who, based on our experience, are not in the habit of wasting their time," said P. Peter Pascali, CEO and Chairman of PyroGenesis. "This validates our recent decision to increase our ownership in HPQ which we believe, in due time, will become a significant contributor to our bottom line. Although this deal has not yet been concluded and, until it is completed there are risks that it may not be, it does confirm that we are on the right path, in the right industry, with the right products, and with the right partner."

About HPQ Silicon

HPQ Silicon Resources Inc. (TSX-V: HPQ) is a Canadian producer of Innovative Silicon Solutions, based in Montreal, building a portfolio of unique high value specialty silicon products. Working with PyroGenesis, HPQ is developing:

- The PUREVAP™ "Quartz Reduction Reactors" (QRR), an innovative process (patent pending), which will permit the one step transformation of quartz (SiO₂) into high purity silicon (Si) at reduced costs, energy input, and carbon footprint that will propagate its considerable renewable energy potential;

¹ <https://hpqsilicon.com/wp-content/uploads/2020/09/HPQ-HPQ-NANO-PRE-ORDER-SEPT-30-2020-FINAL.pdf>

The PUREVAP™ Nano Silicon Reactor (NSiR), a new proprietary process that can use different purities of silicon (Si) as feedstock, to make spherical silicon nanopowders and nanowires; HPQ is also working with industry leader Apollon Solar of France to use their patented process and develop a capability to produce commercially porous silicon (Si) wafers and porous silicon (Si) powders.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis' CEO Files Early Warning Report;
Reflects Increase in Ownership by 3.225 Million Shares**

MONTREAL, Quebec (GlobeNewswire – October 1st, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, announces today that its CEO filed an early warning report. This early warning report reflects the conversion by Fiducie de Cr dit Mellon Trust (the "**Trust**") of a convertible loan of \$903,000 (the "**Loan**") into 3,225,000 common shares of the Company ("**Common Shares**") at the request of the Company in accordance with the terms of a loan agreement between the Trust and the Company dated March 18, 2020 (the "**Loan Agreement**"). The Loan Agreement was previously disclosed by the Company in a press release issued on March 18, 2020.

As a result of the conversion of the Loan (the "**Transaction**"), Mr. P. Peter Pascali, the Chief Executive Officer and President of the Company, (i) beneficially owns and controls 60,327,941 Common Shares, (ii) controls 7,251,000 Common Shares beneficially owned by 8339856 Canada Inc. (the "**Holdco**"), and (iii) controls 9,459,781 Common Shares beneficially owned by the Trust. This represents, in aggregate, 77,038,722 Common Shares (the "**Total Ownership**") or slightly over 50.00% of the issued and outstanding Common Shares which are, in aggregate, 154,067,292 Common Shares. The Holdco is a Canadian holding company of which Mr. P. Peter Pascali is a director, executive officer and the sole shareholder, and the Trust is a Quebec family trust of which Mr. Pascali is a trustee, executive officer and beneficiary. The Trust and the Holdco may be considered to be joint actors with Mr. Pascali.

On a fully diluted basis, assuming all options fully vest, Mr. Pascali together with Holdco and the Trust would beneficially own and control 52.19% of the issued and outstanding Common Shares of the Corporation.

About PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Announces Receipt of \$4.8MM Down Payment
under US Navy Contract**

MONTREAL, Quebec (GlobeNewswire – October 5th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce that, further to its press release dated September 4th, 2020, it has received the first payment ("Down Payment") of approx. \$4.8MM under the previously announced \$11.5MM contract (the "Contract"). The Contract is to provide two of PyroGenesis' waste destruction systems (the "Systems"), one for each ship of the US Navy's two-ship build.

The Systems are expected to be built within the next 18 months, and are to be installed on the next Gerald R. Ford-class US aircraft carriers; the USS Enterprise (CVN-80) and the USS Doris Miller (CVN-81).

Separately, the Company expects to receive an additional \$2.65MM from Drosrite International over the next few weeks.

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SOURCE PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Files Application to Uplist to TSX as
a Technology Company**

MONTREAL, Quebec (GlobeNewswire – October 6th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce that it has applied to have its common shares listed on the Toronto Stock Exchange ("TSX"), as a technology Company.

Listing is subject to the approval of the TSX in accordance with its original listing requirements for technology companies. The TSX has not conditionally approved the company's listing application and there is no assurance that the TSX will approve the listing application. Without limitation, the original listing requirements of the TSX provide that a company must have a minimum of \$10,000,000 in the treasury, the majority of which has been raised by the issuance of securities qualified for distribution by a prospectus, which requirement is not currently satisfied by the company.

"We are proud to announce today that the Board of Directors of PyroGenesis, believing that the Company is at a stage where investors could benefit from an up-listing to a more senior exchange, has taken, and is taking, steps to do just that," said P. Peter Pascali, CEO of PyroGenesis Canada Inc. "Although the Company does not need to raise cash for working capital purposes it does not, as noted, have on its balance sheet the requisite funds raised by prospectus which is mandated by the TSX for any company that wants to be listed as a technology company. Upon receiving conditional approval from the TSX, the Company will consider, based on market conditions at the time, if it will proceed in due course. In the interim, the Company has, and will, file the appropriate documents and take all other measures to be in position to act quickly should the opportunity to up-list be acceptable to the Board of Directors. Notwithstanding our sincere desire to up-list, there is no guarantee that either the TSX will approve the listing application or that the market conditions at the time of approval will be acceptable to the Board. Should for any reason the up listing not be pursued, we would consider that a material change which would be press released immediately."

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PyroGenesis Announces \$5.76 Million Bought-Deal Short Form Prospectus Offering of Units

Montreal, Canada – October 15, 2020 – PyroGenesis Canada Inc. (“**PyroGenesis**” or the “**Company**”) (TSXV:PYR) (OTCQB:PYRNF) (FRA:8PY) is pleased to announce that it has entered into an agreement with Mackie Research Capital Corporation (as the sole underwriter and sole bookrunner, the “**Underwriter**”), pursuant to which the Underwriter have agreed to purchase, on a bought-deal basis, 1,600,000 units of the Company (the “**Units**”) for gross proceeds to the Company of \$5,760,000 (the “**Offering**”) at a price of \$3.60 per Unit.

Each Unit shall be comprised of one common share of the Company (a “**Common Share**”) and one-half of one Common Share purchase warrant of the Company (each whole warrant, a “**Warrant**”). Each Warrant shall entitle the holder thereof to purchase one additional Common Share at an exercise price of \$4.50 at any time up to 24 months from Closing (as defined herein).

Provided that if, at any time prior to the expiry date of the Warrants, the volume weighted average trading price of the Common Shares on the TSX Venture Exchange (the “**Exchange**”), or other principal exchange on which the Common Shares are listed, is greater than \$6.75 for 20 consecutive trading days, the Company may, within 15 days of the occurrence of such event, deliver a notice to the holders of Warrants accelerating the expiry date of the Warrants to the date that is 30 days following the date of such notice (the “**Accelerated Exercise Period**”). Any unexercised Warrants shall automatically expire at the end of the Accelerated Exercise Period.

The Company has granted the Underwriter an option (the “**Underwriter’s Option**”) to increase the size of the Offering by up to an additional number of Units, and/or the components thereof, that in aggregate would be equal to 15% of the total number of Units to be issued under the Offering, at any time up to 30 days following the closing of the Offering.

The net proceeds from the Offering will be used for working capital and general corporate purposes.

The Units will be offered by way of a short form prospectus to be filed in those provinces of Canada as the Underwriter may designate pursuant to National Instrument 44-101 – Short Form Prospectus Distributions and may be offered in the United States on a private placement basis pursuant to an appropriate exemption from the registration requirements under applicable U.S. law.

The Closing of the Offering is expected to occur on or about October 30, 2020 (the “**Closing**”) and is subject to the Company receiving all necessary regulatory approvals, including the approval of the Exchange.

About Pyrogenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We provide engineering and manufacturing expertise, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m2 manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 and AS9100D certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com.

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PyroGenesis Announces Upsize of its Previously Announced Bought-Deal Short Form Prospectus Offering of Units to a Total of \$12 Million, Including Full Exercise of the Over-Allotment Option

Montreal, Canada – October 16, 2020 – PyroGenesis Canada Inc. (“**PyroGenesis**” or the “**Company**”) (TSXV:PYP) (OTCQB:PYPNF) (FRA:8PY) is pleased to announce that it has entered into a revised agreement with Mackie Research Capital Corporation (as the sole underwriter and sole bookrunner, the “**Underwriter**”), to increase the size of the previously announced bought-deal short-form prospectus offering of units of the Company (the “**Units**”) at a price of \$3.60 per Unit to 2,917,000 for gross proceeds of \$10,501,200 and concurrently announces the full exercise of the over-allotment option of 437,550 Units for additional gross proceeds of \$1,575,180. The aggregate gross proceeds to the Company from the sale of Units, including the full exercise of the over-allotment option, is \$12,076,380 (the “**Offering**”).

Each Unit shall be comprised of one common share of the Company (a “**Common Share**”) and one-half of one Common Share purchase warrant of the Company (each whole warrant, a “**Warrant**”). Each Warrant shall entitle the holder thereof to purchase one additional Common Share at an exercise price of \$4.50 at any time up to 24 months from Closing (as defined herein).

Provided that if, at any time prior to the expiry date of the Warrants, the volume weighted average trading price of the Common Shares on the TSX Venture Exchange (the “**Exchange**”), or other principal exchange on which the Common Shares are listed, is greater than \$6.75 for 20 consecutive trading days, the Company may, within 15 days of the occurrence of such event, deliver a notice to the holders of Warrants accelerating the expiry date of the Warrants to the date that is 30 days following the date of such notice (the “**Accelerated Exercise Period**”). Any unexercised Warrants shall automatically expire at the end of the Accelerated Exercise Period.

The net proceeds from the Offering will be used for working capital and general corporate purposes.

The Units will be offered by way of a short form prospectus to be filed in those provinces of Canada as the Underwriter may designate pursuant to National Instrument 44-101 – Short Form Prospectus Distributions and may be offered in the United States on a private placement basis pursuant to an appropriate exemption from the registration requirements under applicable U.S. law.

The Closing of the Offering is expected to occur on or about October 30, 2020 (the “**Closing**”) and is subject to the Company receiving all necessary regulatory approvals, including the approval of the Exchange.

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**PyroGenesis Receives Conditional Approval to Graduate
to the Toronto Stock Exchange**

MONTREAL, Quebec (GlobeNewswire – October 26, 2020) - PyroGenesis Canada Inc. (TSX-V: PYR; OTCQB: PYRNF; FRA: 8PY) (the “Company” or “PyroGenesis”), a high-tech company that designs, develops, manufactures and commercializes advanced plasma processes and products, is pleased to announce that, further to its press release dated October 6, 2020, it has received conditional approval from the Toronto Stock Exchange (the “TSX”) to graduate from the TSX Venture Exchange (the “TSXV”) and list its common shares on the TSX.

“This is a significant milestone for the Company,” said P. Peter Pascali, CEO and Chair of PyroGenesis. “We are proud to have been conditionally accepted by Canada’s largest and most credible exchange. Having spent just under 10 years on the TSX Venture Exchange (whom we would like to thank for providing us the ideal forum on which we could attract the capital to finance our growth), we believe it is time for us to graduate to the TSX, the premier destination for publicly traded companies. This represents another step in management’s efforts to broaden our appeal to a larger shareholder base while at the same time raising the Company’s profile in the investment community. It underscores our long-term commitment to increasing investor awareness and generating shareholder value. As we continue to successfully execute our growth strategy, the graduation to the TSX should enhance the liquidity of our stock and enable us to continue building long-term shareholder value.”

Final approval of the listing is subject to the Company fulfilling all of the requirements of the TSX, including the completion of the Company’s public offering for which it has filed a preliminary prospectus on October 20, 2020. Upon, and subject to, receipt of final TSX approval, PyroGenesis’ common shares would be delisted from the TSXV and begin trading on the TSX under the symbol “PYR”.

Separately, the Company is pleased to announce the creation of a new Board position; Lead Independent Director. We are happy to announce that Mr. Robert Radin has agreed to be the Company’s first Lead Independent Director.

In an unrelated matter, the Company also announces today that it has granted stock options to acquire 200,000 common shares of the Company to Mr. Rodney Beveridge, Director, and 50,000 Common Shares to Ms. Rodayna Kafal, Director & Vice President, Investor Relations and Strategic Business Development. The stock options have an exercise price of \$4.00 per common share and are exercisable over a period of five (5) years. The options are granted in accordance with the Company’s stock option plan.

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For further information please contact:

Rodayna Kafal, Vice President, Investor Relations and Strategic Business Development,

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>

**MATERIAL CHANGE REPORT
FORM 51-102F3**

1. Name and Address of Company

PyroGenesis Canada Inc. (the “Company” or “PyroGenesis”)
1744 William Street, Suite 200
Montreal, Quebec, H3J 1R4

2. Date of Material Change

Not applicable.

3. News Release

Not applicable.

4. Summary of Material Change

This material change report is filed to clarify and provide additional disclosure on matters that have previously been disclosed by the Company and update the Company’s continuous disclosure documents. See item 5 below.

5. Full Description of Material Change

On October 9, 2019, PyroGenesis announced that the business line behind a \$20 million contract, plus subsequent years revenue, is DROSRITE, and the client is Drosrite International LLC (“**Drosrite International**”), a US-based private company. However, Drosrite International is, on an accounting basis, a subsidiary of the Company and not a client, as under applicable accounting standards the Company is considered to effectively control Drosrite International. The sole director, officer and shareholder of Drosrite International is Alex Pascali, an employee of the Company and the son of P. Peter Pascali, Chief Executive Officer of the Company.

PyroGenesis also announced on the same day that Drosrite International had signed an agreement with Radian Oil & Gas Services Company, an oil and gas services company operating in the Middle East (the “**Dross Processing Service Agreement**”). The Dross Processing Service Agreement was structured as a “BOOT” agreement (build, own, operate and transfer) having a 20-year term and using the Company’s DROSRITE technology.

The Dross Processing Service Agreement provides that Drosrite International will manufacture and deliver to Radian Oil & Gas five DROSRITE TPY systems with an annual treatment capacity of approximately 5,000 tons per year each and two DROSRITE TPY systems with an annual treatment capacity of approximately 10,000 tons per year each, for a total annual treatment capacity of 30,000 to 40,000 tons per year of white and black aluminum dross, all of which will be installed at the aluminium smelting facility of Ma’aden Aluminum Company located at Ras Al-Khair, in Saudi Arabia. In addition, Drosrite International will oversee the installation of the systems at the Ras Al-Khair facility. Drosrite International will also supply spare parts over the 20-year duration of the Dross Processing Service Agreement and be entitled to receive an annual royalty. A consideration of approximately US\$15 million is payable to Drosrite International during the first year of the contract for the engineering, design, supply, installation, supervision and commissioning of the systems, of which approximately US\$5.5 million has been paid as of the date of this material change report following the satisfaction of certain milestones. Drosrite International is entitled to receive additional payments in the future for spare parts as well as annual royalty payments during the term of the Dross Processing Service Agreement. The Dross Processing Service Agreement includes customary termination rights, which include termination rights for a material breach of the agreement that is not remedied within a certain period, prolonged force majeure, insolvency events and failure to meet specification requirements.

In connection with the Dross Processing Service Agreement between Drosrite International and Radian Oil & Gas, an agreement dated August 29, 2019 was entered into between PyroGenesis and Drosrite International (the “**Drosrite International Exclusive Agreement**”) under which Drosrite International received the required rights from PyroGenesis to perform its obligations under its agreement with Radian Oil & Gas. Under the Drosrite International Exclusive Agreement, PyroGenesis will receive payments equal to the payments received by Drosrite International under its Dross Processing Service Agreement with Radian Oil & Gas. Drosrite International does not receive any management, administration or other fee from the Company.

The Drosrite International Exclusive Agreement provides that all transactions of Drosrite International are conducted on behalf of the Company as an agent and, as such, such transactions have been accounted for by the Company as if they were performed directly by the Company. The Company has to indemnify Drosrite International for any claims and liabilities incurred in connection with the Drosrite systems.

The Company’s disclosure also led to believe that the Company’s Drosrite technology was protected by patents. However, the Company’s Drosrite technology was only protected by patents until 2017 and new patent applications pertaining to the technology have been filed before 2017, which patent applications are pending.

For further details, please see the revised annual information form of the Company dated November 3, 2020, available under the Company’s SEDAR profile at www.sedar.com, which includes an updated description of (i) the relationship between the Company and Drosrite International, (ii) the Dross Processing Service Agreement, (iii) the Drosrite International Exclusive Agreement, and (iv) the terms of a settlement agreement and events relating thereto entered into between the Company and Phoenix Haute Technology Inc. on April 30, 2018.

6. Reliance on Subsection 7.1(2) or (3) of National Instrument 51-102

Not applicable.

7. Omitted Information

Not applicable.

8. Executive Officer

For further information please contact:

P. Peter Pascali
President and Chief Executive Officer of the Company
514-937-0002, ext. 230 or ppascali@pyrogenesis.com

9. Date of Report

November 3, 2020.



*NOT FOR DISTRIBUTION TO U.S. NEWSWIRE SERVICES OR DISSEMINATION IN
THE UNITED STATES*

**PyroGenesis Announces Filing of Final Prospectus
and Closing Date for Offering**

MONTREAL, Quebec (GlobeNewswire – November 3, 2020) - PyroGenesis Canada Inc. (TSX-V: PYR; OTCQB: PYRNF; FRA: 8PY) (the “Company” or “PyroGenesis”), a high-tech company that designs, develops, manufactures and commercializes advanced plasma processes and products, is pleased to announce that it has filed and received a receipt for its final prospectus dated November 3, 2020 (the “Prospectus”) in respect of its previously announced bought-deal short form prospectus offering of units at a price of \$3.60 per unit for aggregate gross proceeds to the Company of \$12,076,380, including the full exercise of the over-allotment option. Mackie Research Capital Corporation is acting as the sole underwriter and sole bookrunner in respect of the offering.

The closing of the offering is expected to occur on or about November 10, 2020 and is subject to customary conditions. For more information on the offering and the terms thereof, please refer to the Prospectus, which is available under the Company’s profile on SEDAR at www.sedar.com. The units are being offered under the Prospectus in all provinces of Canada.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company’s core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis’ operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words “may”, “plan”, “will”, “estimate”, “continue”, “anticipate”, “intend”, “expect”, “in the process” and other similar expressions which constitute “forward-looking information” within the meaning of applicable securities laws. Forward-looking statements reflect the Company’s current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, the closing and timing of the Company’s public offering. Such statements reflect the current views of the Company with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Company’s ongoing filings with the securities regulatory authorities, including under “Risk Factors” in the Company’s most recent annual information form, which filings can be found under the Company’s profile at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Company undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the Toronto Stock Exchange nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, Investor Relations and Strategic Business Development,

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>

No securities regulatory authority has expressed an opinion about these securities and it is an offence to claim otherwise. The securities offered hereby are not for offer or sale in any jurisdiction where to do so would be a violation of securities or other laws.

This short form prospectus constitutes a public offering of these securities only in those jurisdictions where they may be lawfully offered for sale and therein only by persons permitted to sell such securities. These securities have not been, and will not be, registered under the United States Securities Act of 1933, as amended (the “U.S. Securities Act”) or any state securities laws, and may not be offered, sold or delivered within the United States except in compliance with an exemption from the registration requirements of the U.S. Securities Act and applicable U.S. state securities laws. This short form prospectus does not constitute an offer to sell or a solicitation of an offer to buy any of the securities offered hereby within the United States. See “Plan of Distribution”.

Information has been incorporated by reference in this short form prospectus from documents filed with securities commissions or similar authorities in Canada. Copies of the documents incorporated herein by reference may be obtained on request without charge from the Corporate Secretary of PyroGenesis at 1744 William Street, Suite 200, Montréal, Québec H3J 1R4, Canada, telephone: (514) 937-0002, and are also available electronically at www.sedar.com.

SHORT FORM PROSPECTUS

New Issue

November 3, 2020



\$10,501,200
2,917,000 Units
\$3.60 per Unit

This short form prospectus (the “**Prospectus**”) qualifies the distribution (the “**Offering**”) by PyroGenesis Canada Inc. (“**PyroGenesis**” or the “**Company**”) of units (the “**Units**”) of PyroGenesis at a price of \$3.60 per Unit (the “**Offering Price**”).

The Units are being issued and sold pursuant to an underwriting agreement dated October 20, 2020 (the “**Underwriting Agreement**”) entered into by the Company with Mackie Research Capital Corporation (the “**Underwriter**”), acting as the sole underwriter and sole bookrunner. The Units will be offered in each of the provinces of Canada through the Underwriter, its affiliates and such other registered dealers as may be designated by the Underwriter. The Offering Price was determined by arm’s length negotiation between the Company and the Underwriter. See “Plan of Distribution”.

Each Unit consists of one common share of the Company (a “**Unit Share**”) and one half of one common share purchase warrant (each whole common share purchase warrant, a “**Warrant**”). Each Warrant will entitle the holder thereof to acquire, subject to adjustment in accordance with the Warrant Indenture (as defined herein), one common share of the Company (a “**Warrant Share**”) at a price of \$4.50 per Warrant Share at any time prior to 5:00 p.m. (Toronto time) on the date that is 24 months following the Closing Date (as defined herein) (the “**Expiry Date**”), provided that if at any time prior to the Expiry Date the volume-weighted average price of the common shares of the Company (the “**Common Shares**”) on the TSX Venture Exchange (“**TSXV**”) (or such other principal exchange on which the Common Shares are listed) exceeds \$6.75 for 20 consecutive trading days, the Company may, within 15 days following the occurrence of such event, give written notice to the holders of the Warrants that the Warrants will expire at 5:00 p.m. (Toronto time) on the 30th day following the giving of such notice (the “**Accelerated Exercise Period**”). The Warrants will be governed by a warrant indenture (the “**Warrant Indenture**”) to be entered into on or before the Closing Date between the Company and AST Trust Company (Canada) (the “**Warrant Agent**”). The Units will be immediately separated into Unit Shares and Warrants upon issuance. See “Description of the Securities Being Distributed”.

The outstanding Common Shares are listed for trading on the TSXV under the trading symbol “PYR”. On October 15, 2020, the date of our announcement of this offering, the closing price of the Common Shares on the TSXV was \$4.00. On November 2, 2020, the trading day immediately prior to the date of this Prospectus, the closing price of the Common Shares on the TSXV was \$3.59. The TSXV has conditionally approved the listing of the Unit Shares, Warrant Shares, Over-Allotment Unit Shares and Over-Allotment Warrant Shares (as such terms are defined herein) distributed under the Prospectus, as well as the Unit Shares, and Warrant Shares which may be issued upon exercise of the Compensation Option (as defined herein) to be issued pursuant to the Offering on the TSXV. Listing will be subject to the Company fulfilling all of the listing requirements of the TSXV.

There is no market through which the Warrants may be sold and purchasers may not be able to resell the Warrants that are purchased under this Prospectus. In addition, the Warrants will not be listed for trading on the TSXV or any other stock exchange following the Closing Date. This may affect the pricing of the Warrants in the secondary market, the transparency and availability of trading prices, the liquidity of the Warrants and the extent of issuer regulation. See “Risk Factors - Risks Related to the Offering”.

Price: \$3.60 per Unit

| | Price to the Public⁽¹⁾ | Underwriter's Fee⁽²⁾ | Net Proceeds to PyroGenesis⁽³⁾ |
|-------------------------------|--|--|--|
| Per Unit | \$ 3.60 | \$ 0.2011 | \$ 3.3989 |
| Total Offering ⁽⁴⁾ | \$ 10,501,200 | \$ 586,708.20 | \$ 9,914,491.80 |

Notes:

- (1) The Offering Price was determined by arm's length negotiation between PyroGenesis and the Underwriter.
- (2) The Company has agreed to pay the Underwriter an aggregate cash fee equal to 6.5% of the gross proceeds of the Offering (the "**Underwriter's Fee**"), including in respect of any gross proceeds raised on the exercise of the Over-Allotment Option (as defined herein), being \$0.234 per Unit, except that such Underwriter's Fee shall be reduced to 3.25% in respect of any sales of Units to purchasers on a president's list provided by the Company to the Underwriter (the "**President's List**"). The Underwriter will also receive, at Closing, as additional compensation, non-transferable compensation options (the "**Compensation Options**") to purchase a number of Units equal to 6.5% of the aggregate number of Units issued by the Company under the Offering (including pursuant to the exercise of the Over-Allotment Option (as defined below)) on the same terms as set out above, except that such Compensation Options shall be reduced to 3.25% in respect of any sales of Units to purchasers on the President's List, for a period of 24 months from the Closing Date. This Prospectus qualifies the distribution of the Compensation Options and the distribution of the Units, Unit Shares, Warrants and Warrant Shares underlying such Compensation Options. See "Plan of Distribution".
- (3) After deducting the Underwriter's Fee (assuming 819,400 Units are sold to purchasers on the President's List), but before deducting the expenses of the Offering (estimated to be \$450,000).
- (4) The Company has granted the Underwriter an over-allotment option (the "**Over-Allotment Option**"), exercisable in whole or in part, at the sole discretion of the Underwriter, at any time up to 30 days after the Closing Date, to purchase from the Company: (i) up to such additional number of Units (the "**Over-Allotment Units**") as is equal to 15% of the number of Units sold under the Offering at the Offering Price; (ii) up to such additional number of additional Warrants (the "**Over-Allotment Warrants**") as is equal to 15% of the number of Warrants comprising the Units sold under the Offering at \$0.001 per Over-Allotment Warrant; (iii) up to such additional number of additional Common Shares (the "**Over-Allotment Unit Shares**") as is equal to 15% of the number of Common Shares comprising the Units sold under the Offering at \$3.60 per Over-Allotment Unit Share; or (iv) combination of Over-Allotment Units, Over-Allotment Warrants and Over-Allotment Unit Shares, so long as the aggregate number of Over-Allotment Units, Over-Allotment Warrants and Over-Allotment Unit Shares does not exceed 437,550 Over-Allotment Units or Over-Allotment Unit Shares, and 218,775 Over-Allotment Warrants, solely to cover over-allotments, if any, and for market stabilization purposes.

Each Over-Allotment Unit consists of one Over-Allotment Unit Share and one half of one Over-Allotment Warrant. Each Over-Allotment Warrant will entitle the holder thereof to acquire, subject to adjustment in accordance with the Warrant Indenture, one Common Share of the Company (an "**Over-Allotment Warrant Share**") at a price of \$4.50 per Over-Allotment Warrant Share at any time prior to 5:00 p.m. (Toronto time) on the Expiry Date, subject to an Accelerated Exercise Period.

This Prospectus qualifies the grant of the Over-Allotment Option and the distribution of the Over-Allotment Units, Over-Allotment Unit Shares and Over-Allotment Warrants to be issued and sold upon exercise of the Over-Allotment Option. A purchaser who acquires securities forming part of the Underwriter's over-allocation position acquires those securities under this Prospectus, regardless of whether the Underwriter's over-allocation position is ultimately filled through the exercise of the Over-Allotment Option or secondary market purchases.

The Over-Allotment Option has been exercised in full for Over-Allotment Units. The total number of Units sold pursuant to the Offering will be 3,354,550, the total Price to the Public will be \$12,076,380, the total Underwriter's Fee will be \$689,094.90, and the proceeds to the Company will be \$11,387,285.10 (before deducting the estimated expenses of the Offering of \$450,000 and assuming 819,400 Units are sold to purchasers on the President's List).

The following table sets out the number of Over-Allotment Units, Over-Allotment Warrants and Underwriter's Compensation Options that have been sold or may be issued by the Company in connection with the Offering:

| Underwriter's Position | Maximum Number of Securities Available⁽²⁾ | Exercise Period | Exercise Price |
|---|---|---|--------------------------------|
| Over-Allotment Option | Up to 437,550 Over-Allotment Units | At any time up to 30 days following the Closing Date | \$3.60 per Over-Allotment Unit |
| Underwriter's Compensation Options ⁽¹⁾ | 218,045 | Exercisable for a period of 24 months from the Closing Date | \$3.60 per Unit |

Notes:

(1) Assumes no sales to purchasers on the President's List.

(2) The Over-Allotment Option has been exercised in full.

Unless the context otherwise requires, when used herein, all references to the "Offering", the "Units", the "Unit Shares", the "Warrants" and the "Warrant Shares" shall include the Over-Allotment Option, the Over-Allotment Units, the Over-Allotment Unit Shares, the Over-Allotment Warrants and the Over-Allotment Warrant Shares, respectively.

The Underwriter, as principal, conditionally offers the Units, subject to prior sale, if, as and when issued by PyroGenesis and accepted by the Underwriter in accordance with the conditions contained in the Underwriting Agreement referred to under "Plan of Distribution", and subject to the approval of certain legal matters on behalf of PyroGenesis by Osler, Hoskin & Harcourt LLP and on behalf of the Underwriter by Fasken Martineau DuMoulin LLP.

An investment in the Units is subject to a number of risks that should be considered by a prospective investor. Prospective investors should carefully consider the risk factors described in and incorporated by reference into this Prospectus before purchasing Units. See "Caution Regarding Forward-Looking Statements" and "Risk Factors".

Subject to applicable laws, the Underwriter may, in connection with the Offering, over-allot or effect transactions that stabilize or maintain the market price of the Units at levels other than those which might otherwise prevail on the open market. Such transactions, if commenced, may be discontinued at any time. **The Underwriter may offer the Units at prices lower than stated above. See "Plan of Distribution".**

Subscriptions for Units will be received subject to rejection or allotment in whole or in part and the Underwriter reserve the right to close the subscription books at any time without notice. Closing of the Offering is expected to occur on or about November 10, 2020 (the "**Closing Date**"), or such later date as PyroGenesis and the Underwriter may agree, but in any event no later than 42 days from the date of the passport receipt issued by the *Autorité des marchés financier*, as principal regulator, for this Prospectus.

It is expected that the Company will arrange for the instant deposit of the Units under the book-based system of registration, to be registered to CDS Clearing and Depository Services Inc. ("**CDS**") or its nominee and deposited with CDS on the Closing Date, or as may otherwise be agreed to among the Company and the Underwriter. No certificates evidencing the Units will be issued to purchasers of the Units. Accordingly, a purchaser of the Units will receive only a customer confirmation from the Underwriter or other registered dealer or broker which is a CDS participant from or through whom a beneficial interest in the Units is purchased. See "Plan of Distribution".

A director of the Company residing outside of Canada, has appointed PyroGenesis, 1744 William Street, Suite 200, Montréal, Québec H3J 1R4, Canada, as agent for service of process. Purchasers are advised that it may not be possible for investors to enforce judgments obtained in Canada against any person or company that is incorporated, continued or otherwise organized under the laws of a foreign jurisdiction or that resides outside of Canada, even if the party has appointed an agent for service of process. See "Enforcement of Judgments Against Foreign Persons".

The head office and registered office of the Company is located at 1744 William Street, Suite 200, Montréal, Québec H3J 1R4, Canada.

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GENERAL MATTERS

As used in this Prospectus, where the context so requires, references to the “Company”, “PyroGenesis”, “it”, “its” or similar expressions refer to PyroGenesis Canada Inc., a Canadian corporation.

Prospective investors should rely only on the information contained or incorporated by reference in this Prospectus. Neither the Company nor the Underwriter have authorized anyone to provide prospective investors with information different from that contained or incorporated by reference in this Prospectus, and any such information should not be relied upon. The Company takes no responsibility for, and provides no assurance as to the reliability of, any information other than the information contained or incorporated by reference in this Prospectus or that others may give readers of this Prospectus. The securities are being offered only in jurisdictions where, and to persons to whom, offers and sales are lawfully permitted.

Readers should not assume that the information contained or incorporated by reference in this Prospectus is accurate as of any date other than the date of this Prospectus or the respective dates of the documents incorporated by reference herein, unless otherwise noted herein or as required by law. It should be assumed that the information appearing in this Prospectus and the documents incorporated by reference herein is accurate only as of their respective dates. The business, financial condition, results of operations and prospects of the Company may have changed since those dates.

This Prospectus shall not be used by anyone for any purpose other than in connection with the Offering. Information contained on, or otherwise accessed through, the Company’s website, <https://www.pyrogenesis.com>, shall not be deemed to be a part of this Prospectus or any document incorporated by reference herein, even if this Prospectus or such document incorporated by reference herein references the Company’s website, and such information is not incorporated by reference herein and prospective investors should not rely on such information when deciding whether or not to invest in the securities.

This Prospectus and the documents incorporated by reference herein contain trademarks, service marks or trade names owned by PyroGenesis and used in connection with the operation of its business, together with names, logos and website names and addresses owned or licensed by PyroGenesis, as applicable. PyroGenesis also owns or has the rights to copyrights that also protect the content of its products and/or services. Solely for convenience, the trademarks, service marks, trade names and copyrights referred to in this Prospectus and the documents incorporated by reference may be listed without the ©, ® and TM symbols, but PyroGenesis reserves all rights to assert, to the fullest extent under applicable law, its rights or the rights of the applicable licensors to these trademarks, service marks, trade names and copyrights. This Prospectus and the documents incorporated by reference herein may also include trademarks, service marks or trade names of other parties. PyroGenesis’ use or display of other parties’ trademarks, service marks, trade names or products is not intended to, and does not imply a relationship with, or endorsement or sponsorship of PyroGenesis by, the trademark, service mark or trade name owners or licensees.

Unless otherwise indicated, all references to “\$” in this Prospectus refer to the lawful currency of Canada and all references to “US\$” refer to the lawful currency of the United States.

The Over-Allotment Option has been exercised in full for Over-Allotment Units.

References to “management” in this Prospectus means the persons acting in the capacity of the Company’s Chief Executive Officer, the Company’s Chief Financial Officer, and the other persons who are the Company’s executive officers. Any statements in this Prospectus made by or on behalf of management are made in such persons’ capacities as officers of the Company and not in their personal capacities.

PRESENTATION OF FINANCIAL INFORMATION

The financial statements of the Company included in, or incorporated by reference into, this Prospectus are reported in Canadian dollars and have been prepared in accordance with generally accepted accounting principles in Canada, as set out in the CPA Canada Handbook – Accounting, which incorporates International Financial Reporting Standards as issued by the International Accounting Standards Board.

The Company's fiscal year end occurs on December 31 of each calendar year.

DOCUMENTS INCORPORATED BY REFERENCE

Information has been incorporated by reference in this Prospectus from documents filed with securities commissions or similar authorities in Canada. Copies of the documents incorporated herein by reference may be obtained on request without charge from the Corporate Secretary of PyroGenesis at 1744 William Street, Suite 200, Montréal, Québec H3J 1R4, Canada, telephone: (514) 937-0002 and are also available electronically at www.sedar.com.

The following documents of PyroGenesis, filed with the various securities commissions or similar authorities in each of the provinces of Canada, are specifically incorporated by reference into and form an integral part of this Prospectus:

- (a) the revised annual information form of PyroGenesis dated November 3, 2020 for the year ended December 31, 2019 (the “**Annual Information Form**”);
- (b) the management proxy circular of PyroGenesis dated August 17, 2020 in connection with the annual meeting of shareholders of the Company held on September 22, 2020;
- (c) the audited consolidated financial statements of PyroGenesis as at and for the years ended December 31, 2019 and 2018, together with the notes thereto and the independent auditor's report thereon (the “**2019 Annual Financial Statements**”);
- (d) the management's discussion and analysis of results of operations and financial condition of PyroGenesis dated June 15, 2020 for the year ended December 31, 2019 (the “**2019 Annual MD&A**”);
- (e) the interim unaudited condensed consolidated financial statements of PyroGenesis for the three and six months ended June 30, 2020, together with the notes thereto (the “**2020 Q2 Financial Statements**”) except for the notice therein provided under section 4.3(3)(a) of National Instrument 51-102 - *Continuous Disclosure Obligations*;
- (f) the management's discussion and analysis of results of operations and financial condition of PyroGenesis dated July 28, 2020 for the three and six months ended June 30, 2020 (the “**2020 Q2 MD&A**”);
- (g) the material change report of the Company dated March 24, 2020, in connection with the completion of a \$903,000 convertible loan;
- (h) the material change report of the Company dated November 3, 2020, relating to the nature of the contractual arrangements between the Company and Drosrite International LLC and related matters; and
- (i) the template version of the indicative term sheet for the Offering dated October 15, 2020 (the “**Initial Term Sheet**”), and the template version of the revised term sheet for the Offering dated October 16, 2020 (together with the Initial Term Sheet, the “**Marketing Materials**”).

Any documents of the type referred to above or required to be incorporated by reference herein under National Instrument 44-101 – *Short Form Prospectus Distribution* (“**NI 44-101**”), including any material change report (excluding confidential material change reports), business acquisition report, interim financial statements, annual financial statements and the independent auditor's report thereon, management's discussion and analysis, information circular and annual information form subsequently filed by the Company with the various securities commissions or similar authorities in Canada after the date of this Prospectus and prior to the completion or withdrawal of the Offering shall be deemed to be incorporated by reference into this Prospectus.

Any statement contained in this Prospectus or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded, for the purposes of this Prospectus, to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. The modifying or superseding statement need not state that it has modified or superseded a prior statement or include any other information or statement set forth in the document that it modifies or supersedes. The making of a modifying or superseding statement shall not be deemed an admission for any purposes that the modified or superseded statement, when made, constituted a misrepresentation, an untrue statement of a material fact or an omission to state a material fact that is required to be stated or that is necessary to make a statement not misleading in light of the circumstances in which it was made. Any such statement so modified or superseded shall not constitute a part of this Prospectus, except as so modified or superseded.

MARKETING MATERIALS

The Marketing Materials represent “marketing materials” for purposes of applicable securities legislation. The Marketing Materials does not form part of this Prospectus to the extent that its contents have been modified or superseded by a statement contained in this Prospectus. Any “template version” of “marketing materials” (as defined in Regulation 41-101 – *General Prospectus Requirements*) pertaining to the Offering that is filed by the Company on SEDAR after the date of this Prospectus and before the termination of the distribution under the Offering will be deemed to be incorporated by reference into this Prospectus.

CAUTION REGARDING FORWARD-LOOKING STATEMENTS

This Prospectus and the documents incorporated by reference herein contain forward-looking statements and forward-looking information (collectively, “**forward-looking statements**”) within the meaning of applicable securities legislation. Forward-looking statements contained in this Prospectus and the documents incorporated by reference herein may be based on forecasts of future results and estimates of amounts not yet determinable. These statements may involve, but are not limited to, comments relating to guidance, strategies, expectations, planned operations or future actions. Forward-looking statements are identified using terms and phrases such as “anticipate”, “believe”, “could”, “estimate”, “expect”, “intend”, “may”, “plan”, “predict”, “project”, “will”, “would”, and similar terms and phrases (including negative and grammatical variations), including references to assumptions. All statements other than statements of historical facts included in this Prospectus and the documents incorporated by reference herein may constitute forward-looking statements within the meaning of applicable securities laws. Forward-looking statements include, among others, statements pertaining to:

- the Company’s outlook, goals, expectations, and projected results of operations, including factors and assumptions underlying the Company’s projections;
- the strategy, future operations, prospects and plans of the Company’s management;
- the Company’s expectations with respect to liquidity, including its ability to meet its ongoing capital, operating, and other obligations, and anticipated needs for, and sources of, funds;
- expectations regarding industry trends, overall market growth rates, the Company’s growth rates and growth strategies;
- the Company’s competitive position in its industry;
- the anticipated completion of this Offering;
- the use of proceeds from this Offering; and
- the Company’s assessment of market risks.

Forward-looking statements, by their nature, are based on assumptions, including those described in this Prospectus and the documents incorporated by reference herein and are subject to important risks and uncertainties. Forward-looking statements cannot be relied upon due to, amongst other things, changing external events and general uncertainties of the business of the Company. Actual results may differ materially from results indicated in forward-looking statements due to a number of factors, including those discussed below.

The Company has based forward-looking statements on factors and assumptions about future events and financial trends that it believes may affect its financial condition, results of operations, business strategy and financial needs. Important assumptions relating to the forward-looking statements contained in this Prospectus include, among other things, assumptions concerning:

- the Company's business strategies, strategic objectives and growth strategy;
- the Company's current and future capital resources and the need for additional financing;
- the Company's ability to increase sales from new and existing customers, and the results of the successful completion of the Company's current projects;
- management's expectation that the Company will achieve growth and profitability;
- the Company's overall financial performance;
- the Company continuing to maintain sufficient and effective production and research and development;
- there being no significant reduction in the availability of qualified and cost-effective human resources;
- there will be adequate liquidity available to the Company to carry out its operations;
- the Company's ability to obtain and retain key personnel; and
- the success of intellectual property applications.

Other factors which may cause results to differ materially from results indicated in forward-looking statements are identified in PyroGenesis' public disclosure file available at www.sedar.com and, in particular, those identified under the heading "Risk Factors" of this Prospectus. The forward-looking statements contained in this Prospectus and the documents incorporated by reference herein represent PyroGenesis' expectations as of the date of this Prospectus (or as of the date they are otherwise stated to be made) and are subject to change after such date. However, PyroGenesis disclaims any intention or obligation to update or revise any forward-looking statements whether because of new information, future events or otherwise, except as required under applicable securities regulations.

ELIGIBILITY FOR INVESTMENT

In the opinion of Osler, Hoskin & Harcourt LLP, counsel to PyroGenesis, and Fasken Martineau DuMoulin LLP, counsel to the Underwriter, based on current provisions of the *Income Tax Act* (Canada) and the regulations thereunder, as amended, (the "**Tax Act**") in force on the date hereof, the Unit Shares, the Warrants and the Warrant Shares, if issued on the date hereof, would be qualified investments under the Tax Act for a trust governed by a registered retirement savings plan, a registered retirement income fund, a registered education savings plan, a registered disability savings plan, a tax-free savings account (each a "**Registered Plan**") or a deferred profit sharing plan ("**DPSP**"), each as defined in the Tax Act, provided that: (i) the Unit Shares or Warrant Shares are listed on a "designated stock exchange" for the purposes of the Tax Act (which currently includes the TSXV and the TSX); and (ii) in the case of the Warrants, the Warrant Shares are qualified investments as described in (i) above and neither PyroGenesis, nor any person with whom PyroGenesis does not deal at arm's length, is an annuitant, a beneficiary, an employer or a subscriber under, or a holder of, such Registered Plan or DPSP.

Notwithstanding the foregoing, the annuitant, holder or subscriber of a Registered Plan, as the case may be (each, a "**Registered Holder**"), will be subject to a penalty tax if the Unit Shares, Warrants or Warrant Shares held in a Registered Plan are a "prohibited investment" for the purpose of the Tax Act for the particular Registered Plan. The Unit Shares, Warrants and Warrant Shares will not be a "prohibited investment" for a particular Registered Plan if the Registered Holder in respect thereof deals at arm's length with PyroGenesis for the purposes of the Tax Act and does not have a "significant interest" (as defined in the Tax Act) in PyroGenesis. In addition, the Unit Shares and Warrant Shares will not be a prohibited investment if such securities are "excluded property," as defined in the Tax Act, for trusts governed by a Registered Plan.

This summary is of a general nature only and is not, and is not intended to be, legal or tax advice to any particular holder. Individuals who intend to hold Unit Shares, Warrants or Warrant Shares in a Registered Plan or a DPSP should consult their own tax advisors having regard to their own particular circumstances.

BUSINESS OF PYROGENESIS

Summary Description of the Business

PyroGenesis Canada Inc. is in the business of the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries.

With a team of experienced engineers, scientists and technicians working out of its headquarters and its 3,800 m² manufacturing facility, each located in Montréal, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization.

The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 certified and AS9100D.

Products and Services

The Company's highly specialized products and services are commercialized to customers operating in a wide range of industries, including the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. The advanced plasma products and services of PyroGenesis include:

- (i) plasma torches systems for the pelletizing of iron ore, which are predominantly offered to customers in the mining and metallurgical and environmental industry;
- (ii) waste destruction and waste-to-energy systems, which are predominantly offered to customers in the environmental and defense industries;
- (iii) systems for the recovery of aluminum and other metal from dross (a residue generated by primary and secondary metal producers), which are predominantly offered to customers in the mining and metallurgical industries;
- (iv) production of high purity spherical metal powders, which are predominantly offered to customers in the additive manufacturing industries, including for the 3D printing industry;
- (v) development of processes for the production of high purity silicon metals, nano powders and nanowires, which are proposed to be predominantly offered to customers in the mining and metallurgical industries, including the battery industry;
- (vi) installation, commissioning and start-up services.
- (vii) research and development, internal and external funded projects by customers.

See "Business of the Company" in the Annual Information Form for more information about the business of the Company.

Recent Developments

The Company has also filed an application to graduate to the TSX and to have its issued and outstanding Common Shares listed on the TSX as a technology company. As at the date of the Prospectus, the Company has obtained conditional approval for the listing of the Common Shares on the TSX. Final approval of the listing on the TSX is subject to the Company fulfilling all of the requirements of the TSX on or before January 19, 2021, including the completion of the Offering. Upon and subject to receipt of final TSX approval, the Common Shares would be delisted from the TSXV and begin trading on the TSX under the symbol "PYR". The graduation to the TSX is not a condition to the closing of the Offering and will not be completed prior to the closing of the Offering.

DESCRIPTION OF SHARE CAPITAL

The Company is authorized to issue an unlimited number of Common Shares without par value. The rights of the holders of Common Shares, as a class, are equal in all respects and include the right (i) to vote at any meeting of shareholders, (ii) to receive, as and when declared by the directors of the Company, any dividends payable on such dates, for such amounts and at such place or places as the board of directors of the Company may from time to time determine; and (iii) to receive the remaining property of the Company on liquidation or dissolution.

As at November 2, 2020, there were 154,296,042 Common Shares issued and outstanding.

DESCRIPTION OF THE SECURITIES BEING DISTRIBUTED

Units

Each Unit is comprised of one Unit Share (being a Common Share forming a part of each Unit) and one Warrant, subject to adjustment in certain circumstances in accordance with the Warrant Indenture. The Units will separate into Unit Shares and Warrants immediately upon issue.

Common Shares

See “Description of Share Capital” above.

Warrants

The Warrants will be governed by the terms of the Warrant Indenture to be entered into on or before the Closing Date between the Company and AST Trust Company (Canada), as Warrant Agent. Under the Warrant Indenture, each Warrant will entitle the holder thereof to acquire, subject to adjustment in accordance with the Warrant Indenture, one Warrant Share at an exercise price of \$4.50 per Warrant Share at any time prior to 5:00 p.m. (Toronto time) on the Expiry Date, which is the date that is 24 months following the Closing Date (subject to an Accelerated Exercise Period), after which time the Warrants shall be void and of no value or effect.

Warrant Indenture

The following summary of certain anticipated provisions of the Warrant Indenture does not purport to be complete and is subject in its entirety to the detailed provisions of the executed Warrant Indenture. Reference is made to the Warrant Indenture for the full text of the attributes of the Warrants which, following the closing of the Offering, (i) will be filed on SEDAR under the issuer profile of PyroGenesis at www.sedar.com, or (ii) may be obtained on request without charge from the Corporate Secretary of PyroGenesis at 1744 William Street, Suite 200, Montréal, Québec H3J 1R4, Canada, telephone: (514) 937-0002. A register of holders of Warrants will be maintained at the principal offices of the Warrant Agent in Toronto, Ontario.

The Warrant Indenture will provide, in the event of certain alterations of the Common Shares, that the number of Common Shares which may be acquired by a holder of Warrants upon the exercise thereof will be subject to standard anti-dilution provisions governed by the Warrant Indenture, including provisions for the appropriate adjustment of the class, number and price of the securities issuable under the Warrant Indenture upon the occurrence of certain events including any subdivision, consolidation, or reclassification of the shares, payment of dividends outside of the ordinary course, or amalgamation/merger of the Company.

No fractional Warrant Shares will be issuable to any holder of Warrants upon the exercise thereof, and no cash or other consideration will be paid in lieu of fractional shares. The holding of Warrants will not make the holder thereof a shareholder of the Company or entitle such holder to any right or interest in respect of the Warrant Shares except as expressly provided in the Warrant Indenture. Holders of Warrants will not have any voting or preemptive rights or any other rights of a holder of Common Shares.

The Company will also covenant in the Warrant Indenture, during the period in which the Warrants are exercisable, to give notice to holders of Warrants of certain stated events, including events that would result in an adjustment to the exercise price for the Warrants or the number of Warrant Shares issuable upon exercise of the Warrants, at least two days prior to the record date or effective date, as the case may be, of such event.

The Warrant Indenture will provide that the Warrants will only be exercisable: (i) by, or for the account or benefit of, persons in the United States or that are U.S. Persons (as defined in Regulation S under the U.S. Securities Act) (a “**U.S. Person**”) by the original purchaser of the Units who is a “qualified institutional buyer” (as defined in Rule 144A under the 1933 Act), exercising the Warrants for its own account or the account of a “qualified institutional buyer” over which it exercises sole investment discretion; or (ii) by a holder that is not in the United States, a U.S. Person, or acting for the account or benefit of a person in the United States or a U.S. Person; was not offered and did not acquire the Warrants in the United States; and did not execute or deliver the notice of exercise in the United States.

The Warrant Indenture will provide that, from time to time, the Warrant Agent and the Company, without the consent of the holders of Warrants, may be able to amend or supplement the Warrant Indenture for certain purposes, including rectifying any ambiguities, defective provisions, clerical omissions or mistakes, or other errors contained in the Warrant Indenture or in any deed or indenture supplemental or ancillary to the Warrant Indenture, provided that, in the opinion of the Warrant Agent, relying on counsel, the rights of the holders of Warrants are not prejudiced, as a group.

The Warrant Indenture will also contain provisions making binding upon the holders of Warrants all resolutions passed at meetings of such holders in accordance with such provisions or by instruments in writing signed by holders of Warrants holding a specified percentage of the Warrants. Any amendment or supplement to the Warrant Indenture that is prejudicial to the interests of the holders of Warrants, as a group, will be subject to approval by an “Extraordinary Resolution”, which will be defined in the Warrant Indenture as a resolution either: (i) passed at a meeting of the holders of Warrants at which there are holders of Warrants present in person or represented by proxy representing at least 25% of the aggregate number of the then outstanding Warrants and passed by the affirmative vote of holders of Warrants representing not less than 66 ⅔% of the aggregate number of all the then outstanding Warrants represented at the meeting in person or by proxy and voted on the poll upon such resolution, or (ii) adopted by an instrument in writing signed by the holders of Warrants representing not less than 66 ⅔% of the number of all of the then outstanding Warrants.

The principal transfer office of the Warrant Agent in Toronto, Ontario is the location at which Warrants may be surrendered for exercise or transfer.

CONSOLIDATED CAPITALIZATION

Since June 30, 2020, there has been no material change in the Company’s share or loan capital on a consolidated basis. Subsequent to June 30, 2020, the Company issued 2,224,917 Common Shares from the exercise of options and warrants for cash proceeds of \$1,702,163 and issued 3,225,000 Common Shares from the conversion of the Convertible Loan (collectively, the “Subsequent Transactions”). See “Prior Sales”.

The following table sets forth the consolidated capitalization of PyroGenesis as at June 30, 2020 on an actual basis, and as adjusted to give effect to the Offering and the Subsequent Transactions. The table should be read in conjunction with the 2020 Q2 Financial Statements and the 2020 Q2 MD&A, which are incorporated by reference into this Prospectus.

| | As at June 30, 2020 | As adjusted as at June 30, 2020 after giving effect the Offering (including exercise in full of the Over-Allotment Option) and the Subsequent Transactions |
|--|------------------------|---|
| Term loans | \$ 332,137 | \$ 332,137 |
| Convertible loan | 816,569 | - |
| Lease liabilities, including current portion | 3,916,754 | 3,916,754 |
| Total Loans | 5,065,460 | 4,248,891 |
| Common shares and warrants | 53,839,058(1) | 67,003,284(3)(4) |
| Contributed surplus | 6,427,978(2) | 6,427,978(2) |
| Equity portion of convertible debentures | 98,422 | - |
| Deficit | (57,304,682) | (57,315,673) |
| Shareholders’ Equity | 3,060,776 | 16,115,589 |
| Total Loans and Shareholders’ Equity | \$ 8,126,236 | \$ 20,364,480 |

Notes:

- (1) Issued and outstanding at June 30, 2020: 149,146,126 Common Shares and 9,709,093 warrants exercisable between December 18, 2020 and October 25, 2021 at a weighted average exercise price of \$0.78/share.
- (2) At June 30, 2020, the Company has 6,810,000 options exercisable between September 25, 2021 and January 2, 2025 at a weighted average exercise price of \$0.31/share.
- (3) Based on Common Shares and warrants outstanding at June 30, 2020, after giving effect to the Offering (including exercise in full of the Over-allotment Option) and the Subsequent Transactions, the Company will have 157,650,592 Common Shares issued and outstanding, 7,614,176 warrants exercisable between December 18, 2020 and October 25, 2021 at a weighted average exercise price of \$0.72/share, 1,677,275 warrants exercisable until the Expiry Date at an exercise price of \$4.50/share, and 191,414 Compensation Options to purchase 191,414 Units for a period of 24 months from the Closing Date at an exercise price of \$3.60/Unit (assuming 819,400 Units are sold to purchasers on the President’s List).
- (4) Total issuance costs of \$1,540,299, comprising the Underwriter’s fee, expenses of the Offering and the estimated fair value of the Compensation Options has been charged to against common shares and warrants.

PRIOR SALES

The following table summarizes the issuance by PyroGenesis of Common Shares or securities convertible into Common Shares during the 12-month period preceding the date of this Prospectus.

| Date | Type of Securities | Number of Securities | Issuance/Exercise Price per Security |
|----------------|---|----------------------|--------------------------------------|
| September 2019 | Grant of options to purchase Common Shares ⁽¹⁾ | 400,000 | \$0.51 |
| November 2019 | Exercise of options to purchase Common Shares ⁽²⁾ | 407,000 | \$0.18 - \$0.18 |
| | | 240,000 | \$0.30 - \$0.30 |
| December 2019 | Exercise of options to purchase Common Shares ⁽²⁾ | 500,000 | \$0.18 - \$0.18 |
| | | 237,000 | \$0.30 - \$0.30 |
| January 2020 | Exercise of options to purchase Common Shares ⁽²⁾ | 560,000 | \$0.30 - \$0.30 |
| January 2020 | Grant of options to purchase Common Shares ⁽¹⁾ | 100,000 | \$0.45 |
| February 2020 | Exercise of options to purchase Common Shares ⁽²⁾ | 928,000 | \$0.30 - \$0.30 |
| June 2020 | Exercise of options to purchase Common Shares ⁽²⁾ | 120,000 | \$0.58 - \$0.58 |
| | | 120,000 | \$0.60 - \$0.60 |
| June 2020 | Exercise of warrants to purchase Common Shares ⁽³⁾ | 981,800 | \$0.58 - \$0.58 |
| | | 2,748,500 | \$0.85 - \$0.85 |
| June 2020 | Convertible Debenture converted to Common Shares ⁽⁴⁾ | 3,369,375 | \$0.80 - \$0.80 |
| July 2020 | Grant of options to purchase Common Shares ⁽¹⁾ | 2,460,000 | \$4.41 |
| July 2020 | Exercise of options to purchase Common Shares ⁽²⁾ | 100,000 | \$0.19 - \$0.19 |
| July 2020 | Exercise of warrants to purchase Common Shares ⁽³⁾ | 200,200 | \$0.58 - \$0.58 |
| | | 1,082,000 | \$0.85 - \$0.85 |
| August 2020 | Exercise of options to purchase Common Shares ⁽²⁾ | 30,000 | \$0.52 - \$0.52 |
| August 2020 | Exercise of warrants to purchase Common Shares ⁽³⁾ | 100,000 | \$0.58 - \$0.58 |
| | | 300,000 | \$0.85 - \$0.85 |
| September 2020 | Exercise of warrants to purchase Common Shares ⁽³⁾ | 100,000 | \$0.58 - \$0.58 |
| | | 83,967 | \$0.85 - \$0.85 |
| September 2020 | Convertible Loan converted to Common Shares ⁽⁵⁾ | 3,225,000 | \$0.28 - \$0.28 |
| October 2020 | Grant of options to purchase Common Shares ⁽¹⁾ | 250,000 | \$4.00 |
| October 2020 | Exercise of warrants to purchase Common Shares ⁽³⁾ | 18,750 | \$0.58 - \$0.58 |
| | | 210,000 | \$0.85 - \$0.85 |

Notes;

- (1) Options to purchase Common Shares issued under PyroGenesis' option plan (the "**Option Plan**").
- (2) Exercise of options to purchase Common Shares issued under the Option Plan.
- (3) Exercise of warrants to purchase Common Shares.
- (4) Conversion of Convertible Debenture to Common Shares.
- (5) Conversion of Convertible Loan to Common Shares ("**Convertible Loan**").

MARKET FOR SECURITIES

The Common Shares are listed on the TSXV under the symbol “PYR” and trade on the OTCQB under the symbol “PYRNF” and on the Frankfurt (FRA) exchange under the symbol “8PY”.

The following table sets forth the price range and trading volume of the Common Shares as reported by the TSXV for the 12-month period prior to the date of this Prospectus.

| Month | Common Shares | | |
|-----------------|---------------|----------|----------------------|
| | High (\$) | Low (\$) | Average Daily volume |
| November 2019 | 0.57 | 0.48 | 57,785 |
| December 2019 | 0.50 | 0.40 | 95,366 |
| January 2020 | 0.49 | 0.47 | 71,906 |
| February 2020 | 0.45 | 0.43 | 89,451 |
| March 2020 | 0.50 | 0.42 | 93,710 |
| April 2020 | 0.72 | 0.55 | 204,055 |
| May 2020 | 1.43 | 1.27 | 474,380 |
| June 2020 | 2.47 | 2.32 | 787,709 |
| July 2020 | 6.15 | 5.75 | 807,083 |
| August 2020 | 5.99 | 5.76 | 263,325 |
| September, 2020 | 6.43 | 5.43 | 397,089 |
| October 2020 | 4.29 | 3.41 | 201,429 |

USE OF PROCEEDS

Principal Purposes

The net proceeds of the Offering to the Company, after deduction of the Underwriter’s Fee but before deducting the other estimated expenses of the Offering (estimated to be approximately \$450,000), will be \$11,387,285.10 (including the Over-Allotment Option which has been exercised in full for Over-Allotment Units) (assuming 819,400 Units are sold to purchasers on the President’s List).

The net proceeds of the Offering, including the Over-Allotment Option, which has been exercised in full, are expected to be used by the Company as follows:

- (a) approximately \$5,000,000 to expand the Company’s current business through future acquisitions of, or investments in, other complementary businesses, products, or technologies;
- (b) approximately \$1,500,000 to develop and expand sales & marketing across all the Company’s offerings;
- (c) approximately \$1,000,000 for research and development activities to expand the Company’s offerings in the greenhouse gas emissions reduction space;
- (d) approximately \$1,000,000 to purchase equipment, tools and software relating to the operations of the Company’s business; and
- (e) the balance for general working capital and other general corporate purposes.

The Company had negative operating cash flow for the financial years ended December 31, 2019 and December 31, 2018 and for the six months ended June 30, 2020, resulting in an accumulated deficit of \$57,304,682 as at June 30, 2020. The Company estimates that its working capital deficiency was approximately \$4.6 million as at September 30, 2020. During the six-month period ended June 30, 2020, the Company had an average monthly cash burn rate of approximately \$138,000. For the three months ended September 30, 2020, the Company estimates that it is making positive cash from operations and no longer has a cash burn rate. Based on its current order backlog, the Company estimates that it will not have a cash burn rate for the next 18 months. The Company cannot guarantee if it will have positive or negative cash flow from operating activities in future periods. To the extent that the Company has negative cash flow in any future period, certain of the proceeds from the Offering may be used to fund such negative cash flow from operating activities. See “Risk Factors - Other Risks - Negative Operating Cash Flow”.

The expected use of net proceeds from the Offering represents the Company’s current intentions based upon its present plans and business condition, which could change in the future as its plans and business conditions evolve. The amounts and timing of the actual use of the net proceeds will depend on multiple factors and there may be circumstances where, for sound business reasons, a reallocation of funds may be necessary in order for the Company to achieve its stated business objectives. The Company may also require additional funds in order to fulfill its expenditure requirements to meet existing and any new business objectives and expects to either issue additional securities or incur debt to do so. As a result, management will retain broad discretion in the application of the net proceeds, and investors will be relying on management’s judgment regarding the application of the net proceeds from the Offering.

The Company currently has no potential acquisition or investment opportunities targeted for use of the proceeds of this Offering and no outstanding agreements or commitments relating to any acquisition. To the extent that the Company identifies and proceeds with an acquisition or investment opportunity in the future, this may result in a use of funds that materially affects the allocation of the net proceeds of this Offering received by the Company.

Pending the use of the net proceeds from the Offering, the Company may plan to invest the net proceeds in short- and intermediate-term, interest-bearing obligations, investment-grade instruments, certificates of deposit or government securities, or hold them as cash.

The actual amount that the Company spends in connection with each of the intended uses of proceeds will depend on a number of factors, including those listed under the headings “Risk Factors” and “Caution Regarding Forward-Looking Statements” or incorporated by reference in this Prospectus or unforeseen events.

PLAN OF DISTRIBUTION

General

Pursuant to the Underwriting Agreement, PyroGenesis has agreed to issue and sell an aggregate of 2,917,000 Units and the Underwriter has agreed to purchase from PyroGenesis, as principal, on the Closing Date, subject to the conditions stipulated in the Underwriting Agreement, all but not less than all of the Units offered hereby at a price of \$3.60 per Unit for a total gross consideration of \$12,076,380 (including the Over-Allotment Option which has been exercised in full for Over-Allotment Units) payable in cash to PyroGenesis against delivery of the Units. The Units are being offered to the public in each of the provinces of Canada, through the Underwriter or its affiliates who are registered to offer and sell the Units in such provinces and such other registered dealers as may be designated by the Underwriter. Subject to applicable law and the provisions of the Underwriting Agreement, the Underwriter may offer the Units outside of Canada.

The Underwriting Agreement provides that the Underwriter will be paid the Underwriter’s Fee, being an amount equal to \$0.234 per Unit issued and sold by PyroGenesis pursuant to the Offering (and per Over-Allotment Units issued and sold pursuant to the Over-Allotment Option).

The Company has agreed to pay to the Underwriter the Underwriter’s Fee, in consideration for its services rendered in connection with the Offering, in the amount equal to 6.5% of the gross proceeds of the Offering, subject to the terms and conditions of the Underwriting Agreement, including in respect of any gross proceeds raised on the exercise of the Over-Allotment Option, being \$0.234 per Unit, except that such Underwriter’s Fee shall be reduced to 3.25% in respect of any sales of Units to purchasers on the President’s List. The aggregate Underwriter’s Fee will be \$586,708.20 (\$689,094.90 including the Over-Allotment Option which has been exercised in full for Over-Allotment Units) (assuming 819,400 Units are sold to purchasers on the President’s List).

The Underwriter will also receive, as additional compensation, non-transferable Compensation Options to purchase a number of Units equal to 6.5% of the aggregate number of Units issued by the Company under the Offering (including pursuant to the exercise of the Over-Allotment Option) on the same terms as set out above, except that such Compensation Options shall be reduced to 3.25% in respect of any sales of Units to purchasers on the President’s List, for a period of 24 months from the Closing Date. The Compensation Options will be registered in the name or names specified by the Underwriter. This Prospectus qualifies the distribution of the Compensation Options and the distribution of the Units, Unit Shares, Warrants and Warrant Shares underlying such Compensation Options.

Each Unit consists of one Unit Share and one Warrant. Each Warrant will entitle the holder thereof to acquire, subject to adjustment in accordance with the Warrant Indenture, one Warrant Share at an exercise price of \$4.50 per Warrant Share at any time prior to 5:00 p.m. (Toronto time) on the Expiry Date, which is the date that is 24 months following the Closing Date, subject to an Accelerated Exercise Period. The Warrants will be created and issued pursuant to the terms of the Warrant Indenture to be dated as of the Closing Date between the Company and the Warrant Agent. The Warrant Indenture will contain provisions designed to protect holders of the Warrants against dilution upon the happening of certain events. No fractional Warrants will be issued.

The Company has granted the Underwriter an Over-Allotment Option, exercisable in whole or in part, at the sole discretion of the Underwriter, at any time up to 30 days after the Closing Date, enabling it to offer: (i) up to such additional number of Over-Allotment Units as is equal to 15% of the number of Units sold under the Offering at \$3.60 per Over-Allotment Unit; (ii) up to such additional number of Over-Allotment Warrants as is equal to 15% of the number of Warrants comprising the Units sold under the Offering at \$0.001 per Over-Allotment Warrant; (iii) up to such additional number of Over-Allotment Unit Shares as is equal to 15% of the number of Common Shares comprising the Units sold under the Offering at \$3.60 per Over-Allotment Unit Share; or (iv) any combination of Over-Allotment Units and Over-Allotment Warrants, so long as the aggregate number of Over-Allotment Units, Over-Allotment Warrants and Over-Allotment Unit Shares does not exceed 437,550 Over-Allotment Units or Over-Allotment Unit Shares, and 218,775 Over-Allotment Warrants, solely to cover over-allotments, if any, and for market stabilization purposes.

Each Over-Allotment Unit consists of one Over-Allotment Unit Share and one Over-Allotment Warrant. Each Over-Allotment Warrant will entitle the holder thereof to acquire, subject to adjustment in accordance with the Warrant Indenture, one Over-Allotment Warrant Share at an exercise price of \$4.50 per Over-Allotment Warrant Share at any time prior to 5:00 p.m. (Toronto time) on the Expiry Date, subject to an Accelerated Exercise Period.

This Prospectus qualifies the grant of the Over-Allotment Option and the distribution of the Over-Allotment Units, Over-Allotment Unit Shares and Over-Allotment Warrants to be issued and sold upon exercise of the Over-Allotment Option. A purchaser who acquires securities forming part of the Underwriter's over-allocation position acquires those securities under this Prospectus, regardless of whether the Underwriter's over-allocation position is ultimately filled through the exercise of the Over-Allotment Option or secondary market purchases.

The price at which the Units are being offered hereunder and the terms of the Offering were determined by arm's length negotiation between PyroGenesis and the Underwriter. The Underwriter proposes to offer the Units initially at the Offering Price. Without affecting the firm obligation of the Underwriter to purchase from PyroGenesis 2,917,000 Units at a price of \$3.60 per Unit in accordance with the Underwriting Agreement, after the Underwriter has made a reasonable effort to sell all of the Units at the Offering Price, the Underwriter may subsequently reduce and thereafter change, from time to time, the price at which the Units are offered to an amount not greater than the Offering Price. As a result, the compensation realized by the Underwriter will effectively be decreased by the amount that the aggregate price paid by purchasers for the Units is less than the gross proceeds paid by the Underwriter to PyroGenesis.

Under the terms of the Underwriting Agreement, the obligations of the Underwriter may be terminated at its discretion on the basis of "disaster out", "material change out" and "breach out" and may also be terminated upon the occurrence of certain stated events. The Underwriter is, however, obligated to take up and pay for all of the Units if any of such Units are purchased under the Underwriting Agreement. The Underwriting Agreement also provides that PyroGenesis will indemnify the Underwriter and its respective directors, officers, partners, shareholders, agents, employees and controlling persons against certain liabilities and expenses, including, as the case may be, liabilities under Canadian securities legislation.

Orders for Units will be received subject to rejection or allotment in whole or in part and the right is reserved to close the order books at any time without notice.

In accordance with the rules and policy statements of certain Canadian securities regulators, the Underwriter may not, throughout the period of distribution of the Units, bid for or purchase securities of the Company. The foregoing restriction is subject to exceptions, on the condition that the bid or purchase is not engaged in for the purpose of creating actual or apparent active trading in, or raising prices of, such securities. These exceptions include a bid or purchase permitted under the Universal Market Integrity Rules of the Investment Industry Regulatory Organization of Canada relating to market stabilization and passive market-making activities and a bid or purchase made for and on behalf of a customer where the order was not solicited during the period of distribution. Subject to the foregoing and applicable laws, in connection with the Offering, the Underwriter may engage in over-allotment and stabilizing transactions and purchases to cover short positions created by the Underwriter in connection with the Offering. Stabilizing transactions consist of certain bids or purchases for the purpose of preventing or retarding a decline in the market price of the Common Shares and short positions created by the Underwriter involving the sale by the Underwriter of a greater number of Common Shares than it are required to purchase in the Offering. These activities may stabilize, maintain or otherwise affect the market price of the Common Shares, which may be higher than the price that might otherwise prevail in the open market. These activities, if commenced, may be discontinued at any time.

Pursuant to the Underwriting Agreement, PyroGenesis has agreed during the period commencing on the date of the Underwriting Agreement and ending 120 days following Closing, not to, directly or indirectly, without the prior written consent of the Underwriter, issue, agree to, issue, sell, offer, grant an option or right in respect of, or otherwise dispose of, or enter into any derivative transaction that has the effect of any of the foregoing, or agree to or announce any intention to issue, sell, offer, grant an option or right in respect of, or otherwise dispose of, or enter into any derivative transaction that has the effect of any of the foregoing, any Common Shares or any securities convertible into or exercisable or exchangeable for Common Shares, other than issuances (a) to satisfy rights or obligations under securities or other financial instruments existing and outstanding as of the date hereof or pursuant to the exercise of the Over-Allotment Option, or (b) pursuant to the Company's existing share option plan.

Pursuant to the Underwriting Agreement, PyroGenesis has agreed to use commercially reasonable efforts to cause (and it is a condition of closing of the Offering) its directors, and senior officers of the Company, and their respective associated, and all shareholders with a pro-forma ownership interest in the Company greater than 5%, to enter into agreements with and an in form and substance satisfactory to the Underwriter on or before Closing pursuant to which they will agree not to, for a period commencing on Closing and ending on the date that is 120 days following Closing, directly or indirectly offer, sell, contract to sell, lend, swap, or enter into any other agreement to transfer the economic consequences of, or otherwise dispose of or deal with, or publicly announce any intention to offer, sell, contract to sell, grant or sell any option to purchase, hypothecate, pledge, transfer, assign, purchase any option or contract to sell, lend, swap, or enter into any agreement to transfer the economic consequences of, or otherwise dispose of or deal with, whether through the facilities of a stock exchange, by private placement or otherwise, or announce any intention to do any of the foregoing, any Common Shares or other securities of the Company held by them, directly or indirectly, other than (a) with the prior written consent of the Underwriter, (b) upon the exercise of previously issued options or other convertible securities of the Company, (c) transfers among a shareholder's affiliates for tax or other planning purposes, or (d) pursuant a take-over bid or similar transaction involving a change of control of the Company.

The Units, the Unit Shares and the Warrants comprising the Units, and the Warrants Shares issuable upon exercise of the Warrants have not been and will not be registered under the U.S. Securities Act or any U.S. state securities laws, and may not be offered or sold within the United States except in transactions registered under the U.S. Securities Act or exempt from the registration requirements of the U.S. Securities Act and in accordance with all applicable U.S. state securities laws. The Underwriter has agreed pursuant to the terms of the Underwriting Agreement that it will not offer or sell the Units within the United States, except to "qualified institutional buyers" (as defined in Rule 144A under the U.S. Securities Act) in transactions that are exempt from the registration requirements under the U.S. Securities Act, and in compliance with applicable U.S. state securities laws. In addition, until 40 days after the commencement of the Offering, an offer or sale of Units, Unit Shares or Warrants within the United States by a dealer (whether or not participating in the Offering) may violate the registration requirements of the U.S. Securities Act unless made in compliance with an exemption thereunder.

The TSXV has conditionally approved the listing of the Unit Shares, Warrant Shares, Over-Allotment Unit Shares and Over-Allotment Warrant Shares distributed under the Prospectus, as well as the Unit Shares, and Warrant Shares which may be issued upon exercise of the Compensation Option to be issued pursuant to the Offering on the TSXV. Listing will be subject to the Company fulfilling all of the listing requirements of the TSXV.

The Company has also filed an application to graduate to the TSX and to have its issued and outstanding Common Shares listed on the TSX as a technology company. As at the date of the Prospectus, the Company has obtained conditional approval for the listing of the Common Shares on the TSX. Final approval of the listing on the TSX is subject to the Company fulfilling all of the requirements of the TSX on or before January 19, 2021, including the completion of the Offering. Upon and subject to receipt of final TSX approval, the Common Shares would be delisted from the TSXV and begin trading on the TSX under the symbol "PYR". The graduation to the TSX is not a condition to the closing of the Offering and will not be completed prior to the closing of the Offering. See "Risk Factors - Other Risks - Risks Relating to the Proposed TSX Graduation".

There is no market through which the Warrants may be sold and purchasers may not be able to resell the Warrants that are purchased under this Prospectus. In addition, the Warrants will not be listed for trading on the TSXV or any other stock exchange following the Closing Date. This may affect the pricing of the Warrants in the secondary market, the transparency and availability of trading prices, the liquidity of the Warrants and the extent of issuer regulation. See "Risk Factors - Risks Related to the Offering".

Non-Certificated Inventory System

Subscriptions for the Units will be received subject to rejection or allotment in whole or in part and the right is reserved to close the subscription books at any time without notice. It is anticipated that the Units will be delivered under the book-based system through CDS Clearing and Depository Services Inc. ("CDS") or its nominee and deposited in registered or electronic form with CDS on the Closing Date, or such other date as may be agreed upon by the Company and the Underwriter. No certificates evidencing the Unit Shares and Warrants comprising the Units will be issued to subscribers, except in certain limited circumstances, and as such a purchaser of Units will receive only a customer confirmation from the registered dealer through which the Units are purchased.

CERTAIN CANADIAN FEDERAL INCOME TAX CONSIDERATIONS

In the opinion of Osler, Hoskin & Harcourt LLP, counsel to the Company, and Fasken Martineau DuMoulin LLP, counsel to the Underwriter, the following is, as at the date of this Prospectus, a summary of the principal Canadian federal income tax considerations under the Tax Act generally applicable to a holder who acquires, as beneficial owner, Units pursuant to the Offering and who, for the purposes of the Tax Act and at all relevant times, (i) is resident or deemed to be a resident in Canada, (ii) deals at arm's length with the Company and the Underwriter, (iii) is not affiliated with the Company or any of the Underwriter, and (iv) holds the Unit Shares, Warrant Shares (hereinafter sometimes collectively referred to as the "**Shares**") and Warrants as capital property (a "**Holder**"). Generally, the Shares and Warrants will be considered to be capital property to a Holder unless they are held or acquired in the course of carrying on a business of trading or dealing in securities or as part of an adventure or concern in the nature of trade. Certain Holders whose Shares might not otherwise qualify as capital property may make, in certain circumstances, an irrevocable election pursuant to subsection 39(4) of the Tax Act to have their Shares, and every other "Canadian security" as defined in the Tax Act, owned by such Holders, in the taxation year of the election and in all subsequent taxation years, deemed to be capital property. This election does not apply to Warrants. Holders should consult their own tax advisors for advice as to whether an election under subsection 39(4) of the Tax Act is available or advisable in their own circumstances.

This summary does not apply to a Holder (i) that is a "financial institution" for the purposes of the mark-to-market rules contained in the Tax Act, (ii) that is a "specified financial institution" as defined in the Tax Act, (iii) an interest in which would be a "tax shelter investment" as defined in the Tax Act, (iv) that makes or has made a functional currency reporting election under the Tax Act, (v) that has or will enter into a "derivative forward agreement", a "dividend rental arrangement" or a "synthetic disposition arrangement" as those terms are defined in the Tax Act, with respect to the Shares or Warrants, or (vi) that is an Underwriter. This summary does not address the deductibility of interest by a Holder who borrows money to acquire Units. Such Holders should consult their own tax advisors with respect to an investment in Units.

This summary is based upon the current provisions of the Tax Act in force as of the date hereof and counsel's understanding of the current published administrative policies and assessing practices of the Canada Revenue Agency (the "**CRA**"). This summary takes into account all specific proposals to amend the Tax Act publicly announced by or on behalf of the Minister of Finance (Canada) prior to the date hereof (the "**Tax Proposals**") and assumes that the Tax Proposals will be enacted in the form proposed, although no assurance can be given that the Tax Proposals will be enacted in their current form or at all. This summary does not otherwise take into account any changes in law or in the administrative policies or assessing practices of the CRA, whether by legislative, governmental or judicial decision or action, nor does it take into account or consider any provincial, territorial or foreign income tax considerations, which considerations may differ significantly from the Canadian federal income tax considerations discussed in this summary.

This summary is of a general nature only and is not intended to be, nor should it be construed to be, legal or tax advice or representations to any particular Holder. This summary is not exhaustive of all possible Canadian federal income tax considerations applicable to a Holder. Accordingly, Holders should consult their own legal and tax advisors for advice with respect to the tax consequences of acquiring, holding or disposing of the Shares and Warrants based on their own particular circumstances.

Allocation of Offering Price

The total purchase price of a Unit to a Holder must be allocated on a reasonable basis between the Unit Share and the Warrant to determine the cost of each to the Holder for purposes of the Tax Act.

For its purposes, the Company intends to allocate \$3.60 of the issue price of each Unit as consideration for the issuance of each Unit Share and \$0.001 of the issue price of each Unit for the issuance of each Warrant. Although the Company believes that its allocation is reasonable, it is not binding on the CRA or the Holder. Counsel expresses no opinion with respect to such allocation. The Holder's adjusted cost base of the Unit Share comprising a part of each Unit will be determined by averaging the cost allocated to the Unit Share with the adjusted cost base to the Holder of all Common Shares owned by the Holder as capital property immediately prior to such acquisition.

Exercise of Warrants

No gain or loss will be realized by a Holder upon the exercise of a Warrant to acquire a Warrant Share. When a Warrant is exercised, the Holder's cost of the Warrant Share acquired pursuant to such exercise will be the aggregate of the Holder's adjusted cost base of such Warrant and the exercise price paid for the Warrant Share. The Holder's adjusted cost base of the Warrant Share so acquired will be determined by averaging such cost with the adjusted cost base to the Holder of all Common Shares owned by the Holder as capital property immediately prior to such acquisition.

Expiry of Warrants

In the event of the expiry of an unexercised Warrant, a Holder generally will realize a capital loss equal to the Holder's adjusted cost base of such Warrant. For a description of the treatment of capital gains and capital losses, see "Certain Canadian Federal Income Tax Considerations – Taxation of Capital Gains and Capital Losses" below.

Dividends

Dividends received or deemed to be received on the Shares will be included in computing a Holder's income. In the case of an individual (other than certain trusts), such dividends will be subject to the gross-up and dividend tax credit rules in the Tax Act normally applicable to taxable dividends received from taxable Canadian corporations. Provided that appropriate designations are made by the Company, such dividend or deemed dividend will be treated as an "eligible dividend" for the purposes of the Tax Act and a Holder who is an individual will be entitled to an enhanced dividend tax credit in respect of such dividend. There may be limitations on the ability of the Company to designate dividends and deemed dividends as eligible dividends.

Dividends received or deemed to be received on the Shares by a Holder that is a corporation will be required to be included in computing such Holder's income for the taxation year in which such dividends are received, but such dividends will generally be deductible in computing such Holder's taxable income for that taxation year. In certain circumstances, subsection 55(2) of the Tax Act will treat a taxable dividend received or deemed to be received by a Holder that is a corporation as proceeds of disposition or a capital gain. Holders that are corporations should consult their own tax advisors having regard to their own circumstances.

A Holder that is a "private corporation" or a "subject corporation" (each as defined in the Tax Act) may be liable under Part IV of the Tax Act to pay a refundable tax on dividends received or deemed to be received on the Shares to the extent that such dividends are deductible in computing the Holder's taxable income for the taxation year.

Dividends received by a Holder who is an individual (including certain trusts) may result in such Holder being liable for alternative minimum tax under the Tax Act. Holders who are individuals should consult their own tax advisors in this regard.

Dispositions of Shares and Warrants

Upon a disposition (or a deemed disposition) of a Share or a Warrant (other than on the exercise thereof) by a Holder (other than to the Company, unless purchased by the Company in the open market in the manner in which shares are normally purchased by any member of the public in the open market), a capital gain (or a capital loss) will generally be realized by the Holder equal to the amount by which the proceeds of disposition of such security, as applicable, net of any reasonable costs of disposition, are greater (or are less) than the adjusted cost base of such security, as applicable, to the Holder. For a description of the treatment of capital gains and capital losses, see "Certain Canadian Federal Income Tax Considerations – Taxation of Capital Gains and Capital Losses" below.

Taxation of Capital Gains and Capital Losses

Generally, a Holder is required to include in computing its income for a taxation year one-half of the amount of any capital gain (a "**taxable capital gain**") realized in the year. Subject to and in accordance with the provisions of the Tax Act, a Holder is required to deduct one-half of the amount of any capital loss (an "**allowable capital loss**") realized in a taxation year from taxable capital gains realized in the year by such Holder. Allowable capital losses in excess of taxable capital gains may be carried back and deducted in any of the three preceding taxation years or carried forward and deducted in any following taxation year against taxable capital gains realized in such year to the extent and under the circumstances described in the Tax Act.

The amount of any capital loss realized on the disposition or deemed disposition of Shares by a Holder that is a corporation may be reduced by the amount of dividends received or deemed to have been received by it on such shares or shares substituted for such shares to the extent and in the circumstance described by the Tax Act. Similar rules may apply where a corporation is a member of a partnership or a beneficiary of a trust that owns Shares, directly or indirectly through a partnership or a trust. A Holder that is throughout the year a "Canadian controlled private corporation" (as defined in the Tax Act) may be liable to pay a refundable tax on certain investment income, including taxable capital gains.

A capital gain realized by a Holder who is an individual (including certain trusts) may result in such Holder being liable for alternative minimum tax under the Tax Act. Holders who are individuals should consult their own tax advisors in this regard.

CEASE TRADE ORDERS, BANKRUPTCIES, PENALTIES OR SANCTIONS

To the knowledge of PyroGenesis, no director or executive officer of PyroGenesis is, as at the date of this Prospectus, or was, within 10 years before the date of this Prospectus, a director, chief executive officer or chief financial officer of any company that, (a) was subject to a cease trade order, an order similar to a cease trade order or an order that denied the relevant company access to any exemption under securities legislation, that was in effect for a period of more than 30 consecutive days (an “Order”) that was issued while the director or executive officer of PyroGenesis was acting in the capacity as director, chief executive officer or chief financial officer, or (b) was subject to an Order that was issued after the director or executive officer of PyroGenesis ceased to be a director, chief executive officer or chief financial officer and which resulted from an event that occurred while that person was acting in the capacity as director, chief executive officer or chief financial officer.

To the knowledge of PyroGenesis, no director or executive officer of PyroGenesis, or a shareholder holding a sufficient number of securities of PyroGenesis to affect materially the control of PyroGenesis, (a) is, as at the date of this Prospectus, or has been within the 10 years before the date of this Prospectus, a director or executive officer of any company that, while that person was acting in that capacity, or within a year of that person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets; or (b) has, within the 10 years before the date of the Prospectus, become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold the assets of the director, executive officer or shareholder of PyroGenesis.

To the knowledge of PyroGenesis, no director or executive officer of PyroGenesis or a shareholder holding a sufficient number of securities of PyroGenesis to affect materially the control of PyroGenesis, (i) has been subject to any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or has entered into a settlement agreement with a securities regulatory authority or (ii) has been subject to any other penalties or sanctions imposed by a court or regulatory body that would likely be considered important to a reasonable investor in making an investment decision.

RISK FACTORS

Any investment in the Units offered hereby is subject to certain risks. Prospective investors should consider carefully before purchasing the Units the risks described below which are qualified in their entirety by reference to, and must be read in conjunction with, all the other information contained in this Prospectus and in the documents incorporated by reference herein, including those risk factors described in under the heading “Risk Factors” of PyroGenesis’ Annual Information Form, before purchasing Units. The risks identified in this Prospectus and the documents incorporated by reference may not be the only risks faced by PyroGenesis. Other risks of which PyroGenesis is not aware or which PyroGenesis currently deems to be immaterial may surface and have a material adverse impact on PyroGenesis, its business, results from operations and financial condition. If any of the following risks, or any other risks and uncertainties that PyroGenesis has not yet identified or that it currently considers not to be material, actually occur or become material risks, PyroGenesis’ business, prospects, financial condition, results of operations and cash flows, and consequently, the price of the Common Shares could be materially and adversely affected. In all these cases, prospective investors could lose all or part of their original investment.

Risks Related to the Offering

Market Price and Volatility of the Common Shares

There can be no assurance that an active market price for the Common Shares will be sustained after this Offering. The price of PyroGenesis’ securities could be significantly affected by a variety of factors, including, without limitation and in no particular order:

- the market reaction to the COVID-19 pandemic and its impact on the Company;
- actual or anticipated fluctuations in PyroGenesis’ quarterly or annual earnings or those of other companies in its industry;
- changes in estimates of PyroGenesis’ future earnings by the Company or securities research analysts;
- changes in general conditions in Canada and the global economy, financial markets, war, incidents of terrorism, other pandemics or responses to such events;
- acquisitions or business combinations, strategic partnerships, joint ventures or capital commitments by or involving PyroGenesis or its competitors; and
- the other risks described or referred to herein.

This volatility may affect the ability of holders of Common Shares to sell the Common Shares at an advantageous price, or at all.

Additionally, in recent periods, the stock market has experienced extreme declines and volatility. This volatility has had a significant impact on the market price of securities issued by many companies, including PyroGenesis and other companies in its industry. There can be no assurance that continuing fluctuations in price and volume will not occur. If such increased levels of volatility and market turmoil continue, PyroGenesis' operations could be adversely impacted and the trading price of the Common Shares may be adversely affected.

Further, these factors, as well as other related factors, may cause decreases in asset values that are deemed to be other than temporary, which may result in impairment losses. As well, certain institutional investors may base their investment decisions on consideration of the Company's performance against such institutions' respective investment guidelines and criteria, and failure to meet such criteria may result in a limited or no investment in the Units by those institutions, which could adversely affect the trading price of the Common Shares.

Completion of the Offering

The completion of the Offering remains subject to a number of conditions. There can be no certainty that the Offering will be completed. Failure by the Company to satisfy all of the conditions precedent to the Offering would result in the Offering not being completed. If the Offering is not completed, the Company may not be able to raise the funds required for the purposes contemplated under "Use of Proceeds" from other sources on commercially reasonable terms or at all.

Use of Proceeds

PyroGenesis cannot specify with certainty the allocation of the net proceeds it will receive from the Offering. PyroGenesis' management will have broad discretion in the allocation of the net proceeds in light of the objectives described under "Use of Proceeds" and will decide to allocate such proceeds as it deems appropriate. Until utilized, the net proceeds of the Offering will be held in cash balances in the Company's bank account or invested at the discretion of the board of directors of the Company. As a result, a purchaser will be relying on the judgment of management of the Company for the application of the net proceeds of the Offering. The results and the effectiveness of the application of the net proceeds are uncertain. If the net proceeds are not applied effectively, the Company's business, prospects, financial condition and results of operations may suffer, which could have material and adverse effect on the trading price of the Common Shares in the market.

There is No Market Through Which the Warrants May be Sold

Currently there is no public market for the Warrants and the Warrants will not be listed on the TSXV or any other stock exchange, and there can be no assurance that an active market for the Warrants will develop or be sustained after this Offering. If an active market for the Warrants does not develop, the liquidity of an investor's investment in the Warrants may be limited and the price may decline below the portion of the Offering Price allocated to the Warrants.

Dilutive Effects on Holders of Common Shares; Issuance of Additional Common Shares

The issuance of Common Shares in connection with the Offering will have a dilutive effect on the holders of Common Shares. Pursuant to its articles of amalgamation, as amended, PyroGenesis is authorized to issue an unlimited number of Common Shares. If PyroGenesis raises additional funding by issuing additional equity securities, or issues equity-linked securities for any reason, such financing or other issuance may substantially dilute the interests of Common Shareholders of PyroGenesis and could adversely affect the market price of the Common Shares. In addition, any issuance of Common Shares by PyroGenesis, or the perception that PyroGenesis could issue Common Shares, could adversely affect the market prices of the Common Shares.

Pursuant to the Underwriting Agreement, PyroGenesis has agreed during the period commencing on the date of the Underwriting Agreement and ending 120 days following Closing, not to, directly or indirectly, without the prior written consent of the Underwriter, issue, agree to, issue, sell, offer, grant an option or right in respect of, or otherwise dispose of, or enter into any derivative transaction that has the effect of any of the foregoing, or agree to or announce any intention to issue, sell, offer, grant an option or right in respect of, or otherwise dispose of, or enter into any derivative transaction that has the effect of any of the foregoing, any Common Shares or any securities convertible into or exercisable or exchangeable for Common Shares, other than issuances (a) to satisfy rights or obligations under securities or other financial instruments existing and outstanding as of the date hereof or pursuant to the exercise of the Over-Allotment Option, or (b) pursuant to the Company's existing share option plan. In addition, pursuant to the Underwriting Agreement, PyroGenesis has agreed to use commercially reasonable efforts to cause its directors, and senior officers of the Company, and their respective associated, and all shareholders with a pro-forma ownership interest in the Company greater than 5%, to enter into agreements with and in form and substance satisfactory to the Underwriter on or before Closing pursuant to which they will agree not to, for a period commencing on Closing and ending on the date that is 120 days following Closing, directly or indirectly offer, sell, contract to sell, lend, swap, or enter into any other agreement to transfer the economic consequences of, or otherwise dispose of or deal with, or publicly announce any intention to offer, sell, contract to sell, grant or sell any option to purchase, hypothecate, pledge, transfer, assign, purchase any option or contract to sell, lend, swap, or enter into any agreement to transfer the economic consequences of, or otherwise dispose of or deal with, whether through the facilities of a stock exchange, by private placement or otherwise, or announce any intention to do any of the foregoing, any Common Shares or other securities of the Company held by them, directly or indirectly, other than (a) with the prior written consent of the Underwriter, (b) upon the exercise of previously issued options or other convertible securities of the Company, (c) transfers among a shareholder's affiliates for tax or other planning purposes, or (d) pursuant a take-over bid or similar transaction involving a change of control of the Company. See "Plan of Distribution".

Holders of Warrants have no Rights as Shareholders

Until a holder of Warrants acquires Warrant Shares upon exercise of Warrants, such holder will have no rights with respect to the Warrant Shares underlying such Warrants. Upon exercise of such Warrants, such holder will be entitled to exercise the rights of a common shareholder only as to matters for which the record date occurs after the exercise date.

Other Risks

Negative Operating Cash Flow

The Company had negative operating cash flow for the financial years ended December 31, 2019 and December 31, 2018 and for the six months ended June 30, 2020, resulting in an accumulated deficit of \$57,304,682 as at June 30, 2020. The Company estimates that its working capital deficiency was approximately \$4.6 million as at September 30, 2020. During the six-month period ended June 30, 2020, the Company had an average monthly cash burn rate of approximately \$138,000. For the three months ended September 30, 2020, the Company estimates that it is making positive cash from operations and no longer has a cash burn rate. Based on its current order backlog, the Company estimates that it will not have a cash burn rate for the next 18 months.

To the extent that the Company has negative operating cash flow in future periods, it may need to allocate a portion of its cash reserves to fund such negative cash flow. The Company may also be required to raise additional funds through the issuance of equity or debt securities. There can be no assurance that the Company will be able to generate a positive cash flow from its operations, that additional capital or other types of financing will be available when needed or that these financings will be on terms favourable to the Company.

Public Health Crises and COVID-19

Public health crises, including local, regional, national or international outbreak of a contagious disease, could have an adverse effect on local economies, the global economy, and the markets in which the Company operates and markets its products, and may adversely impact the price and demand for the Company's products and the ability of the Company to operate and market its products. Any such alterations or modifications could cause substantial interruption to the Company's business, any of which could have a material adverse effect on the Company's operations or financial results, and could include temporary closures of one or more of the Company's or its partner's offices or facilities; temporary or long-term labor shortages; temporary or long-term adverse impacts on the Company's supply chain and distribution channels; the potential of increased network vulnerability and risk of data loss resulting from increased use of remote access and removal of data from the Company's facilities.

Subsequent to December 31, 2019, the global emergence of coronavirus (COVID-19) occurred. The global outbreak of COVID-19 has resulted in governments worldwide enacting novel emergency measures to protect against the spread of the virus. These measures, which include, among other things, limitations on travel, self-imposed quarantine periods and social distancing measures, have caused material disruption to businesses globally resulting in an economic slowdown. Global equity markets have experienced significant volatility and weakness. Governments and central banks have reacted with significant monetary and fiscal interventions designed to stabilize economic conditions. The duration and impact of the COVID-19 outbreak is unknown at this time, as is the efficacy of any government and/or central bank interventions. It is not possible to reliably estimate the length and severity of these developments and the impact on the financial results and condition of the Company in future periods.

As of the date of this Prospectus, the Company has successfully continued operations under COVID-19 protocols. COVID-19 has not resulted in any material delays in the development or testing of the Company's products or any other material development projects. The Company is not currently experiencing any delays or interruptions in service or product delivery. At the outset of the COVID-19 pandemic, certain of the Company's operations were negatively impacted, but have since normalized. The Company has not experienced any material disruption in its supply chain, and the pandemic has not materially impacted the Company's business or delivery of services or products.

The Company's production schedule has continued throughout COVID-19 on a modified employee schedule, with certain non-production employees working remotely. The Company has been able to operate largely unaffected by the COVID-19 pandemic. Notwithstanding the foregoing, if the Company or its vendors and suppliers are unable to continue operations or keep up with increasing demands as a result of COVID-19, customers may experience delays or interruptions in service or the delivery of products, which may be detrimental to the Company's reputation, business, results of operations and financial position. The Company cautions that it is impossible to fully anticipate or quantify the effect and ultimate impact of the COVID-19 pandemic as the situation is rapidly evolving. The extent to which COVID-19 impacts the Company's results will depend on future developments, which are highly uncertain and cannot be predicted, including new information that may emerge concerning the severity of COVID-19 and the actions taken by governments to contain it or treat its impact, including shelter in place directives, which, if extended, may impact the economies in which the Company now operates, or may in the future operate, key markets into which the Company sells products and delivers services, and markets through which the Company's key suppliers source their products.

Risks Relating to the Proposed TSX Graduation

The Company has filed an application to graduate to the TSX and to have its issued and outstanding Common Shares listed on the TSX as a technology company. As at the date of the Prospectus, the Company has obtained conditional approval for the listing of the Common Shares on the TSX. Final approval of the listing on the TSX is subject to the Company fulfilling all of the requirements of the TSX on or before January 19, 2021, including the completion of the Offering. Upon and subject to receipt of final TSX approval, the Common Shares would be delisted from the TSXV and begin trading on the TSX under the symbol "PYR". The graduation to the TSX is not a condition to the closing of the Offering and will not be completed prior to the closing of the Offering. There is no assurance that the graduation to the TSX will occur, which could negatively impact the market price of the Common Shares.

Forward-Looking Statements May Prove to be Inaccurate

Investors should not place undue reliance on forward-looking statements. By their nature, forward-looking statements involve numerous assumptions, known and unknown risks and uncertainties, of both general and specific nature, that could cause actual results to differ materially from those suggested by the forward-looking statements or contribute to the possibility that predictions, forecasts or projections will prove to be materially inaccurate. Additional information on the risks, assumptions and uncertainties can be found in this Prospectus under the heading "Caution Regarding Forward-Looking Statements".

LEGAL MATTERS

Certain legal matters in connection with the Offering will be passed upon by Osler, Hoskin & Harcourt LLP on behalf of PyroGenesis and by Fasken Martineau DuMoulin LLP on behalf of the Underwriter. As of the date hereof, the partners and associates of Osler, Hoskin & Harcourt LLP, as a group, and Fasken Martineau DuMoulin LLP, as a group, each beneficially own, directly or indirectly, less than 1% of the outstanding securities of PyroGenesis or any associate or affiliate of PyroGenesis.

INTEREST OF EXPERTS

The 2019 Annual Financial Statements have been audited by KPMG LLP, Chartered Professional Accountants, located at 600 de Maisonneuve Boulevard West, Suite 1500, KPMG Tower, Montréal, Québec, Canada. KPMG LLP has confirmed that it is independent of the Company within the meaning of the relevant rules and related interpretations prescribed by the relevant bodies in Canada.

TRANSFER AGENT AND REGISTRAR

The transfer agent and registrar of the Common Shares is AST Trust Company (Canada) having an office at 2001 Robert-Bourassa Boulevard, Suite 1600, Montréal, Québec, H3A 2A6.

STATUTORY RIGHTS OF RESCISSION AND WITHDRAWAL

Securities legislation in certain of the provinces of Canada provides purchasers with the right to withdraw from an agreement to purchase securities. This right may only be exercised within two business days after receipt or deemed receipt of a prospectus and any amendment thereto. In several of the provinces, securities legislation further provides the purchaser with remedies for rescission or, in some jurisdictions, revisions of the price of damages if the prospectus and any amendment contains a misrepresentation or is not delivered to the purchaser, provided that such remedies for rescission, revisions of the price or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province.

A purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province for the particulars of these rights or consult with a legal adviser.

Under the Warrant Indenture, original purchasers of Warrants pursuant to the Offering will have a non-assignable contractual right of rescission if this Prospectus (including documents incorporated herein by reference) or any amendment hereto contains a misrepresentation (within the meaning of the *Securities Act* (Ontario)). This contractual right of rescission shall be subject to the defences, limitations and other provisions described under part XXIII of the *Securities Act* (Ontario), and is in addition to any other right or remedy available to original purchasers under section 130 of the *Securities Act* (Ontario) or otherwise at law. For greater certainty, the contractual right of rescission will entitle such original purchasers to receive the amount paid upon conversion, exchange or exercise, as well as the amount paid for the original Warrant, upon surrender of the underlying securities acquired thereby, in the event that this Prospectus (as supplemented or amended) contains a misrepresentation, provided that: (i) the conversion, exchange or exercise takes place within 180 days of the date of the purchase of the Units under this Prospectus; and (ii) the right of rescission is exercised within 180 days of the date of the purchase of the Units under this Prospectus. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province for the particulars of this right of action for damages, or consult with a legal adviser.

ENFORCEMENT OF JUDGMENTS AGAINST FOREIGN PERSONS

A director of the Company, Mr. Robert Radin, resides outside of Canada. Mr. Radin has appointed PyroGenesis, 1744 William Street, Suite 200, Montréal, Québec H3J 1R4, Canada as agent for service of process. Purchasers are advised that it may not be possible for them to enforce judgments obtained in Canada against any person that resides outside of Canada, even if the party has appointed an agent for service of process.

CERTIFICATE OF PYROGENESIS

Dated: November 3, 2020

This short form prospectus, together with the documents incorporated by reference, constitutes full, true and plain disclosure of all material facts relating to the securities offered by this short form prospectus as required by the securities legislation of each of the provinces of Canada.

PYROGENESIS

By: (Signed) P. PETER PASCALI
President and Chief Executive Officer Executive

By: (Signed) MICHAEL BLANK
Acting Chief Financial Officer

By: (Signed) RODAYNA KAFAL
Director

On behalf of the Board of Directors

By: (Signed) RODNEY BEVERIDGE
Director

CERTIFICATE OF THE UNDERWRITER

Dated: November 3, 2020

To the best of our knowledge, information and belief, this short form prospectus, together with the documents incorporated by reference, constitutes full, true and plain disclosure of all material facts relating to the securities offered by this short form prospectus as required by the securities legislation of each of the provinces of Canada.

MACKIE RESEARCH CAPITAL CORPORATION

BY: (Signed) David Keating
Managing Director, Head of Equity Capital Markets, Co-Head of Capital Markets



PYROGENESIS CANADA INC.

**REVISED ANNUAL INFORMATION FORM
FOR THE YEAR ENDED DECEMBER 31, 2019**

Dated November 3, 2020

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EXPLANATORY NOTES

The information in this revised annual information form (this “AIF”) of PyroGenesis is stated as at December 31, 2019, unless otherwise indicated. For an explanation of the capitalized terms and expressions and certain defined terms, please refer to the “Glossary of Terms” at the end of this AIF.

In this AIF, where the context so requires, references to the “Company”, “PyroGenesis”, “it”, “its” or similar expressions refer to PyroGenesis Canada Inc., a Canadian corporation. In this AIF, unless otherwise indicated, all references to “\$”, “C\$” or “dollars” are to Canadian dollars, all references to “US\$” are to U.S. dollars and all references to “€\$” are to euros. Amounts are stated in Canadian dollars unless otherwise indicated.

This AIF should be read in conjunction with the information contained in the Company’s audited consolidated financial statements and related notes for the year ended December 31, 2019 and the management’s discussion and analysis thereon.

The Company has certain proprietary or contractual rights to certain company names, product names, trade names and trademarks used in this AIF that are important to its business, including PyroGenesis, PyroGenesis Additive, NEXGEN, DROSRITE, PUREVAP, SPARC, APT, APATH, RPT, MINIGUN, SPT, PAWDS, PPRS, PACWADS and PAGV. The Company has omitted the registered trademark (®) and trademark (™) symbols and any other related symbols for such trademarks and all related trademarks, including those related to specific products or services, when used in this AIF. All other names and trademarks are the property of their respective owners.

FORWARD-LOOKING STATEMENTS

This AIF contains forward-looking statements and forward-looking information (collectively, “**forward-looking statements**”) within the meaning of applicable securities legislation. All statements other than statements of historical fact contained in this AIF are forward-looking statements, including, without limitation, the Company’s: statements regarding its products and services; the execution of its growth strategy; relations with suppliers and customers; future financial position; business strategy; potential acquisitions; potential business partnering; litigation; and plans and objectives. In certain cases, forward-looking statements can be identified by the use of words such as “plans”, “expects” or “does not expect”, “is expected”, “budget”, “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates” or “does not anticipate”, or “believes”, or variations of such words and phrases or state that certain actions, events or results “may”, “could”, “would”, “might” or “will be taken”, “occur” or “be achieved” and similar words or the negative thereof. These forward-looking statements are based on management’s current expectations and are subject to a number of risks, uncertainties, and assumptions, including market and economic conditions, business prospects or opportunities, future plans and strategies, projections and anticipated events and trends that affect the Company and its industry. Although management of the Company believes that the expectations reflected in such forward-looking statements are reasonable and are based on reasonable assumptions and estimates as of the date hereof, there can be no assurance that these assumptions or estimates are accurate or that any of these expectations will prove accurate.

Actual results and developments are likely to differ, and may differ materially, from those anticipated by the Company and expressed or implied by the forward-looking statements contained in this AIF. Such statements are based on a number of assumptions and risks which may prove to be incorrect. Important assumptions relating to the forward-looking statements contained in this AIF include, among other things, assumptions concerning:

- the Company’s business strategies, strategic objectives and growth strategy;
- the Company’s expected production volumes, rates and costs;
- the Company’s current and future capital resources and the need for additional financing;
- the Company’s ability to increase sales from new and existing customers, and the results of the successful completion of the Company’s current projects;
- management’s expectation that the Company will achieve growth and profitability;

- the Company's overall financial performance;
- the Company continuing to maintain sufficient and effective production and research and development;
- there being no significant reduction in the availability of qualified and cost-effective human resources;
- there will be adequate liquidity available to the Company to carry out its operations;
- the Company's ability to obtain and retain key personnel; and
- the success of intellectual property applications.

By their nature, forward-looking statements require assumptions and are subject to inherent risks and uncertainties including those discussed herein. There is significant risk that predictions and other forward-looking statements will not prove to be accurate. Readers are cautioned to not place undue reliance on forward-looking statements made herein because a number of factors could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.

The future outcomes that relate to forward-looking statements may be influenced by many factors, including, but not limited to, the risk factors described under the heading "Risk Factors". The Company cautions that the foregoing list of factors is not exhaustive, and that, when relying on forward-looking statements to make decisions with respect to the Company, investors and others should carefully consider these factors, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements.

Although the forward-looking statements contained in this AIF are based upon what management currently believes to be reasonable assumptions, the Company cannot assure investors that actual results, performance or achievements will be consistent with these forward-looking statements and additional risks and uncertainties discussed in the Company's materials filed with the Canadian securities regulatory authorities from time to time, available under the Company's profile on SEDAR at www.sedar.com. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. Forward-looking statements are provided as of the date of this AIF, and the Company assumes no obligation to update or revise such forward-looking statements to reflect new events or circumstances except as required under applicable securities laws.

The forward-looking statements contained in this AIF are expressly qualified in their entirety by this cautionary statement and are made as of the date of this AIF or such other date specified herein.

MARKET AND INDUSTRY DATA

Unless otherwise indicated, information contained in this AIF concerning the industry and the markets in which the Company operates, including its general expectations, market position and market opportunity, is based on information from industry publications and reports generated by several third parties and management estimates. Unless otherwise indicated, management estimates are derived from publicly available information released by independent industry analysts and third-party sources, as well as data from the Company's internal research, and are based on assumptions made by the Company based on such data and its knowledge of such industry and markets, which the Company believes to be reasonable. These industry publications and reports generally indicate that the information contained therein was obtained from sources believed to be reliable, but do not guarantee the accuracy and completeness of such information. The Company has not independently verified the data in such publications, reports or resources, and such information is inherently imprecise. In addition, projections, assumptions and estimates of the Company's future performance and the future performance of the industry in which the Company operates are necessarily subject to a high degree of uncertainty and risk due to a variety of factors, including those described under "Forward-Looking Statements" and "Risk Factors".

CORPORATE STRUCTURE

Name, Address and Incorporation

PyroGenesis is a corporation governed by the provisions of the *Canada Business Corporations Act* (“CBCA”) and results from an amalgamation completed on July 11, 2011 under the CBCA of Industrial Growth Income Corporation (“IGIC”) and PyroGenesis Canada Inc., a predecessor entity incorporated on June 5, 2006, to form the Company. Prior to the amalgamation, which constituted its qualifying transaction, IGIC was a capital pool company listed on the TSX-V.

The Company’s head and registered office is located at 1744 William Street, Suite 200, Montréal, Québec, Canada, H3J 1R4.

Inter-corporate Relationships

The Company has no subsidiaries or other inter-corporate relationships.

GENERAL DEVELOPMENT OF THE BUSINESS

The following is a summary of the significant events that have influenced the general development of the business of the Company over the last three completed years.

Year Ended December 31, 2017

Expansion & Development of Product Offerings

On June 14, 2017, PyroGenesis launched PyroGenesis Additive, a product line of PyroGenesis dedicated to additive manufacturing. See “Business of the Company - Products and Services - Production of High Purity Spherical Metal Powders” for details.

Contracts and Milestones

In February and March 2017 PyroGenesis received the 3rd and 4th milestone payments, totaling \$1,063,200, under a previously announced \$8,260,000 contract (which, as a result of a rebate of \$190,000 was reduced to \$8,070,000) with HPQ Silicon Resources Inc. (TSX-V: HPQ) under which PyroGenesis would provide a PUREVAP pilot system capable of producing 200-metric tonnes per year of silicon metal directly from quartz. In 2018, the capacity of the system was subsequently reduced to 50-metric tonnes per year.

Year Ended December 31, 2018

Expansion & Development of Product Offerings

Proposed Global DROSRITE Tolling Services

On November 6, 2018, PyroGenesis announced it had entered into a memorandum of understanding with one of the major Japanese trading houses which outlines how the parties will seek to move forward towards a potential joint venture partnership for the purpose of developing DROSRITE tolling services globally. At the time of the announcement, the proposed partner had assets in excess of \$25 billion, annual revenues in excess of \$5.4 billion, and an annual profit in excess of \$2.0 billion. Discussions with the trading house are still ongoing.

A tolling service arrangement is one in which a smelter provides dross (a residue generated by primary and secondary metal producers) to a third party to process either on or off-site. The memorandum of understanding envisions moving forward with test cases to provide tolling services. These test cases would serve as a basis on which to determine if, and how, the parties would jointly provide tolling services on a global basis, using PyroGenesis’ proprietary DROSRITE system to process the dross and recover valuable metals for a fee. The extensive global network and administrative depth of the proposed partner would provide a solid platform for the expansion of the services.

DROSRITE Mini

On June 25, 2018, PyroGenesis announced a new strategy involving a new DROSRITE system, the DROSRITE Mini. The DROSRITE Mini system can economically process 500 tons of dross/year as compared to the 5,000 tons dross/year that the DROSRITE systems are designed for. The smaller and less expensive system enables the Company to target thousands of smaller facilities for which the DROSRITE system far exceeded these facilities' needs.

Metallic Powders

On August 14 and 20, 2018, PyroGenesis announced that its metallic powders had either met or exceeded rigorous properties requirements under intensive chemical and mechanical analysis conducted by a leading 3D printer original equipment manufacturer. The powder tested was Ti-6Al-4V grade 23; one of the most sought-after powders in metal 3D printing, particularly from plasma atomization. The analysis consisted of, amongst other things, validating chemical composition, printing properties, density, hardness and tensile strength. As a result of the positive results, PyroGenesis became a supplier of powders to the customer, and became an approved supplier to the customer's end-users. Any user of this printer type commercialized by the customer can either purchase PyroGenesis' powder from the customer or directly from PyroGenesis for use in their printers. PyroGenesis also announced that it was now being recommended by the leading 3D Printer original equipment manufacturer to their customers as a powder supplier for titanium powders.

Contracts and Milestones

Metallic Powder Commercial Contract

On May 17, 2018, PyroGenesis announced that it had signed its first major exclusive commercial agreement for the sale of titanium (Ti-6Al-4V) powders for use in the additive manufacturing industry, after having been qualified as an approved supplier by a client in Asia. The agreement provided for a minimum sales volume of 10,000 kg (10 tons) during the two-year term of the agreement and was limited geographically to a specific territory in Asia. This agreement also granted the Company exclusive distribution rights of titanium powders (Ti64 Grade 23) into a specific territory in Asia.

Contracts with US Military

On September 10, 2018, PyroGenesis announced that it had entered into contracts with the US Military totaling US\$509,000 for general ongoing upgrades and maintenance for PAWDS systems previously sold by PyroGenesis.

DROSRITE Orders & Deliveries

On October 4, 2018, PyroGenesis announced it had received a down payment of US\$699,985 towards an order from an Asian client for two DROSRITE furnace systems, each with a capacity of 5,000 tons/year. These DROSRITE systems were the third and fourth commercial systems sold by PyroGenesis, and the first order from this client. Delivery of the systems are expected to be completed in 2021.

The Company also announced that a commercial DROSRITE system had been delivered to a client's facility in North America pursuant to an order placed in July 2018.

Financings

2018 Convertible Debenture

On March 29, 2018, the Company completed a \$3,000,000 non-brokered private placement of 9.5% secured convertible debentures (the "**2018 Convertible Debenture**"). The 2018 convertible debentures bear interest at the rate of 9.5% per annum, with interest payable in cash on a quarterly basis, and mature on March 29, 2020. Each debenture is convertible into Common Shares at a conversion price of \$0.80 per Common Share. The 2018 Convertible Debentures are secured by a hypothec on the universality of all of the assets of the Company. In connection with the 2018 Convertible Debenture, the Company paid finder fees in the amount of \$180,000 to the agent.

On March 30, 2020, the Company reached an agreement to extend the maturity date of its \$3,000,000 convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company paid \$300,000 of the outstanding amount (representing 10% of the principal amount), paid a one-time accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. The interest rate and conversion feature had not changed.

As of June 30, 2020, the Company had retired the 2018 Convertible Debentures in full, \$304,500 paid in cash and \$2,695,500 was converted into Common Shares.

February and March 2018 Private Placement and Debt Settlement

On February 9, 2018, the Company issued 3,271,429 units on a private placement basis at a price of \$0.70 per unit, of which 2,200,000 units were issued for gross proceeds of \$1,540,000 payable to the Company in cash, and 1,071,429 units were issued to the Father, as owner of Phoenix, to satisfy \$750,000 of the Cash Consideration payable to Phoenix as outlined under “Interest of Management and Others in Material Transactions - Settlement of Claim”. Each unit consisted of one Common Share of the Company and one Common Share purchase warrant. Each warrant entitled the holder thereof to purchase one Common Share at a price of \$1.25 until August 9, 2019.

On March 7, 2018, the Company issued 1,600,000 units on a private placement basis at a price of \$0.70 per unit, of which 771,430 units were issued for gross proceeds of \$540,001 payable to the Company in cash, and 828,570 units were issued to the Father, as owner of Phoenix, to satisfy \$579,999 of the Cash Consideration payable to Phoenix as outlined under “Interest of Management and Others in Material Transactions - Settlement of Claim”. Each unit consisted of one Common Share of the Company and one Common Share purchase warrant. Each warrant entitled the holder thereof to purchase one Common Share at a price of \$1.25 until August 9, 2019.

In connection with the private placement, the Company paid finder fees in the amount of \$127,750 and issued 88,000 compensation warrants to acquire Common Shares, each compensation warrant entitling the holder thereof to purchase one Common Share at a price of \$1.25 until August 9, 2019.

The warrants issued on February 9, 2018 and March 7, 2018 were not exercised and are expired.

April 2018 Private Placement and Debt Settlement

On April 19, 2018, the Company issued 3,108,333 units on a private placement basis at a price of \$0.60 per unit, of which 1,850,000 units were issued for gross proceeds of \$1,110,000.00 payable to the Company in cash, and 1,258,333 units were issued to repay an amount of \$754,999.80 owed by the Company under a convertible debenture.

Each unit consisted of one Common Share and one Common Share purchase warrant. Each warrant entitled the holder thereof to purchase one Common Share at a price of \$0.85 until April 19, 2020. In connection with this private placement, the Company paid finder fees in the amount of \$89,478 and issued 74,000 finder’s compensation warrants, each compensation warrant entitling the holder thereof to purchase one Common Share at a price of \$0.85 until April 19, 2020.

The warrants issued on April 19, 2018 were not exercised and are expired.

October 2018 Private Placement

On October 2, 2018, the Company completed the first tranche of a non-brokered private placement and issued 3,448,276 units to the Pascali Trust, at a price of \$0.58 per unit, for gross proceeds of \$2,000,000 (the “**October 2018 First Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.58 until February 13, 2021 (“**February 13, 2021 First Private Placement Warrants**”).

On October 19, 2018, the Company completed the second tranche of a non-brokered private placement and issued an amount of 388,750 units at a price of \$0.58 per unit, for gross proceeds of \$225,475 (the “**October 2018 Second Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.58 until February 13, 2021 (“**February 13, 2021 Second Private Placement Warrants**”). In addition, the Company issued 1,112,000 units as a repayment of term loans and account payable to three creditors, which were valued at an amount of \$644,960, to reflect the fair value of the financial liabilities extinguished at that time. Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.58 until February 13, 2021 (“**February 13, 2021 Creditor Warrants**”).

In the aggregate, the Company issued and sold pursuant to the October 2018 First Tranche Private Placement and October 2018 Second Tranche Private Placement a total of 3,837,026 units for gross proceeds of \$2,225,475.08 to the Company. The Pascali Trust, of which P. Peter Pascali, the Chief Executive Officer of the Company, is a trustee, officer and beneficiary, acquired 3,448,276 of the 3,837,026 units for a total consideration of \$2.0 million. The participation of the Pascali Trust in the private placement constituted a “related party transaction” as defined in MI 61-101. The related party transaction was exempt from the formal valuation and minority approval requirements of MI 61-101, as neither the fair market value of the securities issued to, nor the consideration paid by the Pascali Trust, exceeded 25% of the Company’s market capitalization (calculated in accordance with MI 61-101). The transaction was unanimously approved by the board of directors of the Company. See “Directors and Executive Officers - Conflicts of Interest”.

October 2018 Debt Settlement

On October 25, 2018, the Company issued 3,385,715 units at a price of \$0.70 per unit to Phoenix to satisfy the final payment of the Cash Consideration under a settlement agreement entered into on April 30, 2018, each unit consisting of one Common Share of the Company and one Common Share purchase warrant which would entitle the holder to purchase one Common Share at a price of \$0.85 until April 19, 2020, as outlined under “Interest of Management and Others in Material Transactions - Settlement of Claim”.

December 2018 Private Placement

On December 17, 2018, the Company completed the first tranche of a non-brokered private placement and issued 2,146,967 units at a price of \$0.58 per unit, for gross proceeds of \$1,245,241 (the “**December 2018 First Tranche Private Placement**”). On January 7, 2019, the Company completed the second tranche of a non-brokered private placement and issued 97,400 units at a price of \$0.58 per unit for gross proceeds of \$56,492 (the “**December 2018 Second Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.85 until December 18, 2020 (the “**December 18, 2020 Warrants**”).

In the aggregate, the Company issued and sold pursuant to the December 2018 First Tranche Private Placement and December 2018 Second Tranche Private Placement a total of 2,244,367 units for gross proceeds of \$1,301,733 to the Company.

Additional Developments

On March 22, 2018, PyroGenesis announced it had been ranked by the TSX-V as one of the strongest companies on the TSX-V and had been chosen to be included in the TSX Venture 50® group of companies as one of the top-10 cleantech companies on the TSX-V.

On April 27, 2018, PyroGenesis announced that Mr. Angelos Vlasopoulos, director and chair of the Audit Committee, had resigned. Mr. Alain Curleigh, chair of the board of directors of the Company (the “**Board**” or the “**Board of Directors**”), assumed interim responsibility as chair of the Audit Committee. On May 10, 2018, PyroGenesis announced the appointment of Mr. Andrew Abdalla, CPA, CA, to the Board as an independent director and chair of the Audit Committee.

On August 13, 2018, PyroGenesis announced that it had increased its ownership in HPQ Silicon Resources Inc. (“**HPQ**”) (TSX-V: HPQ) to 9.6% (12.03% on a fully diluted basis) by acquiring 16,250,000 units of HPQ in a private placement at a price of 0.12\$ per unit for a total investment price of \$1,950,000. Each unit consists of one common share of HPQ and one common share of HPQ purchase warrant. Each warrant entitles the Company to purchase one common share of HPQ at a price of \$0.17 for a period of 36 months following the issue date.

On October 16, 2018, PyroGenesis announced the completion of its cutting-edge additive manufacturing metal powder production facility. This state-of-the-art facility is strictly dedicated to the production of plasma atomized titanium alloy powders (Ti-6Al-4V), allowing the Company to primarily target the aerospace and biomedical industries. The facility houses a new plasma-based atomization unit and includes sufficient space for inventory storage and logistics operations, and has allowed the Company to reduce its production costs significantly. The facility is ISO 9001:2015 certified (quality management systems) and AS9100D certified (aviation, space, and defense).

Year Ended December 31, 2019

Expansion & Development of Product Offerings

On March 19, 2019, PyroGenesis unveiled its new NexGen plasma atomization system, which produces metal powder at over 25 kilograms/hour for the additive manufacturing industry, specifically the 3D printing industry.

Contracts and Milestones

Plasma Torch System

On January 7, 2019, PyroGenesis announced it had been awarded under a competitive bid process with RISE Energy Technology Center AB, a Swedish company, a contract for a 900 kilowatts plasma torch system valued at more than \$1,000,000 (the “**2019 RISE Agreement**”). On September 18, 2019, PyroGenesis announced that it had successfully completed the factory acceptance testing witnessed by RISE Energy Technology Center AB at PyroGenesis’ facility in Montréal. PyroGenesis received payments from RISE Energy Technology Center AB totaling €643,196 to design, build, test and transfer a 900 kW-gross high air plasma torch system that will be used by RISE Energy Technology Center AB for iron ore pelletization.

Partnership with Aubert & Duval for Titanium Powder

On January 8, 2019, PyroGenesis announced that it had signed a mutually exclusive partnership agreement with Aubert & Duval, a subsidiary of the ERAMET Group. The mutually exclusive agreement, which expires on December 31, 2025, provides that PyroGenesis will supply plasma atomized titanium powder for distribution by Aubert & Duval to the additive manufacturing market in Europe.

Agreement with Drosrite International

On October 9, 2019, PyroGenesis announced that Drosrite International LLC (“**Drosrite International**”), a US-based private company, had signed an agreement with Radian Oil & Gas Services Company, an oil and gas services company operating in the Middle East (the “**Dross Processing Service Agreement**”). The Dross Processing Service Agreement was structured as a “BOOT” agreement (build, own, operate and transfer) having a 20-year term and using the Company’s DROSRITE technology.

The Dross Processing Service Agreement provides that Drosrite International will manufacture and deliver to Radian Oil & Gas five DROSRITE TPY systems with an annual treatment capacity of approximately 5,000 tons per year each and two DROSRITE TPY systems with an annual treatment capacity of approximately 10,000 tons per year each, for a total annual treatment capacity of 30,000 to 40,000 tons per year of white and black aluminum dross, all of which will be installed at the aluminium smelting facility of Ma’aden Aluminum Company located at Ras Al-Khair, in Saudi Arabia. In addition, Drosrite International will oversee the installation of the systems at the Ras Al-Khair facility. Drosrite International will also supply spare parts over the 20-year duration of the Dross Processing Service Agreement and be entitled to receive an annual royalty. A consideration of approximately US\$15 million is payable to Drosrite International during the first year of the contract for the engineering, design, supply, installation, supervision and commissioning of the systems, of which approximately US\$5.5 million has been paid as of the date of this AIF following the satisfaction of certain milestones. Drosrite International is entitled to receive additional payments in the future for spare parts as well as annual royalty payments during the term of the Dross Processing Service Agreement. The Dross Processing Service Agreement includes customary termination rights, which include termination rights for a material breach of the agreement that is not remedied within a certain period, prolonged force majeure, insolvency events and failure to meet specification requirements.

In connection with the Dross Processing Service Agreement between Drosrite International and Radian Oil & Gas, an agreement dated August 29, 2019 was entered into between PyroGenesis and Drosrite International (the “**Drosrite International Exclusive Agreement**”) under which Drosrite International received the required rights from PyroGenesis to perform its obligations under its agreement with Radian Oil & Gas. Under the Drosrite International Exclusive Agreement, PyroGenesis will receive payments equal to the payments received by Drosrite International under its Dross Processing Service Agreement with Radian Oil & Gas. Based on the estimated payments that it will receive in the future subject to the terms of the agreement, PyroGenesis estimates that the agreement has a total value of over \$55 million. The net present value, using a 5% discount rate, of the subsequent annual payments is estimated at approximately \$35 million.

The sole director, officer and shareholder of Drosrite International is Alex Pascali, an employee of the Company and the son of P. Peter Pascali, Chief Executive Officer of the Company. See “Directors and Executive Officers - Conflicts of Interest”.

Drosrite International does not receive any management, administration or other fee from the Company. Drosrite International is, on an accounting basis, a subsidiary of the Company and not a client, as under applicable accounting standards the Company is considered to effectively control Drosrite International. The Company has to indemnify Drosrite International for any claims and liabilities incurred in connection with the Drosrite systems. The Company’s Drosrite technology was protected by patents until 2017 and new patent applications pertaining to the technology have been filed before 2017, which patent applications are pending.

Financings

May 2019 Private Placement

On May 15, 2019, the Company completed the first tranche of a non-brokered private placement and issued 2,996,500 units at a price of \$0.58 per unit, for total gross proceeds of \$1,737,970 (the “**May 2019 First Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.85 until May 15, 2021 (the “**May 15, 2021 Warrants**”).

On May 28, 2019, the Company completed the second tranche of a non-brokered private placement and issued 2,024,500 units at a price of \$0.58 per unit, for total gross proceeds of \$1,174,210 (the “**May 2019 Second Tranche Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one Common Share at a price of \$0.85 until May 28, 2021 (the “**May 28, 2021 Warrants**”).

In the aggregate, the Company issued and sold pursuant to the May 2019 First Tranche Private Placement and May 2019 Second Tranche Private Placement a total of 5,021,000 units for gross proceeds of \$2,912,180 to the Company.

June 2019 Private Placement

On June 19, 2019, the Company completed a non-brokered private placement and issued 1,000,000 units at a price of \$0.58 per unit, for total gross proceeds of \$580,000 (the “**June 2019 Private Placement**”). Each unit consists of one Common Share and one Common Share purchase warrant of the Company. Each warrant entitles the holder to acquire one Common Share at a price of \$0.85 until June 19, 2021 (the “**June 19, 2021 Warrants**”). In connection with the private placement, the Company paid finder’s fees in the amount of \$23,200.

October 2019 Private Placement

On October 23, 2019, the Company completed a non-brokered private placement and issued 300,000 units at a price of \$0.56 per unit, for total gross proceeds of \$168,000 (the “**October 2019 Private Placement**”). Each unit consists of one Common Share and three-quarters (0.75) of a Common Share purchase warrant of the Company. Each warrant entitles the holder to acquire one Common Share at a price of \$0.75 until January 25, 2021 (the “**January 25, 2021 Warrants**”).

Scientific Research and Experimental Development Loans

On December 23, 2019, the Company entered into a Scientific Research and Experimental Development (“**SR&ED**”) tax credit loan of \$247,500 bearing interest at a rate of 16.68% and fees totaling \$22,375 paid at the issuance of the loan (the “**2019 SR&ED Loan**”). The 2019 SR&ED Loan is secured by the Company’s 2019 investment tax credit receivable and is repayable on December 23, 2020. As at December 31, 2019, the amount available under the 2019 SR&ED Loan is of \$185,331.

On March 25, 2019, the Company entered into a SR&ED tax credit loan of \$214,000 bearing interest at a rate of 16.68% and fees totaling \$19,260 paid at the issuance of the loan (the “**2018 SR&ED Loan**”). As at December 31, 2019, the amount available under the 2018 SR&ED Loan is of \$199,736. The 2017 SR&ED Loan was repaid on February 6, 2019, 2018 SR&ED Loan was repaid on May 21, 2020 and 2019 SR&ED Loan was repaid on July 28, 2020.

The SR&ED tax credit loans are financing, in the form of loans with respect to the Company’s SR&RD tax credits (“**SR&ED Tax Credits**”). The principal of the loans is subject to holdback to be disbursed upon reception of the Company’s notice of assessment. The principal of each loan is subject to repayment at the earlier of (a) receipt of the SR&ED Tax Credits refund or (b) the maturity date of the respective loan.

Pursuant to each of the 2019 SR&ED Loan and the 2018 SR&ED Loan, the Company granted the lender a security interest and movable hypothec on all of its assets excluding its intellectual property but including a first rank claim on the refundable portion of its SR&ED Tax Credits for each of the fiscal years ended December 31, 2018, of \$274,921 and 2019 of \$434,474.

Additional Developments

On September 29, 2019, PyroGenesis announced that Mr. Alan Curleigh, Chair of the Board, and Dr. Christopher Twigge-Molecey, director and a member of the Audit Committee, had resigned. On the same date, the Company announced that Dr. Virendra Jha was appointed to the Board as an independent director and that Mr. Michael Blank was appointed to the Board as a director, and Acting Chief Financial Officer of the Company. Mr. Peter Pascali, the Chief Executive Officer of the Company, assumed the role of Chair of the Board.

Recent Developments

The global pandemic due to the novel coronavirus (COVID-19) is a situation that is constantly evolving, and the measures put in place are having multiple impacts on provincial, national and global economies. The overall effect of these events on the Company and its operations is too uncertain to be estimated at this time. The impacts will be accounted for when they are known and may be assessed. See “Risk Factors - Public Health Crises”.

Expansion & Development of Product Offerings

On April 30, 2020, PyroGenesis’ announced it had successfully completed the first phase of a multi-phase modeling contract aimed at evaluating the performance of PyroGenesis’ proprietary torches in an existing iron ore industrial furnace with the goal of replacing all existing fossil fuel burners with PyroGenesis’ plasma torches. Furthermore, on September 1, 2020, the Company announced the completion and acceptance of its modeling contract, which confirmed, amongst other things, that replacing fossil fuel burners with PyroGenesis’ proprietary plasma torches addresses the greenhouse gas reduction strategy/policy. The modeling contract successfully demonstrated the benefits of replacing fossil fuel burners with PyroGenesis’ proprietary plasma torches. More specifically, two of the most important benefits demonstrated were (i) that replacing fossil fuel burners with plasma torches was a simple replacement, plug and play process, and (ii) that PyroGenesis’ proprietary plasma torches significantly reduces greenhouse gas emissions which, as a result, could play a significant role in the greenhouse gas reduction strategy/policy of its client.

On June 4, 2020, the Company announced that its quality management system for the production of metal powders for the additive manufacturing industry had been approved by one of the premier non-European aerospace companies, which may lead to being qualified as a supplier to such company. PyroGenesis' game-changing NexGen™ Plasma Atomization System produces metal powder at over 25 kilograms per hour, shattering any published plasma-atomized production rates for titanium known to management.

On June 11, 2020, the Company announced it had signed a second multi-phase torch modeling contract with a customer, aimed at evaluating the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing the customer's existing fossil fuel burners with PyroGenesis' plasma torches. The modeling contract is geared to demonstrate that replacing fossil fuel burners with PyroGenesis' proprietary plasma torches will not have any detrimental effects on the client's process of its furnace. The switch to plasma torches will also result in the additional benefit of significantly reducing the emission of sulfur dioxide (SO₂).

On September 22, 2020, the Company announced a strategy to become a global on-site dross processor delivering zero-landfill/reduced carbon, and further underscored how DROSRITE reduces greenhouse gas (GHG) emissions.

Contracts and Milestones

On March 4, 2020, the Company announced it had completed all torch tests successfully and had received final payment from RISE Energy Technology Center AB pursuant to the 2019 RISE Agreement.

On March 24, 2020, the Company announced it had received the first payment of approximately \$1.44 million under the Drosrite International Exclusive Agreement.

On April 1, 2020 and April 21, 2020, the Company received US\$400,000 and US\$325,000, respectively, under an agreement with a US-based tunneling company entered into earlier in 2020, under which the Company has demonstrated the feasibility of plasma torch underground tunneling.

On May 19, 2020, the Company announced it had entered into the final stages of negotiation for the supply of iron ore pelletizing equipment to one of the largest international producers of iron ore pellets. Discussions with the customer are ongoing as of the date of this AIF.

On June 11, 2020, the Company announced it had signed a second multi-phase torch modeling contract, aimed at evaluating the performance of PyroGenesis' proprietary torches in an existing iron ore industrial furnace with the goal of replacing existing fossil fuel burners with PyroGenesis' plasma torches.

On July 2, 2020, the Company announced that it had entered into active discussions with a new potential customer, who is not only a significant player in the iron ore pelletization industry but is also a major player in the steel industry, for the sale of equipment. The Company believes there is a high probability that the customer may bypass the standard modeling phase. Discussions with the customer are ongoing as of the date of this AIF. Although there is no certainty that the discussions and relationships with the clients referred to in the May 19, 2020, June 11, 2020 and July 2, 2020 announcements will result in significant contracts for the Company, the Company estimates that there is an opportunity to enter into contracts with such clients for the sale of plasma torches, and that they collectively could have a need for more than 1,000 torches.

On August 18, 2020, PyroGenesis' announced it had signed a development agreement with HPQ Nano Silicon Powders Inc., a wholly owned subsidiary of HPQ, covering the PUREVAP Nano Silicon Reactor development program and the future commercialization of nano silicon materials made with this new, proprietary and low cost manufacturing process. The process, which is under development, is designed to transform silicon into spherical silicon nanopowders and nanowires for use in lithium-ion batteries. The agreement has an estimated value of approximately \$3 million, including a payment of approximately \$2.4 million to PyroGenesis for the sale of the intellectual property rights to the new system and a royalty of 10% on the future sales of nano silicon powders and wires by HPQ Nano Silicon Powders Inc. The royalty stream can at any time be converted by PyroGenesis into a 50% ownership of HPQ Nano Silicon Powders Inc. PyroGenesis has retained a royalty-free, exclusive, irrevocable, worldwide license to use the new system for all purposes other than the manufacturing of nano silicon powders and wires.

On September 4, 2020, PyroGenesis' announced that it had signed a contract to provide waste destruction systems for a total consideration of \$11.5 million. The contract is for two systems, one for each ship in the US Navy's current two-ship build. The contract includes a first payment of approximately \$4.8 million and should be completed within 18 months.

Financings

2020 Convertible Loan

On March 18, 2020, the Company completed a \$903,000 non-brokered secured convertible loan with the Pascali Trust (the "**2020 Convertible Loan**"). The 2020 Convertible Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis, matures on September 17, 2021, and is convertible into common shares of the Company at a conversion price of \$0.28 per common share. The 2020 Convertible Loan was secured by a hypothec on the universality of all of the present and after acquired moveable property and assets of the Company. The Loan was subsequently converted in common shares in accordance with its terms on September 30, 2020, resulting in 3,225,000 common shares being issued.

As the 2020 Convertible Loan was provided by the Pascali Trust, of which P. Peter Pascali, the Chief Executive Officer of the Company, is a trustee, officer and beneficiary, the 2020 Convertible Loan constituted a "related party transaction" as defined in MI 61-101. The related party transaction was exempt from the formal valuation and minority approval requirements of MI 61-101, as the transaction had a value of less than 25% of the Company's market capitalization (calculated in accordance with MI 61-101). The transaction was unanimously approved by the board of directors of the Company. See "Directors and Executive Officers - Conflicts of Interest".

Bought Deal Financing

On October 15, 2020, the Company announced that it had entered into an agreement with Mackie Research Capital Corporation as underwriter pursuant to which the underwriter has agreed to purchase, on a bought-deal basis, 1,600,000 units of the Company for gross proceeds to the Company of \$5,760,000 at a price of \$3.60 per unit. Each unit is comprised of one Common Share and one-half of one Common Share purchase warrant. Each whole warrant will entitle the holder thereof to purchase one additional Common Share at an exercise price of \$4.50 at any time up to 24 months from the closing of the offering. Provided that if, at any time prior to the expiry date of the warrants, the volume weighted average trading price of the Common Shares on the TSXV, or other principal exchange on which the Common Shares are listed, is greater than \$6.75 for 20 consecutive trading days, the Company may, within 15 days of the occurrence of such event, deliver a notice to the holders of warrants accelerating the expiry date of the warrants to the date that is 30 days following the date of such notice. Any unexercised warrants shall automatically expire at the end of the accelerated exercise period. On October 16, 2020, the Company announced that the agreement with the underwriter had been amended to increase the size of the offering announced on October 15, 2020 to 2,917,000 for gross proceeds of \$10,501,200 and that the underwriter had exercise its over-allotment option in full resulting in 437,550 additional units being issuable under the offering, for total gross proceeds of \$12,076,380 (the "**2020 Public Offering**").

On October 20, 2020, the Company filed its preliminary prospectus in connection with the offering and entered into an underwriting agreement with Mackie Research Capital Corporation (the "**Underwriting Agreement**"). The closing of the offering is subject to the Company receiving all necessary regulatory approvals and to the terms of the underwriting agreement.

Additional Developments

On July 28, 2020, the Company requested that the Pascali Trust convert the Convertible Loan on or before September 30, 2020. The Pascali Trust agreed to such request subject to the prepayment of 5 years rent, plus estimated yearly municipal taxes, as soon as possible but no later than December 31, 2020, for a total prepayment of \$1,438,530. As a result of the conversion of the Convertible Loan, the Company expects to save approximately \$110,000 of interest payments that would otherwise have been required to be paid under the Convertible Loan. The agreement with the Pascali Trust in respect of the prepayment of rent constituted a "related party transaction" as defined in MI 61-101. The related party transaction was exempt from the formal valuation and minority approval requirements of MI 61-101, as the transaction had a value of less than 25% of the Company's market capitalization (calculated in accordance with MI 61-101). The transaction was unanimously approved by the board of directors of the Company. See "Directors and Executive Officers - Conflicts of Interest".

On September 1, 2020, PyroGenesis announced that it had acquired 4,000,000 units of HPQ in a private placement at a price of \$0.60 per unit for a total investment \$2.4 million. Each unit consists of one common share of HPQ and one common share of HPQ purchase warrant. Each warrant entitles the Company to purchase one common share of HPQ at a price of \$0.61 for a period of 36 months following the issue date.

On September 22, 2020, at the Company's annual general meeting, the five members of the Board were re-elected and two additional nominees, Ms. Rodayna Kafal and Mr. Rodney Beveridge, were also elected to the Board. On the same date, PyroGenesis also unveiled its strategy to become a global on-site dross processor, delivering zero-landfill and reduced carbon solution.

BUSINESS OF THE COMPANY

General

PyroGenesis Canada Inc., a high-tech company, is a world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries.

With a team of experienced engineers, scientists and technicians working out of its headquarters and its 3,800 m² manufacturing facility, each located in Montréal, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization.

The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified.

Products and Services

The Company's highly specialized products and services are commercialized to customers operating in a wide range of industries, including the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. The advanced plasma products and services of PyroGenesis include:

- (i) plasma torches systems for the pelletizing of iron ore, which are predominantly offered to customers in the mining and metallurgic and environmental industry;
- (ii) waste destruction and waste-to-energy systems, which are predominantly offered to customers in the environmental and defense industries;
- (iii) systems for the recovery of aluminum and other metal from dross (a residue generated by primary and secondary metal producers), which are predominantly offered to customers in the mining and metallurgical industries;
- (iv) production of high purity spherical metal powders, which are predominantly offered to customers in the additive manufacturing industries, including for the 3D printing industry;

- (v) development of processes for the production of high purity silicon metals, nano powders and nanowires, which are proposed to be predominantly offered to customers in the mining and metallurgical industries, including the battery industry;
- (vi) installation, commissioning and start-up services.
- (vii) research and development, internal and external funded projects by customers.

Plasma Torches for Iron Ore Pelletization

PyroGenesis manufactures and commercializes proprietary plasma torches that are used to replace fossil fuel burners in the iron ore induration (pelletization) process. The plasma torches of PyroGenesis can heat gas up to 40,000°F, as hot as the surface of the sun.

Pelletization is the process in which iron ore is concentrated before shipment, which allows to significantly reduce the cost of transportation. In conventional technology, the process heat is provided by fuel oil or natural gas burners. The combustion, in the burners, of fossil fuels results in the production of greenhouse gases, mainly CO₂. Plasma torches, by the fact that they can convert renewable electricity to heat, offer an environmentally attractive alternative to fossil fuel burners. The plasma torches systems are predominantly offered to customers in the environmental industry. The objective of the Company is to be a significant player in the world-wide movement to reduce the carbon footprint in manufacturing.

The solutions of the Company offer a patented process to replace dirty diesel burners with clean burning plasma torches, thereby reducing GHG emissions, for the iron ore pelletization industry. The Company believes its solutions are economically superior to other alternatives with greater environment benefits. By using the Company's solutions, manufacturing companies can reduce GHG emissions without being required to shut down their facility for installation and without any meaningful changes to their workflow.

Waste Destruction and Waste-to-Energy Systems

PyroGenesis manufactures and commercializes a broad range of waste destruction and waste-to-energy systems to customers in the environmental and defense industries. At the core of these systems are the Company's plasma torches and plasma gasification reactors. The Company believes it offers the world's most complete, easy-to-operate, high temperature, plasma-based treatment systems. The waste destruction and waste-to-energy systems offered by the Company include the following:

- (i) plasma arc waste destruction systems ("PAWDS"), for waste destruction onboard ships;
- (ii) steam plasma arc refrigerant cracking ("SPARC") systems, for the destruction of certain refrigerants, including chlorofluorocarbons ("CFCs"), hydrofluorocarbons ("HFCs") and hydrochlorofluorocarbons ("HCFCs");
- (iii) plasma arc chemical warfare agent destruction systems ("PACWADS"), which are mobile platforms for the onsite destruction of chemical warfare agents;
- (iv) plasma resource recovery systems ("PRRS"), for land-based waste destruction and waste-to-energy applications;
- (v) plasma torches for waste gasification systems;
- (vi) plasma torches systems for the pelletizing of iron ore; and
- (vii) plasma arc gasification and vitrification ("PAGV").

Plasma Arc Waste Destruction System (PAWDS)

Originally developed by the Company in the late 1990s for the gasification of waste onboard US Navy aircraft carriers, PAWDS was the first plasma destruction system for marine use on the US Navy aircraft carriers. PAWDS uses plasma eductor for the fast gasification of milled waste. Navy waste is comparable to municipal solid waste, comprised of paper, cardboard, plastics, wood and rags. Since launching PAWDS in 1999, the Company received orders for four PAWDS systems for the US Navy, two of which have been delivered and installed on the Gerald R. Ford (CVN-78) and the John F. Kennedy (CVN-79) aircraft carriers, and two of which have recently been ordered. Developed in collaboration with the US Navy, at 1/5th the size and half the weight of a typical marine incinerator, the patented PAWDS has a capacity of 5 tons/day. PAWDS is a highly compact, inherently safe and efficient alternative to the shipboard waste incinerators. Due to its unique features of compactness and safety, the system has been fitted into the two forthcoming US Navy Ford-class carriers.

Steam Plasma Arc Refrigerant Cracking (SPARC)

The SPARC process is the Company's patented technology for the destruction of old refrigerants such as CFCs, HFC and HCFCs. The system is pre-assembled on skids and has demonstrated high destruction and removal efficiency of more than six "nines", or 99.9999%. SPARC uses a water vapour (steam) torch to quickly and efficiently destroy the refrigerants. The system is designed to handle wastes that have very high chlorine and fluorine content. An integrated caustic scrubber ensures that hydrochloric acid (HCl) and hydrofluoric acid (HF) emissions are well below applicable limits. The system is designed for a destruction capacity of 50 kilograms per hour based on R12, a refrigerant.

Plasma Arc Chemical Warfare Agent Destruction System (PACWADS)

PACWADS was developed by the Company for the US and UK special forces to destroy chemical warfare agents on site. The system is installed on two trailers and can be deployed quickly in areas where chemical warfare agents must be immediately destroyed. Performance tests on simulants have demonstrated destruction and removal efficiency of more than seven "nines", or 99.99999%. The system is designed to destroy the equivalent of two barrels (or approximately 318 litres) per day of sarin, a deadly nerve gas, and is also suitable for the destruction of a variety of other chemical warfare agents.

Plasma Resource Recovery System (PRRS)

The PRRS is used to convert waste to syngas (synthesis gas) and inert slag (a glass-like by-product left over after a desired metal has been separated (i.e., smelted) from its raw ore). The PRRS combines a direct current graphite arc furnace, where the inorganic portion of waste is vitrified, and the organic portion is gasified. The produced syngas is then cleaned up in a plasma-fired eductor, similar to the one used in the PAWDS technology, where tars are converted into clean syngas (i.e. carbon monoxide (CO) and hydrogen (H₂)). The resulting syngas is further cleaned of contaminants (such as HCl, sulfur compounds, particulates and volatile heavy metals) using filters and scrubbers. The resulting syngas can be used as fuel in a gas engine. The inert slag can be used as construction material.

Plasma Torches for Waste Gasification Systems

PyroGenesis' plasma torch systems are used in waste-to-energy applications, advanced material production, metallurgical processing, thermal treatment and nanotechnology manufacturing. As a cleantech alternative to fossil fuel burning, PyroGenesis' electricity-driven plasma torch systems are easy to operate and offer a high level of safety, reliability and service life of wear components.

Plasma Arc Gasification and Vitrification (PAGV)

As the forerunner for the Company's game-changing PRRS waste-to-energy technology, the Company's PAGV systems convert incinerator ash and other hazardous inorganic material to an inert, non-toxic slag. Slag is a glass-like by-product left over after a desired metal has been separated (i.e., smelted) from its raw ore). Using the Company's unique furnace design, the proprietary arc plasma technology uses graphite electrodes and an electrical current to create arcs between the electrodes and the melt, generating an extreme temperature environment above 1600°C, and producing the slag. This slag has been demonstrated to be effective in a wide range of applications, namely as a building material for construction (aggregate asphalt and flooring, partial replacement for cement in concrete). The Company's PAGV systems eliminate future legacy issues for operators of incinerators (i.e. municipalities, along with managers of incineration operations for industrial, hazardous, biomedical, and animal (slaughterhouse) waste) with a simple melting process for their grate and fly ash. Asbestos waste from decommissioning operations is also an excellent use for this technology. The Company's PAGV system is available in capacities ranging from 1 to 250 metric tons per day of input material per module.

Systems for the Recovery of Aluminum and Other Metal from Dross

The Company produces systems for the recovery of aluminum and other metal from dross (a residue generated by primary and secondary metal producers, as well as metal parts casters) through its DROSRITE process, which systems are predominantly offered to customers in the mining and metallurgical industries.

DROSRITE

DROSRITE is a salt-free, highly cost-effective, sustainable process for maximizing metal recovery from dross without any hazardous by-products, targeting mainly the aluminum and zinc industries. Treating dross at its source of generation in a controlled-atmosphere, tilting rotary furnace, DROSRITE eliminates costly loss of metal, while reducing a smelter's carbon footprint and energy consumption, providing customers with a significant return on investment.

Production of High Purity Spherical Metal Powders

The Company produces high purity spherical metal powders through its plasma atomization process, which are predominantly offered to customers in the additive manufacturing industries, including for the 3D printing industry.

Development of Processes for the Production of High Purity Silicon Metals, Nano Powders and Nanowires

The Company is developing processes for the production of high purity silicon metals through its PUREVAP process, and nano powders and nanowires through its PUREVAP Nano Silicon Reactor process, all of which are expected to be predominantly offered to customers in the mining and metallurgical industries, including the battery industry.

PUREVAP

PUREVAP is a patent pending one-step proprietary process that is being developed by the Company that uses a plasma arc within a vacuum furnace to produce high purity metallurgical grade silicon and solar grade silicon from quartz. PUREVAP reduces the quartz with carbon using a plasma submerged arc. Under vacuum, and at very low operating pressure, the silicon is refined in a one-step process removing all impurities and transforming it to its purest form, resulting in a high purity silicon. The Company expects that the silicon grades produced by PUREVAP will, when commercialized, be used for different applications, including solar energy.

In 2016, the Company and HPQ entered into a contract pursuant to which the Company would develop the PUREVAP process and HPQ would acquire the intellectual property rights to the PUREVAP process, for a total consideration of \$8,070,000 payable to the Company. PyroGenesis retained a royalty-free, exclusive, irrevocable, worldwide license to use the process for purposes other than the production of silicon material from quartz. See "General Development of the Business - Year Ended December 31, 2017 - Contracts and Milestones".

PUREVAP Nano Silicon Reactor (NSiR)

The PUREVAP Nano Silicon Reactor (NSiR) is designed to transform silicon into spherical silicon nanopowders and nanowires for use in lithium-ion batteries. The new proprietary process is designed to be highly scalable and will eventually allow the production of silicon nanopowders in large quantities at a competitive cost with other materials used in the lithium-ion space. The PUREVAP Nano Silicon Reactor can use different purities of silicon as feedstock.

A subsidiary of HPQ, HPQ Nano Silicon Powders Inc., acquired the intellectual property rights to the PUREVAP Nano Silicon Reactor system in 2020 and PyroGenesis is entitled to a royalty of 10% on the future sales of nano silicon powders and wires by HPQ Nano Silicon Powders Inc. The royalty stream can at any time be converted by PyroGenesis into a 50% ownership of HPQ Nano Silicon Powders Inc. PyroGenesis has retained a royalty-free, exclusive, irrevocable, worldwide license to use the new system for all purposes other than the manufacturing of nano silicon powders and wires.

Plasma Atomization

PyroGenesis' plasma atomization process allows PyroGenesis to produce and offer to the additive manufacturing market high purity spherical metal powders, including titanium alloy powders. Many existing reactive metals cannot be transformed into high purity spherical powders; especially not in the finer size cuts such as $-45\mu\text{m}/+15\mu\text{m}$. With its extensive plasma expertise, PyroGenesis is able to convert many metals and alloys into high purity spherical powders as its plasma torches use argon gas and the reactor is backfilled with argon. This ensures the powders produced are not exposed to any oxygen during the production process and as a result, PyroGenesis is able to produce powders with extremely low interstitial (ELI) such as titanium alloy powders (Ti 6Al-4V ELI). PyroGenesis' standard offering includes commercially pure titanium (CPTi), grades 1, 2, and 3, and Ti 6Al-4V, grades 5 and 23.

Installation & Servicing

As an option in its contracts, PyroGenesis generally offers to its client installation, commissioning and start-up services. These services are typically quoted as an option in equipment sales contracts. Separately, PyroGenesis offers after sales services to its customers. This includes the sale of spare parts, consumable parts and onsite or remote service on installed systems.

Research and Development, Internal and External Funded Projects by Customers

The Company relies on a combination of internally funded and externally funded R&D to grow its intellectual property portfolio. For externally funded R&D, the company typically retains intellectual property rights for the developed technology, while providing an exclusivity to the client in the sector of application and the geographic area of interest to the client.

Markets and Opportunities

Waste Destruction and Waste-to-Energy Systems

Marine Waste Treatment Market (PAWDS)

Historically, waste onboard ships were disposed of overboard. In 1973, the *International Convention for the Prevention of Pollution from Ships* was adopted by the International Maritime Organization. This convention is intended to prevent the pollution of the marine environment by discharge of harmful waste and effluents from ships. The storage of waste on a ship takes up valuable space and the eventual disposal in port is costly. Although most modern ships have onboard marine incinerators to treat their waste, these incinerators occupy a lot of space, typically covering three to four decks. PAWDS provides a solution to this problem, as the entire system can fit in the headroom of a single deck and is capable of being started up or shut down in a matter of minutes.

The main target market for PAWDS is the US Navy, and more specifically aircraft carriers. The US Navy typically builds a new aircraft carrier every 5 to 7 years. On September 14, 2019, the US government announced its intent to buy one or two new aircraft carriers.¹ The cost of one PAWDS system for the US Navy is approximately US\$5 to 6 million.

According to the Naval Vessel Register, the U.S. Navy fleet comprises approximately 497 ships of which approximately 263 are active in commission. Of these active ships, 11 are aircraft carriers, 12 are loading docks and 2 are amphibious command ships. The Company believes these group of ships would be the most likely candidates for a retrofitting of their legacy waste management systems with a PAWDS.

¹ Inside Defense: "Spending bill cuts \$329 million from Navy's 'accelerated acquisitions'" (September 14, 2018).

Waste-to-Energy Market (PRRS)

Waste management is a large and growing market on a global scale. The methods of managing waste are shifting from disposal towards recycling and resource recovery. The Company believes that society as a whole is seeking more sustainable waste management practices that have lower environmental impacts than traditional solutions such as landfill or incineration.

In the short to medium term, the Company is targeting markets that are readily accessible for plasma waste-to-energy conversion, which include industrial, hazardous, non-hazardous remote communities, military bases and clinical wastes. In the medium to long term, the Company also intends to target the municipal solid waste market with larger system capacities of up to 100 tons/day.

The ability for the PRRS to be a viable and economic alternative at relatively small capacities compared to conventional incinerators, makes it ideally suited for the decentralized treatment of industrial, hazardous and clinical waste. The global waste-to-energy market has experienced significant growth, and is poised to grow by US\$12.26 billion from 2020 to 2024, progressing at a compound annual growth rate of over 5% during such period.²

Plasma Torch Market

Plasma torches are used for different applications: for waste treatment systems (waste gasification and vitrification), in PyroGenesis' own PAWDS and PRRS systems, in thermal spray (plasma spray) in advanced materials production and in metallurgical applications.

Plasma torches can replace conventional fuel or gas burners in industrial furnaces. For example, the Company sells torches used in a patented pelletizing apparatus to customers which allows them to perform the induration of iron ore concentrate pellets in a tunnel furnace heated by plasma torches. Through this process, the generation of CO₂ by the conventional iron ore pelletizing processes is reduced by using electricity powered plasma torches instead of burning natural gas, heavy oil or pulverized coal in burners, thereby reducing considerably industrial pollution of the atmosphere.

Based on their knowledge of the industry, members of management of the Company estimate that a typical pellet plant producing 10 million metric tonnes of pellets per year emits approximately one million metric tonnes of CO₂. The total world production of such iron pellets is approximately 400 million metric tonnes per year about 20% of the total iron ore production³. Pellet production thermal energy consumption ranges between 600 and 1,000 megajoules/tonne (0.167 to 0.278 MWh/t)⁴. Assuming all of this energy was replaced by 1 megawatt plasma torches, the Company estimates the total number of plasma torches required to satisfy worldwide demand would be in the order of 10,000 units, which represents a potential torch market in excess of \$10 billion.

Systems for the Recovery of Aluminum and Other Metal from Dross

The total yearly world production of dross has been estimated at 3 million tonnes per year, slightly less than 5% of the 63 million tonnes of primary aluminum produced annually, which contains up to 80% valuable aluminum. The recent growth rate of primary aluminum has been relatively slow. Aluminum production between 2017 to 2019 has remained relatively flat. From 2006 to 2016, growth rate was a little over 1%.⁵

² <https://www.businesswire.com/news/home/20200305005945/en/Global-Waste-Energy-Market-2020-2024-Evolving-Opportunities>

³ M. Huerta, J. Bolen, M. Okrutny, I. Cameron and K. O'Leary, "Guidelines for Selecting Pellet Plant Technology", Iron Ore Conference 2015 Proceedings (2015).

⁴ M. Huerta, J. Bolen, M. Okrutny, I. Cameron and K. O'Leary, "Guidelines for Selecting Pellet Plant Technology", Iron Ore Conference 2015 Proceedings (2015).

⁵ AlCircle: "Sector Focus Report on Aluminium Dross Processing: A Global Review", (2017)

Based on these figures, the Company estimates the total market for DROSRITE at 600 units of a capacity of 5,000 tonnes per year each (representing a total opportunity of approximately \$1 billion based on a selling price of \$1.75 million (NPV) per unit), with a potential of an additional six new units per year. It is important to note that more than half (approximately 56%) of the aluminum today is produced in China, a market that is difficult to enter, due to several factors, namely the lack of intellectual property protection, closed market conditions and the general political environment.

Dross is 60% metal and 40% residue. More than half of the dross (i.e. approximately 1.6 million tonnes) is not adequately recycled and are either collected by scavengers or landfilled. However, most of the primary aluminum dross is being treated by specialized firms such as PyroGenesis. Traditional treatment techniques contaminate the residues with salt. DROSRITE allows the recovery of the metal in dross and because the DROSRITE process does not contaminate the 40% residues with salt, it presents a unique additional value-added opportunity. By using the DROSRITE technology, the residues have the capacity to be converted into valuable chemical and metallurgical products, including ammonium sulphate and aluminum sulphate.

Figure 1- TRADITIONAL PROCESS



Figure 2 - PYROGENESIS ' DROSRITE PROCESS



PyroGenesis has recently refocused its marketing strategy for DROSRITE on tolling. In a tolling arrangement, PyroGenesis would build, own and operate the DROSRITE system and associated equipment for the aluminum smelter on the smelter plant location. Tolling provides the advantage of recurring revenues to PyroGenesis. Tolling revenues can vary widely by sector and geographic location. Based on discussions with potential customers, the Company estimates that usual fees for the treatment of dross vary between approximately US\$250 and US\$450 per tonne of dross treated.⁶

By allowing the combination of treating dross and creating valuable residues, the DROSRITE technology presents the Company the opportunity to create one of the first, if not the first, global onsite dross processor delivering a zero-landfill/reduced carbon solution. To the Company's knowledge, no other companies offer the complete solution that can be offered by the Company with its DROSRITE technology. With its DROSRITE technology, the Company has the potential to become the environmentally friendly solution to a long existing problem.

⁶ World Aluminium: "Primary Aluminium Production" (August 2020); AlCircle: "Sector Focus Report on Aluminium Dross Processing: A Global Review", (2017).

Production of High Purity Silicon Metals, Nano Powders and Nanowires

Solar Industry

Solar grade silicon metal (SOG Si) is the key material needed to meet the growing demand for solar energy as each new gigawatt of capacity requires 5,000 tonnes of solar grade silicon metal. Canadian Solar estimates that solar energy will grow from ~2% of global electricity generation today to >10% by 2030.⁷ It is expected that at that time, global demand for solar grade silicon metal will reach an annual demand of 540,000 tonnes, compared to the current supply capacity of 350,000 tonnes per annum. The current market price for solar grade silicon metal is between US\$14 and US\$17 per kilogram.

Battery Industry

Research indicates that replacing graphite with nano silicon powders could allow the manufacturing of high-performance lithium-ion batteries with the capability of delivering an almost tenfold (10x) increase in anode capacity, inducing a 20-40% gain in the energy density of the next generation of lithium-ion batteries.⁸ The lithium-ion battery market size is estimated to grow from US\$44.2 billion in 2020 to US\$94.4 billion by 2025, equivalent to a compound annual growth rate of 16.4%.⁹ Manufacturing of silicon nano powders is not yet commercially feasible with selling prices of US\$30,000/kg.¹⁰

Production of High Purity Spherical Metal Powders

Plasma atomized powders offer the best quality on the additive manufacturing market but are limited in their adoption by their high price, compared to lower-quality gas atomized powders. PyroGenesis' ability with its NexGen technology to produce high-quality powder by plasma atomization at rates comparable to gas atomization, while maximizing the yield of powder in the preferred size range for additive manufacturing, gives the Company a competitive advantage on the market.

The mutually exclusive distribution agreement with Aubert & Duval is meant to support PyroGenesis' sales on the European market. PyroGenesis is continuing its own sales efforts on the North American and Asian markets separately from this agreement and is talking to several high-level players in the aeronautics field. To the Company's knowledge, there are three main players supplying powders via plasma atomization: PyroGenesis, AP&C which is part of GE, and Tekna Advanced Materials. The demand for this product is so significant that all three players are ramping up their production capacity to meet the growing market's needs. PyroGenesis draws on its plasma torch and powder production expertise to design and develop its own torches and equipment.

According to the Wohler's Report (2018) and 3D Printing Metals Market¹¹, the metals market in 2017 was estimated at US\$183 million (all metals). In 2015 the metals market was estimated at US\$88.37 million. In 2017, the metal materials market grew at an estimated rate of 44.6%. Wohler's expects that the market will continue to grow at a double-digit rate, estimated at \$3.2 billion by 2024, with future opportunities for technology expansion in excess of \$774 million. PyroGenesis is focusing its sales and marketing efforts on titanium and its alloys. Titanium is a highly sought for material in the aeronautics industry. It is also a high quality and high margin material.

Growth Strategy

Levering off its expertise in plasma, the Company introduces plasma based technologies to, preferably, niche market, often times, by partnering with much larger companies who not only bring the credibility sought when introducing new technology, but also invaluable insight into the market and potential customers, while at the same time, providing valuable market feedback. The Company strategy is to leverage off these strategic partnerships and generate aggressive growth strategies geared to (i) broadening the customer base, as well as (ii) increasing sales to existing clients. The Company primarily targets offerings that reduce greenhouse gases as opposed to those who do not. Each of the Company's existing product lines has been vetted or adopted by multi-billion-dollar industry leaders, which supports the Company in the execution of its growth strategy. As part of its growth strategy, the Company will also selectively consider opportunities to broaden and enhance its product and market scope through acquisitions.

⁷ Deutsche Bank: "Polysilicon Market: Global Industry Analysis 2013-2017 and Opportunity Assessment 2018-2028".

⁸ Chemical Engineering News: "In the Battery Materials World, the Anode's Time Has Come", Volume 97, Issue 14 (2019).

⁹ MarketsandMarkets: "Lithium-Ion Battery Market – Global Forecast to 2025".

¹⁰ HPQ-Silicon Resources Inc.: Innovative Silicon Solutions, 2020.

¹¹ Markets and Markets: "3D Printing Metals Market by form (Powder, Filament), Technology (PBF, DED, Binder Jetting, Metal Extrusion), Metal Type (Titanium, Nickel, Stainless Steel, Aluminum), End-Use Industry (A&D, Automotive, Medical & Dental), Region – Global Forecast to 2024."

Employees

The Company has approximately 70 full-time staff, of which approximately 47 are technical employees (engineers, technicians, tradespeople and operators). Of the Company's 28 engineering staff, half have advanced degrees (Master or Ph.D.). Of the Company's 19 manufacturing staff, half have advanced technical degrees (technical college level).

The Company prides itself in hiring talented individuals with a complementary mix of professional experience and industry knowledge. The Company continues to develop a working environment wherein everyone is valued for their contribution to the team and rewarded for their accomplishments. The Company believes that it has one of the highest concentrations of plasma expertise under one roof in the world. As of December 31, 2019, all of the Company's employees were non-unionized. Except for Mr. Radin, the Company's management team and senior officers are located in Canada.

Facilities

The headquarters of the Company are located at 1744 William Street, Suite 200, Montréal, Québec, Canada, H3J 1R4 in leased premises, which are leased from the Pascali Trust, a related party of which P. Peter Pascali, the Chief Executive Officer of the Company, is a trustee, officer and beneficiary. See "Directors and Executive Officers - Conflicts of Interest".

The Company's 3,800 m² leased manufacturing facility is located at 5655 Philippe-Turcot, Montréal, Québec, Canada, H4C 3K8. This facility is used to manufacture systems, produce powders and host various pilot systems for demonstration and testing, as well as to provide spare parts to the Company's existing client base.

The Company does not own any real property.

Distribution Methods

The Company sells its products and systems primarily through direct sales by its own internal sales team. The marketing of the Company's products is provided by its internal sales and marketing group located in Montréal, Canada.

Under a mutual exclusive agreement with Aubert & Duval, PyroGenesis supplies plasma atomized titanium powder to Aubert & Duval for distribution to the additive manufacturing market in Europe. In addition, Drosrite International has the right to manufacture, market, sell and distribute DROSRITE systems and the DROSRITE technology in the Kingdom of Saudi Arabia and certain other countries in the Middle East, on an exclusive basis.

The business of the Company is neither cyclical nor seasonal. The Company's products have long sales cycles, which are generally unaffected by seasonal variations.

The Company's agreements are typically for the sale of equipment. The Company gets paid on milestone payments that reflect progress on the projects. Usually, the Company tries to also obtain advance payments. For the sale of powders and parts, the Company generally invoices and gets paid upon delivery.

Intellectual Property and Research and Development


The intellectual property and proprietary rights of PyroGenesis, as well as its research and development ("R&D") efforts, are important to its business. Considering the time and investment required to develop new products and obtain marketing authorization, the Company places considerable importance on protecting its research findings, trade secrets and technologies.

Intellectual Property

In efforts to secure, maintain and protect its intellectual property and proprietary rights, PyroGenesis relies on a combination of trademarks, trade secrets and other rights. The Company relies on a combination of patents, laws, licences, non-disclosure agreements and various contractual arrangements to protect its exclusive technology. Nothing, however, can guarantee that the Company's protective measures are enforceable or sufficient to prevent illicit appropriation of its technology or development of the same or similar technology by a third party.

Tradenames and Trademarks

PyroGenesis uses the following tradenames and trademarks in connection with the sale of its services and products, none of which are registered. The tradenames and logo are used everywhere the Company does business and the common law trademarks are or have been used in connection to the sale of specific products, notably in the following jurisdictions: Canada, United States, Europe, Brazil, Saudi Arabia, Australia, Israel, Taiwan and Vietnam.

- PyroGenesis (tradenname)
- PyroGenesis Additive (tradenname)
-  (logo)
- NEXGEN
- DROSRITE
- PUREVAP
- SPARC
- APT
- APTH
- RPT MINIGUN™
- SPT
- PAWDS
- PPRS
- PACWADS
- PAGV

Patents

As of the date of this AIF, the Company owns a total of 118 patents (22 granted, 94 pending and 2 provisional) relating to its products and processes.

Research & Development

The Company's competitive strategy is based on technology leadership of its products and services. This strategy is underpinned by a strong innovation culture and a long-standing commitment to performing research and development. The Company relies on research and development performed and conducted internally out of its Montréal facility.

As of the date of this AIF, the Company employs six engineers and scientists that are fully dedicated to research and development projects. Separately, the engineering team is also involved in research and development projects. Most research and development projects are funded by external customers and are initiated to respond to a specific customer need. Follow-on work and equipment sales can often result from these initial research and development projects. Research and development projects are mainly focused on product extension. Internal research and development expenses vary widely from year to year and depend on Company priorities.

Environmental Protection

The Company currently has two active permits from the City of Montréal for testing on laboratory and pilot scale systems at its manufacturing facility, as well as operation of its powder production system.

The Company needs to apply for a new permit each time a new project involving testing occurs. There are no costs to these permits except the time required to prepare the documentation for the City of Montréal. The time to obtain a permit is usually between two and four months.

Foreign Operations

The Company does not currently have any foreign operations outside of Canada.

Competition

PyroGenesis competes with a substantial number of companies in the industries in which it operates, some of which have greater technical and financial resources. There can be no assurance that such competitors will not substantially increase the resources devoted to the development and marketing of products and services that compete with those of the Company or that new or existing competitors will not enter the various markets in which PyroGenesis is active. There can be no assurance that competitors will not develop new and unknown technologies with which the Company may have difficulty competing. Furthermore, failure to remain cost competitive may result in PyroGenesis losing business to its competitors.

For example, in the waste destruction and waste-to-energy systems markets, the Company faces competition from Europlasma, in the systems for the recovery of aluminum and other metal from dross market, the Company faces competition from Altek, a division of Harsco Corp., and in the production of high purity spherical metal powders market, the Company faces competition from AP&C, a GE Additive company, and Tekna, a portfolio company of Arendals Fossekompagni ASA.

DIVIDENDS AND DISTRIBUTIONS

The Company has not paid any dividends, has no policy on paying dividends or distributions, and has no present intention to pay dividends. The Company currently intends to reinvest any earnings to fund the development and growth of its business. Any future payments of dividends will be at the discretion of the Board and will depend on many factors, including, among other things, the Company's financial condition, current and anticipated capital requirements, contractual requirements, solvency tests imposed by applicable corporate law and other factors it may deem relevant.

DESCRIPTION OF CAPITAL STRUCTURE

The following describes the material terms of the Company's share capital and the number of Common Shares issued and outstanding. The following description may not be complete and is subject to, and qualified in its entirety by reference to, the terms and provisions of the Company's articles (the "Articles").

Authorized Share Capital

The Company is authorized to issue an unlimited number of Common Shares without par value. Subject to the rights, privileges, restrictions and conditions attaching to any preferred shares authorized in the future, the rights of the holders of Common Shares, as a class, are equal in all respects and include the right:

- (i) Voting: to vote at any meeting of shareholders;
- (ii) Dividends: to receive, as and when declared by the directors of the Company, any dividends payable on such dates, for such amounts and at such place or places as the Board may from time to time determine; and
- (iii) Liquidation or Dissolution: to receive the remaining property of the Company on liquidation or dissolution.

As at the date of this AIF, there were 154,296,042 Common Shares issued and outstanding.

Stock Options and Warrants

The following table sets forth, as of October 30, 2020, the aggregate number of convertible or exchangeable securities that are outstanding.

| Description of Security | Number of convertible/exchangeable securities | Number of listed securities (Common Shares) issuable upon conversion/exchange |
|--|---|---|
| Stock Options | 9,310,000 | 9,310,000 |
| June 19, 2021 Warrants ⁽¹⁾ | 500,000 | 500,000 |
| May 28, 2021 Warrants ⁽²⁾ | 750,000 | 750,000 |
| May 15, 2021 Warrants ⁽³⁾ | 1,355,500 | 1,355,500 |
| December 18, 2020 Warrants ⁽⁴⁾ | 1,235,400 | 1,235,400 |
| February 13, 2021 Second Private Placement Warrants ⁽⁵⁾ | 100,000 | 100,000 |
| February 13, 2021 First Private Placement Warrants ⁽⁶⁾ | 3,448,276 | 3,448,276 |
| January 25, 2021 Warrants ⁽⁷⁾ | 225,000 | 225,000 |

Notes:

- (1) See “General Development of the Business - Year Ended December 31, 2019 - Financings – June 2019 Private Placement”. As of the date of this AIF, 500,000 warrants have been exercised.
- (2) See “General Development of the Business - Year Ended December 31, 2019 - Financings – May 2019 Private Placement”. As of the date of this AIF, 1,274,500 warrants have been exercised.
- (3) See “General Development of the Business - Year Ended December 31, 2019 - Financings – May 2019 Private Placement”. As of the date of this AIF, 1,641,000 warrants have been exercised.
- (4) See “General Development of the Business - Year Ended December 31, 2018 - Financings – December 2018 Private Placement”. As of the date of this AIF, 1,008,967 warrants have been exercised.
- (5) See “General Development of the Business - Year Ended December 31, 2018 - Financings - October 2018 Private Placement”. As of the date of this AIF, 1,400,750 warrants have been exercised.
- (6) See “General Development of the Business - Year Ended December 31, 2018 - Financings - October 2018 Private Placement”. (7) See “General Development of the Business - Year Ended December 31, 2019 - Financings – October 2019 Private Placement”.

MARKET FOR SECURITIES

Trading Price and Volume

The Common Shares are listed on the TSX-V under the symbol “PYR” and trade on the OTCQB under the symbol “PYRNF” and on the Frankfurt (FRA) exchange under the symbol “8PY”. The following table sets forth information relating to the trading of the Common Shares on the TSX-V for the months indicated:

| Month | Shares | | |
|----------------|-----------|----------|----------------------|
| | High (\$) | Low (\$) | Average Daily volume |
| January 2019 | 0.68 | 0.52 | 74,391 |
| February 2019 | 0.69 | 0.60 | 55,013 |
| March 2019 | 0.68 | 0.61 | 47,481 |
| April 2019 | 0.67 | 0.58 | 73,543 |
| May 2019 | 0.77 | 0.54 | 171,257 |
| June 2019 | 0.67 | 0.52 | 75,049 |
| July 2019 | 0.65 | 0.54 | 47,442 |
| August 2019 | 0.60 | 0.50 | 55,197 |
| September 2019 | 0.59 | 0.48 | 44,725 |
| October 2019 | 0.65 | 0.50 | 153,554 |
| November 2019 | 0.57 | 0.48 | 57,785 |
| December 2019 | 0.50 | 0.40 | 95,366 |
| January 2020 | 0.49 | 0.47 | 71,906 |
| February 2020 | 0.45 | 0.43 | 89,451 |
| March 2020 | 0.50 | 0.42 | 93,710 |
| April 2020 | 0.72 | 0.55 | 204,055 |
| May 2020 | 1.43 | 1.27 | 474,380 |
| June 2020 | 2.47 | 2.32 | 787,709 |
| July 2020 | 6.15 | 5.75 | 807,083 |
| August 2020 | 5.99 | 5.76 | 263,325 |
| September 2020 | 6.43 | 5.43 | 397,089 |
| October 2020 | 4.29 | 3.41 | 201,429 |

Prior Sales

The following table summarizes the issuances of unlisted securities of the Company during the financial year ended December 31, 2019.

| Date of Issue | Type of Security Issued | Number of Securities Issued | Price Per Security | Total Consideration |
|--------------------|---|-----------------------------|--------------------|---------------------|
| September 29, 2019 | Stock Options | 400,000 | \$ 0.51 | n/a |
| October 23, 2019 | January 25, 2021 Warrants ⁽¹⁾ | 225,000 | \$ 0.75 | n/a |
| June 19, 2019 | June 19, 2021 Warrants ⁽²⁾ | 1,000,000 | \$ 0.85 | n/a |
| May 28, 2019 | May 28, 2021 Warrants ⁽³⁾ | 2,024,500 | \$ 0.85 | n/a |
| May 15, 2019 | May 15, 2021 Warrants ⁽⁴⁾ | 2,996,500 | \$ 0.85 | n/a |
| January 7, 2019 | December 18, 2020 Warrants ⁽⁵⁾ | 97,400 | \$ 0.85 | n/a |

Notes:

- (1) See footnote 8 under “Description of Capital Structure - Stock Options and Warrants”.
- (2) See footnote 1 under Description of Capital Structure - Stock Options and Warrants”.
- (3) See footnote 2 under “Description of Capital Structure - Stock Options and Warrants”.
- (4) See footnote 3 under “Description of Capital Structure - Stock Options and Warrants”.
- (5) See footnote 4 under “Description of Capital Structure - Stock Options and Warrants”.

DIRECTORS AND EXECUTIVE OFFICERS

The Articles of the Company provide for a minimum of three directors and a maximum of 15 directors. Each director holds office until the close of the next annual general meeting of the Company, or until his or her successor is duly elected or appointed, unless his or her office is earlier vacated.

Name and Occupation

The following table lists the names of the directors and executive officers of the Company and their province/state and country of residence, their positions and offices held with the Company, their principal occupations during the past five years, the date on which they first became officers or directors of the Company, and the number and percentage of Common Shares which is beneficially owned, directly or indirectly, or over which control or direction is exercised, by each of them.

| Name, Province/State and Country | Positions and Offices Held with the Company | Committee(s) of the Board of Directors | Director or Officer of the Company Since | Principal Occupation for the Previous Five Years | Number (and Percentage) of Common Shares Owned or Controlled |
|---|---|--|--|---|--|
| P. Peter Pascali Québec, Canada | President, Chief Executive Officer Director Chair of the Board | - | 2006 | President and Chief Executive Officer of the Company. | 77,038,722 ⁽¹⁾ (49.93%) |
| Pierre Carabin Québec, Canada | Chief Technology Officer & Chief Strategist | - | 2006 | Chief Technology Officer & Chief Strategist of the Company | 511,500 (0.33%) |
| Robert Radin South Carolina, USA | Member of the Audit Committee Director | Audit Committee | 2012 | President of Radin & Associates Consulting, LLC since 2011 | 650,000 (0.42%) |
| Andrew Abdalla, CPA, CA Québec, Canada | Chair of the Audit Committee Director | Audit Committee | 2018 | Senior partner at MNP LLP | 0 (0.0%) |
| Michael Blank Québec, Canada | Acting Chief Financial Officer Member of the Audit Committee Director | Audit Committee | 2019 | Vice President Finance at Newtrax Technologies from 2016 to 2019 Chief Financial Officer at Sonomax Technologies Inc./Eers Global Technologies Inc. from 2009 to 2016. | 0 (0.0%) |
| Dr. Virendra Jha Québec, Canada | Director | - | 2019 | Director on the Board of the Atomic Energy of Canada Limited. Current; Member of the Order of Canada; Vice President Canadian Space Agency 2003 to 2008; Acting President of the Canadian Space Agency 2005 to 2006; Chief Engineering Adviser at the Canadian Space Agency until his retirement in 2014. | 0 (0.0%) |
| Rodayna Kafal Québec, Canada | Vice President, Investor Relations and Strategic Business Development Director | - | 2020 | Investor Relations and Strategic Business Development of the Company. | 50,257 (0.03%) |
| Rodney Beveridge Quebec, Canada | Director | Audit Committee | 2020 | Vice President, Portfolio Manager at TD Wealth Private Investment Advice. | 0 (0.0%) |
| Notes: | | | | | |
| (1) Mr. Pascali holds 60,327,941 Common Shares directly, and indirectly holds or controls (i) 7,251,000 Common Shares through a holding company, 8339856 Canada Inc., of which he is the sole shareholder, and (ii) 9,459,781 Common Shares through the Pascali Trust, a family trust of which he is a trustee, officer and a beneficiary. "Description of Capital Structure - Stock Options and Warrants". | | | | | |

All executive officers of the Company work full time for the Company with the exception of Mr. Michael Blank who acts on a part-time basis, under a consulting agreement, as the Acting Chief Financial Officer. All of the executive officers of the Company are employees of the Company, and none are independent contractors.

As of October 30, 2020, the directors and executive officers of the Company, as a group, beneficially own, directly or indirectly, or exercise control or direction over, an aggregate of 78,250,479 Common Shares representing 50.71% of the issued and outstanding Common Shares.

Biographies

The following biographies provide certain selected information in respect of the persons who are serving as directors and executive officers of the Company:

P. Peter Pascali – Director, President and Chief Executive Officer and Chair of the Board

Mr. Peter Pascali, after graduating with an MBA from McGill University in 1983, became an investment banker specializing in mergers and acquisitions and public offerings. He initially worked for the Bank of Nova Scotia and then, in 1987, joined Westpac Banking Company. In 1989, he joined DeGeorge Financial Company as a strategic advisor. Mr. Pascali has been with the Company since its incorporation in 2006 where he has been responsible for developing the business strategy and marketing focus for commercializing the Company's technologies and running the business. Mr. Pascali continues to develop the Company's strategy and oversee the operational management as the President and Chief Executive Officer. In his leadership role, Mr. Pascali spearheads the Strategic Management Team which is responsible for the strategic planning and execution of the Company's business plans.

Michael Blank – Director, Acting Chief Financial Officer and Member of the Audit Committee

Mr. Blank, CPA, CA with over 30 years of executive experience in leading finance and operations for private and public organizations, has a sound professional judgement in business plan preparation, budgeting, cash flow management and internal control implementation. Mr. Blank has served as the Chief Financial Officer of the following public companies: Sonomax Technologies Inc and Applied Gaming Solutions of Canada (Pacific Lottery Corporation). Mr. Blank has acquired an extensive knowledge of taxation and audit, having spent over 10 years at KPMG, an international public accounting and consulting firm, in both Canada and Europe. Adept at explaining complex accounting and tax rules and their impacts on businesses, he provided corporate tax consulting and the information clients rely on to make strong business decisions. Mr. Blank holds a bachelor's degree in commerce with finance and accounting major with honors, from Queen's University and a diploma in Public Accounting from McGill University. Mr. Blank is a designated Chartered Professional Accountant (CPA), and qualifies as a Chartered Accountant (CA).

Robert M. Radin – Director and Member of the Audit Committee

Robert M. Radin, retired from the U.S. Army in 2011 after serving for over 35 years and attaining the rank of Major General. His last assignment was as the U.S. Army Assistant Deputy Chief of Staff, G-4, (Logistics), the Pentagon, Washington, DC. In this position he was responsible for policy development, strategic planning and budget programming for distribution, logistics force structure, readiness reporting, Army pre-positions stocks, contingency contracting and support of U.S. Army worldwide operations. Prior to joining the Army Staff, he served as the Commanding General of the U.S. Army Sustainment Command at Rock Island, Illinois. Other key assignments include: Deputy Chief of Staff for Operations and Logistics for the U.S. Army Materiel Command from 2005 to 2007; Commanding General of the Joint Munitions Command from 2004 to 2005; and from 2003 to 2004 was deployed to Kuwait as the Commanding General, U.S. Army Materiel Command-SWA and was responsible for support of U.S. land forces in Kuwait, Iraq, Afghanistan and Djibouti. After retiring from the Army in June 2011, he founded Radin & Associates Consulting, LLC, a firm that assists clients with supply chain related issues. Mr. Radin has graduated from the U.S. Military Academy at West Point and holds postgraduate degrees from the Florida Institute of Technology and the National Defense University.

Dr. Virendra Jha – Director

Dr. Virendra Jha, member of the order of Canada, has over 42 years of experience in the Canadian Space Program ranging from in-depth engineering work to senior management positions in both the private and the public sectors. Dr. Jha began his space career in 1972 when he joined the aerospace group of RCA Limited Montréal, which later became Spar Aerospace Limited. In 1988, he became the Director of Engineering at Spar Aerospace Limited. In 1991 Dr. Jha joined the Canadian Space Agency as Director of the Space Mechanics Group. In 1996, he was promoted to the position of Director General, Space Technologies Branch of the CSA. From 2003 till 2008, he was the Vice-President responsible for Science, Technology and Programs at the Canadian Space Agency. As Vice President, Dr. Jha provided strategic direction, vision and leadership to all core technical sectors of the Agency. From November 2005 until February 2006, Dr. Jha also served as the Acting President of the Canadian Space Agency. He was Chief Engineering Adviser at the Canadian Space Agency until his retirement in 2014.

Dr. Jha received his B. Tech. degree in Mechanical Engineering from the Indian Institute of Technology Delhi India, his Master's degree in Mechanical engineering from McMaster University, Hamilton, Canada, and his Ph.D. degree in Mechanical Engineering from Concordia University, Montréal, Canada and the C.Dir. (Chartered Director) Degree from McMaster University, Hamilton, Canada. Dr. Jha's technical contributions in Canadian Space Program as well as in International Space activities have been significant. His leadership and commitment to the profession is reflected by his recognition and active participation in many groups, committees and advisory boards.

Dr. Jha currently serves as a director on the Board of the Atomic Energy of Canada Limited, a Canadian federal Crown corporation and Canada's largest nuclear science and technology laboratory.

Andrew Abdalla – Director, Chair of the Audit Committee

Andrew Abdalla, CPA, CA, is a partner at MNP LLP, a leading national accounting, tax and business consulting firm in Canada. Mr. Abdalla brings to the Board of Directors more than 20 years of strategic planning, and tax advice, with a specific focus on sales and income tax, acquisitions and divestitures, business valuations, corporate reorganizations and spinoffs. Mr. Abdalla received his Chartered Professional Accountant (CPA, CA) designation in 1987. He holds a Bachelor of Commerce and a graduate diploma in public accounting from Concordia University in Montréal.

Rodayna Kafal – Director, VP, Investor Relations and Strategic Business Development

Upon graduating from McGill University in 2009 (Bachelor's degree in Chemical Engineering), Ms. Kafal took on lead roles in process engineering at the Natural Gas Technologies Centre in Montreal, where she was responsible for managing a number of high-level projects. Thereafter, she enrolled in a two-year graduate program in Industrial Engineering and Project Management at École Polytechnique de Montréal. Ms. Kafal joined PyroGenesis with a strong background in process engineering, combined with practical experience in sales, promotional activities and business relations. Ms. Kafal has been a member of PyroGenesis' Strategic Management Group since 2016 where she has been instrumental in providing input into all aspects of PyroGenesis' growth and represented the views of the investor community. As Vice President, Investor Relations and Strategic Business Development, Ms. Kafal continues to oversee PyroGenesis' complete investor relations program, while managing the Company's marketing team.

Rodney Beveridge – Director

Mr. Beveridge holds the Chartered Investment Management (CIM) designation as well as a Bachelor of Arts in Honour Applied Economics and a Bachelor of Science in Biochemistry, both from Queen's University. Mr. Beveridge is currently Vice President, Portfolio Manager at TD Wealth Private Investment Advice and has been actively involved in the financial markets since 2006. Mr. Beveridge has a unique understanding of retail markets and corporate financial structures.

Pierre Carabin – Chief Technology Officer and Chief Strategist

Mr. Pierre Carabin, Eng., has over twenty-five years of experience in process engineering and environmental technologies. Throughout his 18 years at PyroGenesis, he has been instrumental in the development of the Company's various technology platforms. He is the inventor or co-inventor of nearly forty pending and issued patents relating to high temperature chemical processes. As Chief Technology Officer, he leads PyroGenesis' engineering team in the design and development of plasma systems and is also member of the Company's Strategic Management Team which is responsible for the strategic planning and execution of the Company's business plan.

Prior to joining PyroGenesis in 1998, Pierre worked in the pulp and paper industry for 8 years, notably developing paper recycling machinery. Pierre holds a Master's degree in Chemical Engineering with honors from McGill University, and, to date, he has contributed in more than 50 technical communications for various journals and at technical conferences. As member of the OIQ, Pierre also volunteers for the Air and Waste Management Association (AWMA), Québec Section, and for the International Thermal Treatment Technologies Conference.

Sara-Catherine L. Tolszczuk – Legal Counsel and Corporate Secretary

Me Sara-Catherine Tolszczuk joined PyroGenesis Canada Inc. in 2020 as in-house Legal Counsel and Corporate Secretary. She is also a member of the Strategic Management Group which is responsible for the strategic planning and execution of the Company's business plan.

Me Tolszczuk is responsible for identifying, assessing and managing legal, reputational and regulatory risks for the Company and providing guidance on a variety of legal matters, including securities, corporate governance, contracts, employment and intellectual property. She is also responsible for drafting legal procedures and documents as well as engaging in contract negotiations with business partners and clients in support of the business objectives of the Company.

Before joining PyroGenesis, Me Tolszczuk was part of the intellectual property group of a leading independent law firm in the province of Québec. Her work involved developing strategies for the protection, commercialization and enforcement of patents, trademarks, copyrights, industrial designs and trade secrets. Sara-Catherine also acquired experience in drafting a wide range of contracts, including product development, supply and licencing, non-disclosure, and material transfer agreements. As a compliment to her intellectual property-centered practice, Sara-Catherine advised clients on matters relating to the compliance with the Consumer Protection Act, the Charter of the French Language, and Canada's Anti-Spam and privacy legislation and participated in the due diligence phase of transaction files.

Me Tolszczuk completed a Bachelor of Law and Master's degree in Biology with a concentration in life sciences and law at Université de Sherbrooke and was admitted to the Quebec Bar in 2018.

Cease Trade Orders, Bankruptcies, Penalties or Sanctions

No director, officer, or shareholder of the Company holding a sufficient number of securities of the Company to affect materially the control of the Company: (a) is, or within 10 years before the date of this AIF has been, a director or officer of any other company that, while that person was acting in that capacity, (i) was the subject of a cease trade or similar order, or an order that denied the other issuer access to any exemptions under applicable securities law, for a period of more than 30 consecutive days; or (ii) became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets; (b) has been subject to any penalties or sanctions imposed by a court relating to Canadian securities legislation or by a Canadian securities regulatory authority or has entered into a settlement agreement with a Canadian securities regulatory authority; (c) has been subject to any other penalties or sanctions imposed by a court or regulatory body that would be likely to be considered important to a reasonable investor making an investment decision; or (d) is, or has become within 10 years before the date of this AIF, bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or been subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold its assets.

Conflicts of Interest

There are potential conflicts of interest to which the directors and officers of the Company may be subject to in connection with the operations of the Company. In particular, the Pascali Trust, of which P. Peter Pascali, the Chief Executive Officer of the Company, is a trustee, officer and beneficiary is the landlord under the lease regarding the Company's corporate headquarters. See "Business of the Company - Facilities" and "General Development of the Business - Recent Developments - Additional Developments". Over the past three completed financial years, P. Peter Pascali has also participated in financings of the Company, and he may continue to do so in the future. See "General Development of the Business - Year Ended December 31, 2018 - Financings", "General Development of the Business - Year Ended December 31, 2019 - Financings" and "General Development of the Business - Recent Developments - Financings". In addition, the son of P. Peter Pascali, Alex Pascali, is the sole director, officer and shareholder of Drosrite International. See "General Development of the Business - Recent Developments - Year Ended December 31, 2019 - Contracts and Milestones". In addition to being the Chief Executive Officer of the Company, P. Peter Pascali is also a controlling shareholder of the Company. See "Risk Factors - Influence of the Significant Shareholders".

To the best of the Company's knowledge, other than as disclosed in this AIF, there are no known existing or potential conflicts of interest among the Company, the directors and officers of the Company or other members of management or of any proposed promoter, director, officer or other member of management as a result of their outside business interests except that certain of the directors and officers serve as directors and officers of other companies, and therefore it is possible that a conflict may arise between their duties to the Company and their duties as a director or officer of such other companies.

A director who has a material interest in a matter before the Board or any committee on which he or she serves is required to disclose such interest as soon as the director becomes aware of it. In situations where a director has a material interest in a matter to be considered by the Board or any committee on which he or she serves, such director may be required to absent himself or herself from the meeting while discussions and voting with respect to the matter are taking place. Directors are also required to comply with the relevant provisions of applicable corporate laws regarding conflicts of interest. Under the CBCA, directors who have a material interest in any person or entity that is a party to a material contract or a proposed material contract with the Company are required under the CBCA, subject to certain exceptions, to disclose that interest and generally abstain from voting on any resolution to approve such a contract. In addition, directors and executive officers are required to act honestly and in good faith with a view to the best interests of the Company.

AUDIT COMMITTEE AND CORPORATE GOVERNANCE

Audit Committee

The Company's Audit Committee is responsible for assisting the Board in monitoring the performance of management in ensuring that the Company is operating in an ethical manner and encouraging management to demonstrate a strong commitment to integrity.

The Audit Committee is also responsible for providing assistance to the Board in fulfilling its financial reporting and control responsibilities to the shareholders of the Company and to the investment community. The Audit Committee's primary responsibilities in this regard are to: (i) oversee the accounting and financial reporting process of the Company and the audit of its financial statements; (ii) monitor the Company's financial reporting process and internal control systems; (iii) review and appraise the audit activities of the Company's independent auditors; (iv) meet periodically with management and with the independent auditors; and (v) assess the relevance and reliability of the Company's financial reports to ensure they accurately portray the underlying economic circumstances and financial performance of the Company.

Audit Committee Charter

The Audit Committee's mandate is to promote and ensure that the Company complies with high standards of financial reporting, risk management and ethical behavior. The Audit Committee charter is attached hereto as Schedule "A".

Composition of the Audit Committee

The Audit Committee is comprised of four directors, Messrs. Abdalla (chairman of the Audit Committee), Blank, Radin and Beveridge. Mr. Blank is an executive officer of the Company, and as such is not independent within the meaning of NI 52-110. Messrs. Abdalla, Radin and Beveridge meet the independence requirements for members of the Audit Committee pursuant to NI 52-110. Each of the three members is financially literate within the meaning of NI 52-110, and has an understanding of the accounting principles used to prepare financial statements and varied experience as to the general application of such accounting principles, as well as an understanding of the internal controls and procedures necessary for financial reporting. For additional details regarding the education and experience of each member of the Audit Committee, see “Directors and Executive Officers”.

Pre-Approval Policies and Procedures

The Audit Committee must pre-approve all non-audit services to be provided to the Company by its external auditors.

External Fees by Audit Category

The Audit Committee has reviewed the nature and amount of the non-audit services provided by the Company’s external auditors, KPMG LLP. Fees incurred with the auditors for audit and non-audit services in the last two fiscal years for audit fees are outlined in the following table.

| | Fees paid to KPMG LLP in | | Fees paid to KPMG LLP in Fiscal | |
|-----------------------------------|--|----------------|--|----------------|
| | Fiscal Year ended December 31, 2019 | | Year ended December 31, 2018 | |
| Audit Fees ⁽¹⁾ | \$ | 249,834 | \$ | 161,000 |
| Audit-Related Fees ⁽²⁾ | \$ | - | \$ | - |
| Tax-Related Fees ⁽³⁾ | \$ | 54,870 | \$ | 13,300 |
| All Other Fees ⁽⁴⁾ | \$ | - | \$ | - |
| Total Fees | \$ | 304,704 | \$ | 174,300 |

Notes:

- (1) “Audit Fees” include fees necessary to perform the annual audit of the Company’s consolidated financial statements and fees incurred in relation to the performance of quarterly reviews. Audit Fees also includes fees for accounting consultations on matters reflected in the financial statements.
- (2) “Audit-Related Fees” include services that are traditionally performed by the auditor. These audit-related services include services required by legislation or regulation such as comfort letters, consents and reviews of securities filings, employee benefit audits, due diligence assistance, internal control reviews and audit or attest services not required by legislation or regulation.
- (3) “Tax-Related Fees” includes fees for tax compliance, tax planning and tax advice. Tax planning and tax advice includes assistance with tax audits and appeals, tax advice related to mergers and acquisitions, and requests for rulings or technical advice from tax authorities.
- (4) “All Other Fees” include all other non-audit services.

Corporate Governance

The Board believes that sound corporate governance practices are essential to the effective, efficient and prudent operation of the Company and to the enhancement of shareholder value. The Board fulfils its mandate directly and through committees at regularly scheduled meetings or as required. Frequency of meetings may be increased and the nature of the agenda items may be changed depending on the state of the Company’s affairs and in light of opportunities and risks which the Company faces. The Board is kept informed of the Company’s operations at these meetings as well as through reports and discussions with the Company’s management.

Board of Directors

The Board is comprised of seven directors, four of whom are independent as that term is defined under applicable Canadian securities laws. Pursuant to NI 52-110, an independent director is one who is free from any direct or indirect material relationship which could, in the view of the Board, be reasonably expected to interfere with a director’s independent judgment. The independent directors of the Company are Dr. Virendra Jha, Robert Radin, Andrew Abdalla and Rodney Beveridge. Michael Blank, P. Peter Pascali and Rodayna Kafal are not independent under these standards as they are executive officers of the Company.

The Board meets on a regular basis. The independent directors are encouraged to have open and frank discussions and, if felt necessary, require that the non-independent directors leave the meeting while such discussions are undertaken. P. Peter Pascali is responsible for chairing all meetings of the Board, providing leadership to the Board, managing the Board, acting as liaisons between the Board and management and representing the Company to external groups.

Board Mandate

The Board is responsible for the general supervision of the management of the business as well as for the oversight and review of the strategic planning process of the Company. The Board will discharge its responsibilities directly and through its committees, currently consisting of the Audit Committee. The full Board will be responsible for corporate governance issues. The Board meets regularly to review the business operations, corporate governance and financial results of the Company.

Orientation and Continuing Education

The Company does not have any formal orientation process for new directors. The Company considers appropriate orientation and continuing education requirements on a going-forward basis. When considered appropriate, the Company arranges site visits to its projects for all directors.

Nomination of Directors

The Board is responsible for recruiting new directors, proposing new director nominees to the Board and reviewing the performance and qualifications of existing directors. The current Board was chosen for their technical and financial expertise to ensure a high level of corporate governance. The existing directors have the knowledge and contacts necessary to search out additional directors.

Compensation

The Board is responsible for, among other things, making recommendations regarding appropriate compensation for the Company's executive officers. Management is compensated based on current competitive rates. On a going-forward basis, the Board reviews peer group practices when determining compensation for senior management.

Board Assessments

The Board reviews on an annual basis the requisite skills and characteristics of members of the Board as well as the composition of the Board as a whole. This assessment includes a member's contribution, qualification as independent, as well as consideration of diversity, age, skills and experience in the context of the needs of the Board.

RISK FACTORS

The Company has identified below certain significant risks relating to the business of the Company and the industry in which it operates. The following information is only a summary of certain risk factors and is qualified in its entirety by reference to, and must be read in conjunction with, the detailed information appearing elsewhere in this AIF. These risks and uncertainties are not the only ones facing the Company. Additional risks and uncertainties not currently known to the Company, or that the Company currently considers immaterial, may also impair the operations of the Company. If any such risks materialize into actual events or circumstances, the Company's assets, liabilities, financial condition, results of operations (including future results of operations), business and business prospects, are likely to be materially and adversely affected. There is no assurance that risk management steps taken will avoid future loss due to the uncertainties described below or other unforeseen risks. An investment in the Common Shares or other securities of the Company is highly speculative and involves a high degree of risk. Before making any investment decision, prospective investors should carefully consider all the information contained in this document including, in particular, the risk factors described below.

Risks Related to the Company's Business and Industry

Operating Losses and Negative Operating Cash Flow

The Company has not yet generated substantial revenue from its products and services. The Company had net losses and negative operating cash flow for the financial years ended December 31, 2019 and December 31, 2018 and for the six months ended June 30, 2020, resulting in an accumulated deficit of \$57,304,682 as at June 30, 2020. To the extent that the Company has net losses and negative operating cash flow in future periods, it may need to allocate a portion of its cash reserves to fund such negative cash flow. The Company may also be required to raise additional funds through the issuance of equity or debt securities. There can be no assurance that the Company will be able to generate a positive cash flow from its operations, that additional capital or other types of financing will be available when needed or that these financings will be on terms favourable to the Company.

The Company's ability to continue as a going concern is dependent upon its ability in the future to grow its revenue, achieve profitable operations, successfully developing and introducing new products and, in the meantime, to obtain the necessary financing to meet its obligations and repay its liabilities when they become due. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so in the future. External financing, predominantly by the issuance of equity and debt, will be, sought to finance the operations of the Company; however, there can be no certainty that such funds will be available at terms acceptable to the Company, or at all. If the Company is unable to obtain sufficient additional financing, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations.

Actual Financial Position and Results of Operations May Differ Materially from the Expectations of the Company's Management

The Company's actual financial position and results of operations may differ materially from management's expectations. The Company has experienced some changes in its operating plans and certain delays in the timing of its plans. As a result, the Company's revenue, net income and cash flow may differ materially from the Company's projected revenue, net income and cash flow. The process for estimating the Company's revenue, net income and cash flow requires the use of judgment in determining the appropriate assumptions and estimates. These estimates and assumptions may be revised as additional information becomes available and as additional analyses are performed. In addition, the assumptions used in planning may not prove to be accurate, and other factors may affect the Company's financial condition or results of operations.

Revenue Risks

PyroGenesis may experience delays in achieving revenues, particularly with plasma gasification projects which have a long sales cycle. Revenues may be delayed or negatively impacted by issues encountered by the Company or its clients including:

- (i) unforeseen engineering and/or environmental problems;
- (ii) delays or inability to obtain required financing, licenses, permits and/or regulatory approvals;
- (iii) supply interruptions and/or labour disputes;
- (iv) foreign exchange fluctuations and/or collection risk; and
- (v) competition from other suppliers and/or alternative energy solutions that are less capital intensive.

There is no assurance that the business will perform as expected or that returns from the business will support the expenditures needed to develop it.

Concentration Risk

To date, a small number of customers have accounted for a majority of PyroGenesis' revenues. As its business expands, the Company expects that revenue distribution will be over a larger number of different customers. For the year ended December 31, 2019, sales of PyroGenesis to its five principal customers accounted for approximately 77% of its total revenue. For the year ended December 31, 2018, sales to three principal customers accounted for approximately 85% of PyroGenesis' total revenue. The loss of, or a reduction in, purchase orders or anticipated purchase orders from PyroGenesis' principal customers could have a material adverse effect on its business, financial condition and results of operations. Additionally, if one of PyroGenesis' customers is unable to meet its commitments to PyroGenesis, the Company's business, financial condition and results of operations could be adversely affected. As a result of the Drosrite International Exclusive Agreement and the Dross Processing Service Agreement, the Company generates significant revenues from payments made to Drosrite International under the Dross Processing Service Agreement. The Company will no longer receive payments under such arrangement if the Dross Processing Service Agreement, which involves a third party in a foreign jurisdiction, is terminated, which could have a material adverse effect on the business, financial condition and results of operations of the Company.

Technology Development and Manufacturing Capability Risks

PyroGenesis recently expanded into new areas of business and, as a result, many of the Company's products are at various stages of the development cycle. The Company may be unable to commercialise such products, or it may be unable to manufacture such products in a commercially viable manner. Whilst management is confident in both its technology and in its team of experienced engineers, scientists and technicians, it cannot know with certainty, which of its products will be commercialised, when such products will be commercialised, or whether such products will be able to be manufactured and distributed profitably.

Reliance on Third Party Suppliers, Service Providers, Distributors and Manufacturers

The Company's direct and indirect suppliers, service providers, distributors and manufacturers may elect, at any time, to breach or otherwise cease to participate in supply, service, distribution or manufacturing agreements, or other relationships, on which the Company's operations rely. Loss of its suppliers, service providers, distributors and manufacturers could have a material adverse effect on the Company's business and operational results. Further, any disruption in the manufacturing process done by third party manufacturers could have a material adverse effect on the business, financial condition and results of operations of the Company. The Company cannot ensure that alternative production capacity would be available in the event of a disruption, or if it would be available, it could be obtained on favorable terms.

Manufacturing Facility

The vast majority of the Company's products are manufactured in its manufacturing facility located in Montreal, Quebec. Accordingly, the Company is highly dependent on the uninterrupted and efficient operation of its manufacturing facility. If for any reason the Company is required to discontinue production at its facility, it could result in significant delays in production of the Company's products and interruption of the Company's sales as it seeks to resume production. The Company may be unable to resume production on a timely basis. If operations at the facility were to be disrupted as a result of equipment failures, natural disasters, fires, accidents, work stoppages, power outages or other reasons, the Company's business, financial condition and/or results of operations could be materially adversely affected.

Sales Cycle and Fixed Price Contracts

PyroGenesis sales cycle is long and the signing of new contracts is subject to delay, over which the Company has little control. The Company also enters into sales contracts with fixed pricing, which may be impacted by changes over the period of implementation. There is no assurance that delays or problems in fulfilling contracts with clients will not adversely affect the Company's activities, operating results or financial position.

Reliance on Technology

PyroGenesis will depend upon continuous improvements in technology to meet client demands in respect of performance and cost, and to explore additional business opportunities. There can be no assurance that the Company will be successful in its efforts in this regard or that it will have the resources available to meet this demand. Whilst management anticipates that the research and development will allow the Company to explore additional business opportunities, there is no guarantee that such business opportunities will be presented or realized. The commercial advantage of the Company will depend to a significant extent on the intellectual property and proprietary technology of PyroGenesis and the ability of the Company to prevent others from copying such proprietary technologies. PyroGenesis currently relies on intellectual property rights and other contractual or proprietary rights, including (without limitation) copyright, trade secrets, confidential procedures, contractual provisions, licenses and patents, to protect its proprietary technology. PyroGenesis may have to engage in litigation in order to protect its patents or other intellectual property rights, or to determine the validity or scope of the proprietary rights of others. This type of litigation can be expensive and time consuming, regardless of whether or not the Company is successful. PyroGenesis may seek patents or other similar protections in respect of particular technology; however, there can be no assurance that any future patent applications will actually result in issued patents, or that, even if patents are issued, they will be of sufficient scope or strength to provide meaningful protection or any commercial advantage to the Company. Moreover, the process of seeking patent protection can itself be long and expensive. In the meantime, competitors may develop technologies that are similar or superior to PyroGenesis' technology or design around the patents owned by the Company, thereby adversely affecting the Company's competitive advantage in one or more of its areas of business. Despite the efforts of the Company, its intellectual property rights may be invalidated, circumvented, challenged, infringed or required to be licensed to others. It cannot be assured that any steps the Company may take to protect its intellectual property rights and other rights to such proprietary technologies that are central to the Company's operations will prevent misappropriation or infringement of its technology.

Changes to Contracts

PyroGenesis is dependent upon its ability to establish and develop new relationships and to build on existing relationships with current clients. The Company cannot provide assurance that it will be successful in maintaining or advancing its relationships with current clients or procure additional clients. In addition, PyroGenesis cannot provide assurance that its customers and the end users of its products will continue to provide the Company with business, or that existing customers and end users will not seek to renegotiate or terminate existing contracts providing for the sale of the Company's products and technology based on circumstances on which the Company is not currently aware. Any termination or amendment of a contract under which the Company derives an important portion of its revenues, including the Drosrite International Exclusive Agreement and the Dross Processing Service Agreement, and any adverse change in the relationship of the Company with its customers and end users, will have an adverse effect on the Company's business, financial condition and results of operations.

Sales to governments and governmental entities are subject to specific additional risks, such as delays in funding, termination of contracts or sub-contracts at the convenience of the government, termination, reduction or modification of contracts or sub-contracts in the event of changes in the government's policies or as a result of budgetary constraints and increased or unexpected costs resulting in losses or reduced profits under fixed price contracts.

Foreign Exchange Exposure

PyroGenesis' products and services are increasingly being sold in markets outside of Canada, whilst most of its operating expenses and capital expenditures are denominated in Canadian dollars. As a result, the Company is exposed to fluctuations in the foreign exchange rates between Canadian dollar and the currency in which a particular sale is transacted, which may result in foreign exchange losses that could affect earnings. Foreign sales are predominantly denominated in U.S. dollars. The Company has not to date sought to hedge the risks associated with fluctuations in foreign exchange rates.

Competition

The industry is competitive and PyroGenesis competes with a substantial number of companies which have greater technical and financial resources. There can be no assurance that such competitors will not substantially increase the resources devoted to the development and marketing of products and services that compete with those of the Company or that new or existing competitors will not enter the various markets in which PyroGenesis is active. There can be no assurance that competitors will not develop new and unknown technologies with which the Company may have difficulty competing. Furthermore, failure to remain cost competitive may result in PyroGenesis losing business to its competitors.

The plasma technology of PyroGenesis competes against other plasma and conventional technologies. Without limitation, the demand for the plasma technology of PyroGenesis, particularly in waste destruction and waste-to-energy systems, can be impacted by the commodity prices of the energy source used for the process and the price at which waste is accepted by landfills and traditional waste processing plants. While the Company believes that demand for sustainable waste management practices that have lower environmental impacts than traditional solutions such as landfill or incineration is increasing, the high flows of electricity necessary to operate the waste destruction and waste-to-energy systems of PyroGenesis have an impact on the operational costs of the Company's systems, and traditional solutions may constitute lower-cost solutions, particularly if commodity prices (including of oil and natural gas) remain low or experience a decline.

Management and Key Personnel

PyroGenesis depends on the skills and experience of its management team and other key employees. The Company relies heavily on its ability to attract and retain highly skilled personnel in a competitive environment. PyroGenesis may be unable to recruit, retain, and motivate highly skilled employees in order to assist the Company's business, especially activities that are essential to the success of the Company. Failure to recruit and retain highly-skilled employees may adversely affect PyroGenesis' business, financial condition and results of operations.

Implementation of a Strategic Plan

PyroGenesis' commercial strategy aims to leverage its products, consumables, and services whilst focusing on the resolution of problems within niche markets within the industries served by the Company. There can be no assurances as to the success of the Company's strategic plan, which should be considered under the risks perspective and difficulties frequently encountered by a developing business.

Adverse Decisions of Sovereign Governments

PyroGenesis conducts an increasing portion of its business internationally. There is no assurance that any sovereign government, including Canada's, will not establish laws or regulations that will not be detrimental to the Company's interests or that, as a foreign corporation, it will continue to have access to the regulatory agencies in other countries. Governments have, from time to time, established foreign exchange controls, which could have a material adverse effect on the Company's business, financial condition and results of operations.

Risks Related to International Operations

A substantial portion of the Company's sales are made to customers and end users outside Canada, including in the United States, the European Union and the Middle East. The Company conducts its international operations directly or through distributors or other agents or intermediaries, including Drosrite International. The Company plans to continue to expand its international sales and marketing efforts. International operations are subject to a number of inherent risks, and the Company's future results could be adversely affected by a number of factors, including:

- unfavorable political or economic environments; requirements or preferences for domestic products or solutions, which could reduce demand for the Company's products;
- differing existing or future regulatory and certification requirements;
- unexpected legal or regulatory changes;
- greater difficulty in collecting accounts receivable and longer collection periods;
- difficulties in enforcing contracts;

- an inability to effectively protect intellectual property;
- tariffs and trade barriers, export regulations and other regulatory and contractual limitations on the Company's ability to sell its products; and
- potentially adverse tax consequences, including multiple and possibly overlapping tax structures.

Fluctuations in currency exchange rates could materially adversely affect sales denominated in currencies other than the Canadian dollar and cause a reduction in revenues derived from sales in a particular country. Financial instability in foreign markets could also affect the sale of the Company's products in international jurisdictions. In addition, the Company may be denied access to its end customers as a result of a closing of the borders of the countries in which its products are sold due to economic, legislative, political, military and other conditions in such countries.

There can be no assurance that such factors will not materially adversely affect the operations, growth prospects and sales of the Company and, consequently, its results of operations. In addition, revenues the Company earns in other jurisdictions may be subject to taxation by more than one jurisdiction, which could materially adversely affect the Company's earnings. Each of these factors could have an adverse effect on the Company's business, financial condition and results of operations.

Governmental Regulation

PyroGenesis is subject to a variety of federal, provincial, state, local and international laws and regulations relating namely to the environment, health and safety, export controls, currency exchange, labour and employment and taxation. These laws and regulations are complex, change frequently and have tended to become more stringent over time. Failure to comply with these laws and regulations may result in a variety of administrative, civil and criminal enforcement measures, including assessment of monetary penalties, imposition of remedial requirements and issuance of injunctions as to future compliance. The Company may be subject to compliance audits by regulatory authorities in the various countries in which it operates.

Government-funded Defense and Security Programs

Like most companies that supply products and services to governments, government agencies routinely audit and investigate government contractors. These agencies may review the Company's performance under its contracts, business processes, cost structure, and compliance with applicable laws, regulations and standards. The Company's incurred costs for each year are subject to audit by government agencies, which can result in payment demands related to costs they believe should be disallowed. The Company works with governments to assess the merits of claims and where appropriate reserve for amounts disputed. The Company could be required to provide repayments to governments and may have a negative effect on its results of operations. Contrary to cost-reimbursable contracts, some costs may not be reimbursed or allowed under fixed-price contracts, which may have a negative effect on the Company's results of operations if it experiences costs overruns.

Environmental Liability

PyroGenesis is subject to various environmental laws and regulations enacted in the jurisdictions in which it operates, which govern the manufacturing, processing, importation, transportation, handling and disposal of certain materials used in the Company's operations. Management believes that it has adequate procedures in place to address compliance with current environmental laws and regulations. Furthermore, management monitors the Company's practices concerning the handling of environmentally hazardous materials. However, there can be no assurance that the Company's procedures will prevent environmental damage occurring from spills of materials handled by the Company or that such damage has not already occurred. On occasion, substantial liabilities to third parties may be incurred. The Company may have the benefit of insurance maintained by it or the operator, however, the Company may become liable for damages against which it cannot adequately insure or against which it may elect not to insure because of high costs or other reasons. The Company's clients are subject to similar environmental laws and regulations, as well as limits on emissions to the air and discharges into surface and sub-surface waters. While regulatory developments that may follow in subsequent years could have the effect of reducing industry activity, the Company cannot predict the nature of the restrictions that may be imposed. The Company may be required to increase operating expenses or capital expenditures in order to comply with any new restrictions or regulations.

Product Liability and Other Lawsuits

PyroGenesis is subject to a variety of potential product liabilities claims and other lawsuits related with its operations, including liabilities and expenses associated with product defects. The Company maintains product liability and other insurance coverage that management believes is generally in accordance with the market practice in its industry, but there can be no assurance that the Company will always be adequately insured against all such potential liabilities.

A malfunction or the inadequate design of the Company's products could result in product liability or other tort claims. Accidents involving the Company's products could lead to personal injury or physical damage. Any liability for damages resulting from malfunctions could be substantial and could materially adversely affect the Company's business and results of operations. In addition, a well-publicized actual or perceived problem could adversely affect the market's perception of the Company's products. This could result in a decline in demand for the Company's products, which would materially adversely affect the Company's financial condition and results of operations.

The sale and use of products and processes developed by the Company may entail potential liability and possible warranty claims. The Company is also required to indemnify Drosrite International for any claims and liabilities incurred in connection with the Drosrite systems. The Company may be subject to personal injury claims for injuries resulting from use of its products. Although the Company maintains product liability insurance, there can be no assurance that such insurance will continue to be available on commercially reasonable terms or that the risks covered or coverage amounts will be sufficient to cover all claims.

Information Systems Disruptions

The Company relies on various information technology systems to manage its operations. Over the last several years, the Company has implemented, and it continues to implement, modifications and upgrades to such systems, including changes to legacy systems, replacing legacy systems with successor systems with new functionality, and acquiring new systems with new functionality. These types of activities subject the Company to inherent costs and risks associated with replacing and changing these systems, including impairment of the Company's ability to fulfill customer orders, potential disruption of its internal control structure, substantial capital expenditures, additional administration and operating expenses, retention of sufficiently skilled personnel to implement and operate the new systems, demands on management time and other risks and costs of delays or difficulties in transitioning to or integrating new systems into the Company's current systems. These implementations, modifications, and upgrades may not result in productivity improvements at a level that outweighs the costs of implementation, or at all. In addition, the difficulties with implementing new technology systems may cause disruptions in the Company's business operations and have a material adverse effect on its business, financial condition, or results of operations.

Security Breaches

As part of its day-to-day business, the Company stores its data and certain data about its customers in its global information technology system. Unauthorized access to the Company's data, including any regarding its customers, could expose the Company to a risk of loss of this information, loss of business, litigation and possible liability. These security measures may be breached by intentional misconduct by computer hackers, as a result of third-party action, employee errors, malfeasance or otherwise. Additionally, third parties may attempt to fraudulently induce employees or customers into disclosing sensitive information such as usernames, passwords or other information in order to gain access to the data of the Company's customers or the Company's data, including the Company's intellectual property and other confidential business information, or the Company's information technology systems. Because the techniques used to obtain unauthorized access, or to sabotage systems, change frequently and generally are not recognized until launched against a target, the Company may be unable to anticipate these techniques or to implement adequate preventative measures. Any security breach could result in a loss of confidence by the Company's customers, damage its reputation, disrupt its business, lead to legal liability and negatively impact its future sales.

Public Health Crises

Public health crises, including local, regional, national or international outbreak of a contagious disease, could have an adverse effect on local economies, the global economy, and the markets in which the Company operates and markets its products, and may adversely impact the price and demand for the Company's products and the ability of the Company to operate and market its products. Any such alterations or modifications could cause substantial interruption to the Company's business, any of which could have a material adverse effect on the Company's operations or financial results, and could include temporary closures of one or more of the Company's or its partner's offices or facilities; temporary or long-term labor shortages; temporary or long-term adverse impacts on the Company's supply chain and distribution channels; the potential of increased network vulnerability and risk of data loss resulting from increased use of remote access and removal of data from the Company's facilities.

Subsequent to December 31, 2019, the global emergence of coronavirus (COVID-19) occurred. The global outbreak of COVID-19 has resulted in governments worldwide enacting emergency measures to protect against the spread of the virus. These measures, which include, among other things, limitations on travel, self-imposed quarantine periods and social distancing measures, have caused material disruption to businesses globally resulting in an economic slowdown. Global equity markets have experienced significant volatility and weakness. Governments and central banks have reacted with significant monetary and fiscal interventions designed to stabilize economic conditions. The duration and impact of the COVID-19 outbreak is unknown at this time, as is the efficacy of any government and/or central bank interventions. It is not possible to reliably estimate the length and severity of these developments and the impact on the financial results and condition of the Company in future periods.

As of the date of this AIF, the Company has successfully continued operations under COVID-19 protocols. COVID-19 has not resulted in any material delays in the development or testing of the Company's products or any other material development projects. The Company is not currently experiencing any delays or interruptions in service or product delivery. At the outset of the COVID-19 pandemic, certain of the Company's operations were negatively impacted, but have since normalized. The Company has not experienced any material disruption in its supply chain, and the pandemic has not materially impacted the Company's business or delivery of services or products.

The Company's production schedule has continued throughout COVID-19 on a modified employee schedule, with certain non-production employees working remotely. The Company has been able to operate largely unaffected by the COVID-19 pandemic. Notwithstanding the foregoing, if the Company or its vendors and suppliers are unable to continue operations or keep up with increasing demands as a result of COVID-19, customers may experience delays or interruptions in service or the delivery of products, which may be detrimental to the Company's reputation, business, results of operations and financial position. The Company cautions that it is impossible to fully anticipate or quantify the effect and ultimate impact of the COVID-19 pandemic as the situation is rapidly evolving. The extent to which COVID-19 impacts the Company's results will depend on future developments, which are highly uncertain and cannot be predicted, including new information that may emerge concerning the severity of COVID-19 and the actions taken by governments to contain it or treat its impact, including shelter in place directives, which, if extended, may impact the economies in which the Company now operates, or may in the future operate, key markets into which the Company sells products and delivers services, and markets through which the Company's key suppliers source their products.

Litigation

The Company may from time to time become party to litigation in the ordinary course of business which could adversely affect its business. Should any litigation in which the Company becomes involved be determined against the Company, such a decision could adversely affect the Company's ability to continue operating and the market price for the Common Shares and could use significant resources. Even if the Company is involved in litigation and wins, litigation can redirect significant Company resources. Litigation may also create a negative perception of the Company's brand.

Trade Secrets May Be Difficult to Protect

The Company's success depends upon the skills, knowledge and experience of its scientific and technical personnel, consultants and advisors, as well as contractors. Because the Company operates in a highly competitive industry, it relies in part on trade secrets to protect its proprietary products and processes. However, trade secrets are difficult to protect. The Company generally enters into confidentiality or non-disclosure agreements with its corporate partners, employees, consultants, outside scientific collaborators, developers and other advisors. These agreements generally require that the receiving party keep confidential, and not disclose to third parties, confidential information developed by the receiving party or made known to the receiving party by the Company during the course of the receiving party's relationship with the Company. These agreements also generally provide that inventions conceived by the receiving party in the course of rendering services to the Company will be its exclusive property, and the Company enters into assignment agreements to perfect its rights.

These confidentiality, inventions and assignment agreements, where in place, may be breached and may not effectively assign intellectual property rights to the Company. The Company's trade secrets also could be independently discovered by competitors, in which case the Company would not be able to prevent the use of such trade secrets by its competitors. The enforcement of a claim alleging that a party illegally obtained and was using the Company's trade secrets could be difficult, expensive and time consuming and the outcome could be unpredictable. The failure to obtain or maintain meaningful trade secret protection could adversely affect the Company's competitive position.

Risks Related to Acquiring Companies

The Company may acquire other companies in the future and there are risks inherent in any such acquisition. Specifically, there could be unknown or undisclosed risks or liabilities of such companies for which the Company is not sufficiently indemnified. Any such unknown or undisclosed risks or liabilities could materially and adversely affect the Company's financial performance and results of operations. The Company could encounter additional transaction and integration related costs or other factors such as the failure to realize all of the benefits from such acquisitions. All of these factors could cause dilution to the Company's earnings per share or decrease or delay the anticipated accretive effect of the acquisition and cause a decrease in the market price of the Company's securities. The Company may not be able to successfully integrate and combine the operations, personnel and technology infrastructure of any such acquired company with its existing operations. If integration is not managed successfully by the Company's management, the Company may experience interruptions in its business activities, deterioration in its employee and customer relationships, increased costs of integration and harm to its reputation, all of which could have a material adverse effect on the Company's business, financial condition and results of operations. The Company may experience difficulties in combining corporate cultures, maintaining employee morale and retaining key employees. The integration of any such acquired companies may also impose substantial demands on the management. There is no assurance that these acquisitions will be successfully integrated in a timely manner.

Global Economic Uncertainty

Demand for the Company's products and services are influenced by general economic and consumer trends beyond the Company's control. There can be no assurance that the Company's business and corresponding financial performance will not be adversely affected by general economic or consumer trends. In particular, global economic conditions are still tight, and if such conditions continue, recur or worsen, there can be no assurance that they will not have a material adverse effect on the Company's business, financial condition and results of operations.

Furthermore, such economic conditions have produced downward pressure on stock prices and on the availability of credit for financial institutions and corporations. If these levels of market disruption and volatility continue, the Company might experience reductions in business activity, increased funding costs and funding pressures, as applicable, a decrease in the market price of the Common Shares, a decrease in asset values, additional write-downs and impairment charges and lower profitability.

Inability to Renew Leases

The Company may be unable to renew or maintain its leases (commercial or real property) on commercially acceptable terms or at all. An inability to renew its leases, or a renewal of its leases with a rental rate higher than the prevailing rate under the applicable lease prior to expiration, may have an adverse impact on the Company's operations, including disruption of its operations or an increase in its cost of operations. In addition, in the event of non-renewal of any of the Company's leases, the Company may be unable to locate suitable replacement properties for its facilities or it may experience delays in relocation that could lead to a disruption in its operations. Any disruption in the Company's operations could have an adverse effect on its financial condition and results of operations.

Financial Reporting and Other Public Issuer Requirements

The Company is subject to reporting and other obligations under applicable Canadian Securities Laws and rules of any stock exchange on which the Common Shares are then-listed. These reporting and other obligations will place significant demands on the management, administrative, operational and accounting resources. If the Company is unable to accomplish any such necessary objectives in a timely and effective manner, the Company's ability to comply with its financial reporting obligations and other rules applicable to reporting issuers could be impaired. Moreover, any failure to maintain effective internal controls could cause the Company to fail to satisfy its reporting obligations or result in material misstatements in its financial statements. If the Company cannot provide reliable financial reports or prevent fraud, its reputation and operating results could be materially adversely affected which could also cause investors to lose confidence in the Company's reported financial information, which could in turn result in a reduction in the trading price of the Common Shares.

The Company is a "venture issuer" as defined in NI 52-109. In contrast to the certificate required for non-venture issuers under NI 52-109, the certificates filed by the Company's officers are not required to include representations relating to the establishment and maintenance of disclosure controls and procedures ("DC&P") and ICFR, as defined in NI 52-109. In particular, the certifying officers are not be required to make any representations relating to the establishment and maintenance of (i) controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the Company in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and (ii) a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS.

Inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost-effective basis DC&P and ICFR may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.

Influence of the Significant Shareholders

To the Company's knowledge, no shareholder beneficially owns, or controls or directs, directly or indirectly, more than 10% of the voting rights attached to the Company's outstanding voting securities, except for Mr. Peter Pascali, President and Chief Executive Officer of the Company, who holds or controls, directly or indirectly, 77,038,722 Common Shares, representing in aggregate 49.93% of the total voting rights attached to the outstanding Common Shares, and options and warrants to acquire an additional 12,198,276 Common Shares (increasing the total number of Common Shares held or controlled, directly or indirectly, by him to 89,236,998 Common Shares, or 53.60% of the Common Shares, on a fully diluted basis). In addition, from time to time, the Company may have other shareholders who have the ability to exercise significant influence over matters submitted to the shareholders of the Company for approval, whether subject to approval by a majority of the shareholders of the Company or subject to a class vote or special resolution. See "Directors and Executive Officers - Conflicts of Interest".

Limited Control Over the Company's Operations

Holders of the Common Shares have limited control over changes in the Company's policies and operations, which increases the uncertainty and risks of an investment in the Company. The Board determines major policies, including policies regarding financing, growth, debt capitalization and any future dividends to shareholders of the Company. Generally, the Board may amend or revise these and other policies without a vote of the holders of the Common Shares. The Board's broad discretion in setting policies and the limited ability of holders of the Common Shares to exert control over those policies increases the uncertainty and risks of an investment in the Company.

Change in Tax Laws

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to the Company. These enactments and events could require the Company to pay additional tax amounts on a prospective or retroactive basis, thereby substantially increasing the amount of taxes the Company is liable to pay in the relevant tax jurisdictions. Accordingly, these events could decrease the capital that the Company has available to operate its business. Any or all of these events could harm the business and financial performance of the Company.

Forward-Looking Information

The forward-looking information included in this AIF relating to, among other things, the Company's future results, performance, achievements, prospects, targets, intentions or opportunities or the markets in which it operates (including, in particular, the information contained under "Business of the Company", and the other statements listed in "Forward-Looking Statements") is based on opinions, assumptions and estimates made by the Company's management in light of its experience and perception of historical trends, current conditions and expected future developments, as well as other factors that the Company believes are appropriate and reasonable in the circumstances. However, there can be no assurance that such estimates and assumptions will prove to be correct. The Company's actual results in the future may vary significantly from the historical and estimated results and those variations may be material. The Company makes no representation that its actual results in the future will be the same, in whole or in part, as those included in this AIF. See "Forward-Looking Statements".

Credit Facilities

The Company's credit facilities and financing agreements mature on various dates. There can be no assurance that such credit facilities or financing agreements will be renewed or refinanced, or if renewed or refinanced, that the renewal or refinancing will occur on equally favourable terms to the Company. The Company's ability to continue operating may be adversely affected if the Company is not able to renew its credit facilities or arrange refinancing, or if such renewal or refinancing, as the case may be, occurs on terms materially less favorable to the Company than at present. The Company's current credit facilities and financing agreements impose covenants and obligations on the Company. There is a risk that such loans may go into default if there is a breach in complying with such covenants and obligations, which could result in the lenders realizing on their security and causing our shareholders to lose some or all of their investment.

Risks Related to the Company's Securities

Potential Volatility of Common Share Price

The market price of the Common Shares could be subject to significant fluctuations. Some of the factors that may cause the market price of the Common Shares to fluctuate include:

- (i) the public's reaction to the Company's press releases, announcements and filings with regulatory authorities and those of its competitors;
- (ii) fluctuations in broader stock market prices and volumes;
- (iii) changes in market valuations of similar companies;
- (iv) investor perception of the Company, its prospects or the industry in general;
- (v) additions or departures of key personnel;
- (vi) commencement of or involvement in litigation;
- (vii) announcements by the Company or its competitors of strategic alliances, significant contracts, new technologies, acquisitions, commercial relationships, joint ventures or capital commitments;
- (viii) variations in the Company's quarterly results of operations or cash flows or those of other comparable companies;

- (ix) revenues and operating results failing to meet the expectations of securities analysts or investors in particular quarter;
- (x) changes in the Company's pricing policies or the pricing policies of its competitors;
- (xi) future issuances and sales of Common Shares;
- (xii) sales of Common Shares by insiders of the Company;
- (xiii) third party disclosure of significant short positions;
- (xiv) demand for and trading volume of Common Shares;
- (xv) changes in securities analysts' recommendations and their estimates of the Company's financial performance;
- (xvi) short-term fluctuation in stock price caused by changes in general conditions in the domestic and worldwide economies or financial markets;
and
- (xvii) the other risk factors described under this heading of the AIF.

The realization of any of these risks and other factors beyond the Company's control could cause the market price of the Common Shares to decline significantly.

In addition, broad market and industry factors may harm the market price of the Common Shares. Hence, the price of the Common Shares could fluctuate based upon factors that have little or nothing to do with the Company, and these fluctuations could materially reduce the price of the Common Shares regardless of the Company's operating performance. In the past, following a significant decline in the market price of a company's securities, there have been instances of securities class action litigation having been instituted against that company. If the Company were involved in any similar litigation, it could incur substantial costs, management's attention and resources could be diverted and it could harm the Company's business, operating results and financial condition.

Market Liquidity

The market price for the Common Shares could be subject to wide fluctuations. Factors such as the announcement of significant contracts, technological innovations, new commercial products, patents, a change in regulations, quarterly financial results, future sales of Common Shares by the Company or current shareholders, and many other factors could have considerable repercussions on the price of the Common Shares. In addition, the financial markets may experience significant price and value fluctuations that affect the market prices of equity securities of companies that sometimes are unrelated to the operating performance of these companies. Broad market fluctuations, as well as economic conditions generally may adversely affect the market price of the Common Shares.

Dividends to Shareholders

The Company does not anticipate paying cash dividends on the Common Shares in the foreseeable future. The Company currently intends to retain all future earnings to fund the development and growth of its business. Any payment of future dividends will be at the discretion of the directors and will depend on, among other things, the Company's earnings, financial condition, capital requirements, level of indebtedness, statutory and contractual restrictions applying to the payment of dividends, and other considerations that the directors deems relevant.

Impact of Future Sales by Existing Shareholders

If the Company's shareholders sell substantial amounts of the Common Shares in the public market, the market price of the Common Shares could decrease. The perception among investors that these sales will occur could also produce this effect. All currently outstanding Common Shares other than those subject to lock-up agreements executed by certain existing shareholders will, subject to applicable securities laws, generally be immediately available for resale in the public markets.

Subject to compliance with applicable securities laws, the Company's officers, directors and their affiliates may sell some or all of their Common Shares in the future. No prediction can be made as to the effect, if any, such future sales of Common Shares will have on the market price of the Common Shares prevailing from time to time. However, the future sale of a substantial number of Common Shares by the Company's officers, directors and their affiliates, or the perception that such sales could occur, could materially adversely affect prevailing market prices for the Common Shares.

Additional Common Shares issuable upon the exercise of stock options may also be available for sale in the public market, which may also cause the market price of the Common Shares to fall. Accordingly, if substantial amounts of Common Shares are sold in the public market, the market price could fall.

Working Capital and Future Issuances

The Company may issue additional Common Shares in the future which may dilute a shareholder's holdings in the Company. The Articles permit the issuance of an unlimited number of Common Shares, and shareholders of the Company will have no pre-emptive rights in connection with any further issuances. The directors of the Company have the discretion to determine the provisions attaching to the Common Shares and the price and the terms of issue of further Common Shares.

Additional equity financing may be dilutive to holders of Common Shares. Debt financing may involve restrictions on the Company's financing and operating activities. Debt financing may be convertible into other securities of the Company which may result in immediate or resulting dilution. In either case, additional financing may not be available to the Company on acceptable terms or at all. If the Company is unable to raise additional funds as needed, the scope of its operations or growth may be reduced and, as a result, the Company may be unable to fulfil its long-term goals. In this case, investors may lose all or part of their investment. Any default under such debt instruments could have a material adverse effect on the Company, its business or the results of operations.

Securities or Industry Analysts

The trading market for Common Shares could be influenced by the research and reports that industry and/or securities analysts may publish about the Company, its business, the market or competitors. If any of the analysts who may cover the Company's business change their recommendation regarding the Common Shares adversely, or provide more favourable relative recommendations about its competitors, the share price would likely decline. If any analyst who may cover the Company's business were to cease coverage or fail to regularly publish reports on the Company, it could lose visibility in the financial markets, which in turn could cause the share price or trading volume to decline.

LEGAL PROCEEDINGS

The Company may be, from time to time, involved in legal proceedings of a nature considered normal to its business. The Company is not involved in any legal proceedings which individually or in the aggregate would be material to the Company's consolidated financial condition or results of operations.

INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

Other than as described elsewhere in this AIF and as described below, there is no material interest, direct or indirect, of: (i) any director or executive officer of the Company; (ii) any person or company that beneficially owns, or controls or directs, directly or indirectly, more than 10% of the Company's outstanding voting securities; or (iii) an associate or any affiliate of any persons or companies referred to above in (i) or (ii), in any transaction within the three years before the date of this AIF that has materially affected or is reasonably expected to materially affect the Company. See "Directors and Executive Officers - Conflicts of Interest".

Settlement of Claim

In connection with the going public transaction of the Company completed in 2011, certain intellectual property rights were purchased by the Company from Phoenix, a corporation controlled by Peter Photis Pascali (the “**Father**”), the father of the current Chief Executive Officer of the Company, P. Peter Pascali, for a total consideration that included a cash component of \$14,280,000 (the “**Cash Consideration**”) payable without interest in equal monthly installments of \$40,000 commencing on April 1, 2011 and ending on December 31, 2040.

In May 2014, the Company and Phoenix completed a shares for debt transaction pursuant to which 7,500,000 Common Shares were issued to Phoenix at a price of \$0.80 per share to pay \$6,000,000 of the outstanding balance of the Cash Consideration (the “**2014 Payment Transaction**”). Prior to the 2014 Payment Transaction, the Company had only paid \$871,584 of the total Cash Consideration. Immediately before the 2014 Payment Transaction, a balance of \$13,408,416 remained payable by the Company to satisfy the Cash Consideration. After giving effect to the 2014 Payment Transaction, a balance of \$7,408,416 remained payable by the Company to satisfy the Cash Consideration.

Between the date of the 2014 Payment Transaction and December 31, 2017, the Company paid an additional \$1,876,488 to Phoenix to satisfy the Cash Consideration. After giving effect to such payments, a balance of \$5,531,928 remained payable by the Company to satisfy the Cash Consideration, which would ultimately be settled for \$3,699,999 as outlined below. The balance of the Cash Consideration continued to be payable in monthly instalments of \$40,000.

In early 2018, in light of the difficult financial condition of the Company at that time and considering that the Company would have to make significant payments under convertible debentures that were maturing on March 31, 2018, P. Peter Pascali discussed the possibility of paying a portion of the amounts due to Phoenix under the Cash Consideration in securities, instead of cash, with the Chairman of the Board, who was then Alan Curleigh and would update the other members of the Board. After a number of information discussions with the Chairman of Board, P. Peter Pascali and the Chairman, who had also had informal discussions with other members of the Board, agreed that as a result of the challenging conditions that were facing the Company, a portion of the remaining balance of the Cash Consideration should be paid in securities, subject to receiving the consent of the Father, as owner of Phoenix.

On February 9, 2018 and March 7, 2018, the Company completed private placements of securities, as outlined under “General Development of the Business - Year Ended December 31, 2018 - Financings - February and March 2018 Private Placement and Debt Settlement”. In connection with such private placements, the Company issued 1,899,999 units to the Father, as owner of Phoenix, at a price of \$0.70 per unit to pay \$1,329,999.30 of the outstanding balance of the Cash Consideration. See “General Development of the Business - Year Ended December 31, 2018 - Financings - February and March 2018 Private Placement and Debt Settlement”.

In connection with the preparation of its annual financial statements for the year ended December 31, 2017, the Company undertook its usual process of confirming with various third parties the amount owed to them by the Company at December 31, 2017. In April 2018, as part of this process, Phoenix alleged that an amount of \$5,531,928 was payable to Phoenix at December 31, 2017, which corresponded to the unpaid balance of the Cash Consideration at that time, but was significantly higher than the amount that was booked in the preliminary financial statements. The amount that had been booked in the preliminary financial statements was lower, as the balance of the Cash Consideration was payable in monthly instalments without interest over a long period. Under accounting standards, loans without interest are given an imputed interest rate and as such a lower amount had been booked on the preliminary financial statements. Phoenix also threatened to file a motion to institute proceedings before the courts to be paid the outstanding balance of the Cash Consideration.

On April 26, 2018, the members of the Board met to consider the claim of Phoenix and matters relating thereto. One member of the Board expressed the view that the claim of Phoenix was not a valid claim and the board process lacked independence. All other members of the Board were of the view that the claim could be a valid claim.

P. Peter Pascali, the Chief Executive Officer of the Company, indicated that he could negotiate the settlement of the claim with Phoenix, which was wholly-owned by the Father, and would abstain from voting on the approval of any settlement agreement with Phoenix as it involved his father. The Board considered various matters relating to the claim, including the merit of the claim, the potential lengthy and costly litigation procedures that could result from the claim, and the negative impact the claim would have on the capacity of the Company to complete additional financings if the claim was reflected in its financial statements. Following discussions, the Board adjourned the meeting.

The Board resumed the meeting on April 27, 2018. Earlier that day, the member of the Board who had expressed the view that the claim of Phoenix was not a valid claim resigned from the Board. As a result of the resignation, the Board was comprised of four directors, including P. Peter Pascali. Following discussion of the claim, P. Peter Pascali was instructed by the three other directors to negotiate a settlement of the claim with Phoenix, within certain parameters set by such directors. The three members of the Board agreed that P. Peter Pascali was in the best position to negotiate a settlement with Phoenix.

On April 30, 2018, the Board met to consider a proposed settlement agreement in respect of the claim. P. Peter Pascali summarized the terms of the proposed settlement agreement that he negotiated with his father, as owner of Phoenix, on behalf of the Company, which were within the parameters set by the other members of the Board. The proposal provided that the Company and Phoenix would agree that the balance of the Cash Consideration at December 31, 2017, which Phoenix alleged should be \$5,531,928 in the financial statement of the Company, would be settled for \$3,699,999 payable in securities as follows: (i) \$1,329,999 in units which were issued on February 9, 2018 and March 7, 2018 at a price of \$0.70 per unit, as outlined above and under “General Development of the Business - Year Ended December 31, 2018 - Financings - October 2018 Debt Settlement”, and (ii) \$2,370,000 in units issuable at the same price per unit of \$0.70, which was significantly higher than the closing price of the Common Shares of \$0.53 on April 30, 2018, with each such unit consisting of one Common Share of the Company and one Common Share purchase warrant which would entitle the holder to purchase one Common Share at a price of \$0.85 until April 19, 2020 as outlined under “General Development of the Business - Year Ended December 31, 2018 - Financings - October 2018 Debt Settlement”.

Following discussion, and after taking into consideration the merit of the claim, the potential lengthy and costly litigation procedures that could result from the claim, the negative impact the claim would have on the capacity of the Company to complete additional financings if the claim was reflected in its financial statements, and the terms of the settlement agreement, the Board unanimously approved the entering into of the settlement agreement, with P. Peter Pascali abstaining from voting.

As a result of a power of attorney signed by the Father and authorizing P. Peter Pascali, the Chief Executive Officer of the Company, to take certain actions on his behalf, Phoenix was considered “under common control” of the Father and P. Peter Pascali from an accounting perspective when the settlement agreement was entered into. P. Peter Pascali had no beneficial equity interest in and was not a director or officer of Phoenix at the time of the settlement.

TRANSFER AGENT AND REGISTRAR

The transfer agent and registrar of the Company’s Common Shares is AST Trust Company (Canada) having an office at 2001, Robert-Bourassa Boulevard, Suite 1600, Montréal, Québec, H3A 2A6.

AUDITORS

The auditors of the Company are KPMG LLP at its office located at 600 de Maisonneuve Boulevard West, Suite 1500, KPMG Tower, Montréal, Québec. KPMG LLP has informed the Company that it is independent with respect to the Company within the meaning of the relevant rules and related interpretations prescribed by the relevant professional bodies in Canada.

MATERIAL CONTRACTS

This AIF includes a summary description of certain material contracts. Each summary description discloses all material attributes of the applicable contract but is not complete and is qualified by reference to the terms of the material contracts, which are available under the Company’s SEDAR profile at www.sedar.com. The following are the Company’s only material contracts, other than those contracts entered into in the ordinary course of business, which have been entered into since the beginning of its last financial year, or entered into prior to such date, but which are still in effect and which are required to be filed with Canadian securities regulatory authorities:

- (a) contract between PyroGenesis and HPQ Silicon Resources dated July 29, 2016 whereby HPQ purchased certain intellectual property and the Company contracted to build a PUREVAP system for C\$7,070,000, which contract refers to certain terms in a development contract between HPQ (f/k/a Uragold Bay Resources Inc.) dated February 26, 2015, as amended from time to time, as described under the “Business of the Company - Development of Processes for the Production of High Purity Silicon Metals, Nano Powders and Nanowires”;
- (b) contract between PyroGenesis and HPQ NANO Silicon Powders dated August 18, 2020 whereby HPQ NANO, a subsidiary of HPQ purchased certain intellectual property and the Company contracted to transform silicon into spherical silicon nanopowders and nanowires for use in lithium-ion batteries for \$3,000,000, as described under “General Development of the Business - Recent Developments - Contracts and Milestones”; and
- (c) the Underwriting Agreement in respect of the 2020 Offering, as described under “General Development of the Business - Recent Developments - Financings”.

ADDITIONAL INFORMATION

Additional information, including with respect to directors’ and executive officers’ remuneration and indebtedness, principal holders of the Company’s securities, and securities authorized for issuance under equity compensation plans, is contained in the Company’s management information circular for its most recent annual meeting of shareholders that involved the election of directors which is available under the Company’s SEDAR profile at www.sedar.com. Additional financial information is contained in the Company’s consolidated financial statements and management’s discussion and analysis for the year ended December 31, 2019. Further information about the Company, filed with Canadian securities regulators, is available online under the Company’s SEDAR profile at www.sedar.com.

GLOSSARY OF TERMS

“**2018 Convertible Debenture**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**2018 SR&ED Loan**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**2019 RISE Agreement**” has the meaning given to such term under “Year Ended December 31, 2019 - Contracts and Milestones”.

“**2019 SR&ED Loan**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**2020 Convertible Loan**” has the meaning given to such term under “Recent Developments - Financings”.

“**2020 Public Offering**” has the meaning given to such term under “General Development of the Business - Recent Developments - Financings”.

“**AIF**” means this annual information form.

“**Articles**” has the meaning given to such term under “Corporate Structure”.

“**Audit Committee**” means the Company’s audit committee.

“**Board**” or “**Board of Directors**” means the board of directors of the Company.

“**business day**” means a day other than a Saturday, Sunday or a day on which the principal chartered banks located at Toronto are not open for business.

“**Canadian Securities Laws**” means the securities legislation or ordinance and regulations thereunder of each province of Canada and the rules, instruments, policies and orders of each Canadian securities regulator made thereunder.

“**Cash Consideration**” has the meaning given to such term under “Interest of Management and Others in Material Transactions - Settlement of Claim”.

“**CFC**” means chlorofluorocarbons.

“**Common Share**” means a common share in the capital of the Company, as described under “Description of Capital Structure - Authorized Share Capital”.

“**Company**” means PyroGenesis Canada Inc., a Canadian corporation.

“**DC&P**” disclosure controls and procedures.

“**December 18, 2020 Warrants**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**December 2018 First Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**December 2018 Second Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**diluted basis**” means the number of Common Shares outstanding assuming the exercise of all outstanding Options and other rights to acquire Common Shares.

“**Drosrite International**” means Drosrite International LLC, a US-based private company.

“**Drosrite International Exclusive Agreement**” has the meaning given to such term under “Year Ended December 31, 2019 - Contracts and Milestones”.

“**Dross Processing Service Agreement**” has the meaning given to such term under “Year Ended December 31, 2019 - Contracts and Milestones”.

“**Father**” has the meaning given to such term under “Interest of Management and Others in Material Transactions - Settlement of Claim”.

“**February 13, 2021 Creditor Warrants**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**February 13, 2021 First Private Placement Warrants**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**February 13, 2021 Second Private Placement Warrants**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**forward-looking statements**” has the meaning given to such term under “Forward-Looking Statements”.

“**HCFC**” means hydrochlorofluorocarbons.

“**HFC**” means hydrofluorocarbons.

“**HPQ**” means HPQ Silicon Resources Inc., a corporation listed for trading on the TSX-V.

“**IASB**” means the International Accounting Standards Board.

“**IFRS**” means International Financial Reporting Standards as issued by the IASB, as adopted by the Canadian Accounting Standards Board.

“**ISO**” means International Organization for Standardization.

“**June 19, 2021 Warrants**” has the meaning given to such term under “Description of Capital Structure - Stock Options and Warrants”.

“**January 25, 2021 Warrants**” has the meaning given to such term under “Description of Capital Structure - Stock Options and Warrants”.

“**May 15, 2021 Warrants**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**May 2019 First Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**May 2019 Second Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**May 28, 2021 Warrants**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**MI 61-101**” means Multilateral Instrument 61-101 – *Protection of Minority Security Holders in Special Transactions*.

“**NI 52-109**” means National Instrument 52-109 — *Certification of Disclosure in Issuers’ Annual and Interim Filings*.

“**NI 52-110**” means National Instrument 52-110 — *Audit Committees*.

“**October 2018 First Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**October 2018 Second Tranche Private Placement**” has the meaning given to such term under “Year Ended December 31, 2018 - Financings”.

“**Option**” means an option to acquire a Common Share granted pursuant to the Company’s option plan.

“**PACWADS**” means the Company’s Plasma Arc Chemical Warfare Agent Destruction System.

“**PAGV**” means plasma arc gasification and vitrification.

“**Pascali Trust**” means Fiducie de Crédit Mellon Trust, a trust of which Company’s Chief Executive Officer, P. Peter Pascali, is a trustee, officer and beneficiary.

“**PAWDS**” means the Company’s Plasma Arc Waste Destruction System.

“**Phoenix**” means Phoenix Haute Technology Inc.

“**PRRS**” means the Company’s Plasma Resource Recovery System.

“**R&D**” means research and development.

“**SEDAR**” means the System for Electronic Document Analysis and Retrieval.

“**SPARC**” means Steam Plasma Arc Refrigerant Cracking.

“**SR&ED**” means Scientific Research and Experimental Development.

“**SR&ED Tax Credits**” has the meaning given to such term under “Year Ended December 31, 2019 - Financings”.

“**TSX-V**” means the TSX Venture Exchange.

“**Underwriting Agreement**” has the meaning given to such term under “General Development of the Business - Recent Developments - Financings”.

“**United States**” and “**U.S.**” mean the United States of America, its territories and possessions, including the District of Columbia.

SCHEDULE “A” CHARTER OF THE AUDIT COMMITTEE

PYROGENESIS CANADA INC.

AUDIT COMMITTEE CHARTER

Approved by the Board of Directors

and effective as of October 25th, 2011

PREAMBLE

The Audit Committee’s (the “Committee”) Charter clarifies its responsibilities delegated by the Board of Directors (the “Board”). The Charter is used by the Committee to guide the planning and the performance of its work. The Charter also clarifies the understanding the Committee has with the Company’s auditors and with management about the nature of their involvement with the Committee and its work.

OVERALL MANDATE

Generally, the Committee promotes and ensures a high standard of financial reporting, risk management and ethical behavior for the Company and in doing so shall carry out the duties and responsibilities as set out in this Charter.

COMPOSITION

The Committee shall consist of at least three Directors appointed by the Board who will serve at the pleasure of the Board and, in any event, only so long as he/she shall be a Board member. The Committee will have an appropriate representation of independent directors as required by law. The composition of the Committee shall comply with the rules and regulations of the stock exchange on which the shares of the Company are listed as well as the Canadian Securities Administrators “Instruments”. The Board may fill vacancies in the Committee by election from their number. The Board shall elect the Chairperson of the Committee. In the absence of the Chairperson, the members of the Committee shall appoint an Acting Chairperson. The President of the Company shall not be an ex-officio member of the Committee, but the Chairperson of the Board may, at his/her discretion, attend meetings as an ex-officio member. An ex-officio member shall be vested with all the rights and powers of appointed members.

To ensure the Committee’s effectiveness, each member will be financially literate and be prepared to spend the time necessary to address complex issues and to challenge both management and the auditors, where necessary.

A quorum of the Committee shall consist of at least two members of the Committee (for this purpose the Committee shall be deemed to consist of at least three members, two being appointed by the Board as aforesaid and one being an ex-officio member as aforesaid). Notwithstanding any vacancy on the Committee, a quorum may exercise all the powers of the Committee.

The Secretary shall be selected from its members or shall be the Corporate Secretary. The Secretary of the Committee shall ensure that minutes of meetings are prepared for distribution to Committee members.

DUTIES AND RESPONSIBILITIES

The Committee shall have the following duties and responsibilities:

OVERSEEING STANDARDS OF INTEGRITY AND BEHAVIOUR

Management is responsible for the Company's standards of behavior. The Committee assists the Board in obtaining assurances that management is operating the Company in an ethical manner and encourages management to demonstrate a strong commitment to integrity.

The Committee requests that management report periodically on how the Company's systems, practices and controls encourage, monitor and provide assurance of compliance with laws, regulations and standards of ethical conduct, including the control of expenses such as perquisites, expense accounts and out-of-pocket expenses for officers and directors.

The Committee seeks the views of the auditors about the Company's standards of behavior. It discusses with the auditors the adequacy of the systems and controls, and the details of any practices or transactions identified by the auditors as being in potential violation of the legal authorities, as well as the details of any "other matters" they consider bringing to the attention of the Board. The committee seeks the views of auditors on remedies to curtail inappropriate practices and behaviors, as well as alternative remedies to rectify those matters that are not in the Company's best interest.

The Committee values financial integrity and credibility. It actively promotes an overall corporate "tone" for quality financial reporting, sound business risk practices, and ethical behavior.

OVERSEEING FINANCIAL REPORTING

Management is responsible for the Company's financial reporting. This includes preparation of accurate, fair and complete financial reports, the selection of the most appropriate accounting principles and practices, formulation of accounting judgments and estimates, and preparation of the annual report including its management's discussion and analysis (MD&A), budgets and other such reports.

The Committee shall provide assistance to the Board in fulfilling its financial reporting and control responsibilities to the shareholders of the Company and to the investment community. The Committee's primary duties and responsibilities in this regard are to:

- (a) oversee the accounting and financial reporting processes of the Company and the audit of its financial statements including:
 - i. the integrity of the Company's financial statements;
 - ii. the compliance with legal and regulatory requirements; and,
 - iii. the independent auditor's qualifications and independence;
- (b) serve as an independent and objective party to monitor the Company's financial reporting process and internal control systems;
- (c) review and appraise the audit activities of the Company's independent auditors;
- (d) provide open lines of communication among the independent auditors, financial and senior management and the Board for financial reporting and control matters and meet periodically with management and with the independent auditors.

The Committee assesses the relevance and the reliability of the financial reports to ensure that they portray, in the clearest light possible, the underlying economic circumstances and financial performance of the Company.

The Committee promotes accuracy, truthfulness, integrity and credibility in financial reporting.

The Committee discusses with management and auditors the inherent fairness, accuracy and completeness of financial disclosures as well as the Company's compliance with legal and regulatory requirements and may request attestation to this effect from them.

The Committee reviews the key accounting principles and the significant judgments and estimates with management and auditors. It seeks their views with respect to the appropriateness and consistency of the accounting principles and practices, not just their acceptability, and the degree of aggressiveness or conservatism in determining estimates.

As integral components of its financial review processes, the Committee reviews the operating and capital budgets, the borrowing plan, summaries of the corporate plan and budgets, the annual and quarterly financial statements, including the MD&A sections, and any other financial information which will be distributed to the public and requiring approval of the Board.

The Committee assesses how well the Company's financial information reporting package meets the Board's needs by reviewing its form, content and level of details.

OVERSEEING MANAGEMENT CONTROL PRACTICES

Management is responsible for maintaining records and financial management and control systems that provide reasonable assurance that assets are safeguarded and maintained, that Intellectual Property (IP) is identified, protected and secured, that transactions are in accordance with regulations and any government directives issued and that financial, human and physical resources are managed economically and efficiently and that operations are carried out effectively.

Management is responsible for identifying the principal business risks facing the Company and formulating the Company's risk tolerance levels and risk management policies for consideration and approval by the Board. The Committee assists the Board in this function, focusing on the financial risks.

The Committee holds management accountable for the design and functioning of the Company's control framework in order to monitor, assess and mitigate the Company's business risks and uncertainty, as well as legal, environmental, social responsibility and ethical compliance. Periodically, the Committee requests that management provides it with an assessment of the effectiveness of the internal control structure and procedures, and, if warranted, with plans for improving its effectiveness.

The Committee reviews with the auditors (internal, external and special examiners when applicable) their assessments of the design and functioning of the control framework and the systems in place for ensuring that the business risks are identified, monitored, controlled and within the Company's limit of tolerance, and their views on management's plans for improvements.

OVERSEEING WORK OF AUDITORS

The Committee recognizes that the Company's auditors possess substantial expertise and have significant professional responsibilities. It holds the auditors accountable for fulfilling their respective responsibilities.

The Internal auditor (when established) will be accountable to the Committee, in its capacity as a committee of the Board.

The Committee demands independent and objective assessments of the Company's standards of behavior, its compliance with authorities, its financial reporting, and its business risks systems, practices and controls from the auditors.

The Committee oversees audit activities with respect to the following two (2) types of audits:

- (a) the annual audit deals with the fairness of the statements, compliance of transactions with specified legal authorities, and any other matter identified by the external auditor as important,

- (b) the internal audit (when established), which is a part of management's system of internal control, deals with matters similar to those of the annual audit.

The Committee reviews and follows the five (5) generic phases of each of the two (2) types of audits:

- (a) establishing the purpose and terms of reference for the audit;
- (b) selection and organization of a team of experienced professionals to plan and conduct the audit;
- (c) conduct of the audit; and
- (d) reviews all the audit results and findings, and reports to the Board.

The Committee shall review management's plans to correct any significant problems raised by the internal and external auditors. It shall monitor and review management's progress in implementing its response plan.

The Committee ensures that management has not placed any inappropriate restrictions on the audits and confirms that the external auditor is independent and able to maintain its objectivity.

The Committee approves the mandate of the internal audit function, monitors the long term internal audit plan and ensures that the internal auditor has adequate resources to perform its responsibilities and has direct and open communication with the Committee. It reviews the reporting relationship of the internal auditor to ensure that an appropriate segregation of duties is maintained and that the internal auditor has an obligation to report directly to the Committee on matters affecting its duties, irrespective of his or her reporting relationships.

The Committee evaluates the work of each of the auditors with a view to determining the level of assurance that can be derived from their work.

Periodically, the Committee evaluates the performance of each auditor.

The Committee shall establish effective communication processes with management and the Company's auditors, to assist it in monitoring objectively the quality and effectiveness of the relationship among the auditors, management and the Audit Committee. It shall be responsible for the resolution of disagreements between management and auditors.

OPERATIONAL RESPONSIBILITIES

Each new member will receive an orientation about the Committee's work and responsibilities and all members are encouraged to keep current about accounting, auditing and financial reporting standards and practices. In recognition of the importance of the financial literacy skills of its members, the Committee relies on the full support of the Board in acquiring and in developing an approach to improve the necessary skills, when required.

Annually, the Committee reviews the Charter setting out the scope of its responsibilities, and, where in the opinion of the Committee, amendments to the Charter are required, may propose such amendments to the Board for consideration and approval.

Annually, the Committee will consider the appropriateness of preparing a report to the Board describing its work.

OTHER RESPONSIBILITIES

Periodically, in consultation with the Chief Financial Officer and the auditors, the Committee seeks reasonable assurance of the quality and sufficiency of the Company's accounting and financial personnel and other resources.

The Committee shall discuss or review in advance the appointment of the Chief Financial Officer.

The Committee shall review procedures established by management for dealing with complaints from employees related to financial reporting, controls and corporate conduct.

The Committee may investigate any matters that, at the Committee's discretion, fall within its duties.

The Committee shall perform such other functions as are assigned to it by law or by the Board.

The Committee shall review with the general counsel, legal and regulatory matters that, in the opinion of management, may have a material impact on the financial statements, related organization compliance policies, and program and reports received from regulators.

OPERATING PROCEDURES

The Committee shall meet quarterly, or more frequently as appropriate, in advance of regularly scheduled Board meetings. Committee meetings shall be called by the Committee Chair or requested by any Committee member or by the Board Chair.

Notice of each meeting of the Committee shall be given to each member of the Committee (including the Chair of the Board as an ex-officio member of the Committee), and except in the case of an in-camera meeting, also to the Auditors, the Chief Executive Officer and the Chief Financial Officer of the Company. Notice of the meeting shall be given either orally or by electronic mail, not less than 48 hours before the time fixed for the meeting. Members may waive notice of a meeting.

Meeting discussions may take place face to face, by teleconference or through a reciprocal interchange of emails.

The agenda for each meeting will be established by the Chair of the Committee.

Any decision made by the Committee shall be determined by a majority vote of the members of the Committee present. A member will be deemed to have consented to any resolution passed or action taken at a meeting of the Committee unless the member dissents.

The Chief Executive Officer and the Chief Financial Officer of the Company shall attend all Audit Committee meetings, with the exception of in-camera meetings.

A matter put to vote at a meeting of the Committee shall be decided by a majority of the votes cast, and in the event of an equality of votes, the Chair has a deciding vote.

The Secretary of the Committee shall ensure that minutes of meetings are prepared for distribution to Committee members, and, except for in-camera meetings, to the Auditors, the Chief Executive Officer and the Chief Financial Officer of the Company.

The Chair of the Committee will report to the Board on proceedings and deliberations of the Committee, either orally or in writing, at the first subsequent meeting of the Board or at such earlier time as the Committee in its discretion may consider advisable.

The Committee may retain at the Company's expense, with prior Board approval, independent consultants and such other persons as the Committee shall determine necessary to fulfill its duties and responsibilities.

LIMITATION ON THE COMMITTEE'S DUTIES

In contributing to the Committee's discharging of its duties under this Charter, each member of the Committee shall be obliged only to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Nothing in this mandate is intended, or may be construed, to impose on any member of the Committee a standard of care or diligence that is in any way more onerous or extensive than the standard to which all Board members are subject. The essence of the Committee's purpose is to monitor, review and when appropriate, recommend changes to financial and corporate operating standards as they are practiced by the Company's management to gain reasonable assurance (but not to ensure) about fundamental activities of the Company.

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PYROGENESIS ANNOUNCES CLOSING OF \$12 MILLION BOUGHT-DEAL PROSPECTUS OFFERING OF UNITS, INCLUDING FULL EXERCISE OF THE OVER-ALLOTMENT OPTION

MONTREAL, CANADA, (GlobeNewswire – November 10, 2020) – PyroGenesis Canada Inc. (“**PyroGenesis**” or the “**Company**”) (TSXV:PYR) (OTCQB:PYRNF) (FRA:8PY), a high-tech company that designs, develops, manufactures and commercializes advanced plasma processes and products, is pleased to announce, further to its press release dated November 3, 2020, the closing of its bought-deal short form prospectus offering pursuant to which the Company issued 3,354,550 units of the Company (the “**Units**”) at a price of \$3.60 per Unit for aggregate gross proceeds of \$12,076,380 (the “**Offering**”), including the full exercise of the over-allotment option. The Offering was led by Mackie Research Capital Corporation, as sole underwriter and sole bookrunner, (the “**Underwriter**”).

Each Unit is comprised of one common share of the Company (a “**Common Share**”) and one-half of one Common Share purchase warrant of the Company (each whole Common Share purchase warrant, a “**Warrant**”). Each Warrant entitles the holder thereof to purchase one additional Common Share at an exercise price of \$4.50 for a period of 24 months from the closing of the Offering.

Provided that if, at any time prior to the expiry date of the Warrants, the volume weighted average trading price of the Common Shares on the TSX Venture Exchange (the “**Exchange**”), or other principal exchange on which the Common Shares are listed, is greater than \$6.75 for 20 consecutive trading days, the Company may, within 15 days of the occurrence of such event, deliver a notice to the holders of Warrants accelerating the expiry date of the Warrants to the date that is 30 days following the date of such notice (the “**Accelerated Exercise Period**”). Any unexercised Warrants shall automatically expire at the end of the Accelerated Exercise Period.

The net proceeds from the Offering will be used for working capital and other purposes as described in the prospectus of the Company dated November 3, 2020 prepared in connection with the Offering.

In consideration for the services provided by the Underwriter, the Company has paid a cash commission equal to 6.5% of the gross proceeds of the Offering and issued to the Underwriter an aggregate of 191,414 non-transferable compensation options, which are exercisable into Units at a price of \$3.60 per Unit at any time up to 24 months from closing of the Offering.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company’s core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis’ operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

For further information, please contact:

Rodayna Kafal, Vice President, Investor Relations and Strategic Business Development,

Phone: (514) 937-0002,

E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>

Cautionary Note Regarding Forward Looking Information:

This press release contains certain forward-looking statements, including, without limitation, statements containing the words “may”, “plan”, “will”, “estimate”, “continue”, “anticipate”, “intend”, “expect”, “in the process” and other similar expressions which constitute “forward-looking information” within the meaning of applicable securities laws. Forward-looking statements reflect the Company’s current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, the intended use of the proceeds of the Offering. Such statements reflect the current views of the Company with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Company’s ongoing filings with the securities regulatory authorities, including under “Risk Factors” in the Company’s most recent annual information form, which filings can be found under the Company’s profile at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Company undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the TSX Venture Exchange, its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) nor the Toronto Stock Exchange nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

Note to Reader
PyroGenesis Canada Inc.
Warrant Indenture

Please be advised that the attached warrant indenture dated November 10, 2020 (the “**Warrant Indenture**”) supersedes the warrant indenture filed on November 11, 2020 (the “**Original Warrant Indenture**”). The Original Warrant Indenture contained typographical errors on the cover page and in the lead-in to section 2.1, indicating that there was a total of 1,772,922 warrants created and authorized to be issued, whereas the correct amount of warrants created and authorized to be issued is 1,772,982. We are therefore filing the Warrant Indenture to correct this.

PYROGENESIS CANADA INC.

WARRANT INDENTURE

Providing for the issue of
up to 1,772,982 Warrants

November 10, 2020

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WARRANT INDENTURE

THIS WARRANT INDENTURE made as of November 10, 2020.

BETWEEN:

PYROGENESIS CANADA INC., a corporation existing under the laws of Canada

(the “**Corporation**”)

AND:

AST TRUST COMPANY (CANADA), a trust company existing under the laws of Canada and authorized to carry on business in all provinces of Canada

(the “**Warrant Agent**”)

WHEREAS in connection with the public offering by the Corporation of up to 2,917,000 Units pursuant to a short form prospectus (“**Prospectus**”) dated November 3, 2020 (the “**Offering**”), the Corporation proposes to issue up to 1,772,982 Warrants (as defined below), of which up to 218,775 Warrants are issuable upon the exercise of the Over-Allotment Option (as defined below) and of which up to 95,707 Warrants (as defined below) are issuable upon the exercise of the Compensation Option (as defined below);

AND WHEREAS each Warrant entitles the holder thereof to purchase, subject to adjustment in certain events, one Warrant Share at a price of \$4.50 at any time prior to the Expiry Time (as defined below);

AND WHEREAS, for such purpose, the Corporation deems it necessary to create and issue Warrants and Warrant Certificates to be constituted and issued in the manner hereinafter set forth;

AND WHEREAS the Corporation is duly authorized to create and issue the Warrants to be issued as herein provided;

AND WHEREAS all things necessary have been done and performed to make the Warrants, when Authenticated (as defined below) or certified by the Warrant Agent and issued as provided in this Indenture (as defined below), legal, valid and binding upon the Corporation with the benefits of and subject to the terms of this Indenture;

AND WHEREAS the foregoing recitals are made as statements of fact by the Corporation and not by the Warrant Agent;

AND WHEREAS the Warrant Agent has agreed to enter into this Indenture and to hold all rights, interests and benefits contained herein for and on behalf of those persons who become holders of Warrants issued pursuant to this Indenture from time to time;

NOW THEREFORE THIS INDENTURE WITNESSES that for good and valuable consideration mutually given and received, the receipt and sufficiency of which are hereby acknowledged, it is hereby agreed and declared as follows:

ARTICLE 1
INTERPRETATION

1.1 Definitions

In this Indenture, unless there is something in the subject matter or context inconsistent therewith, the following words have the respective meaning indicated below:

- (a) “**Acceleration Notice**” has the meaning ascribed thereto in Section 2.2(e);
 - (b) “**Adjourned Meeting**” means a meeting adjourned in accordance with Section 6.7 or Section 6.8;
 - (c) “**Applicable Legislation**” means the provisions, if any, of any statute of Canada or a province thereof, and of the regulations under such statute, relating to warrants, warrant indentures and to the rights, duties and obligations of warrant agents under warrant indentures, and of corporations issuing their securities under warrant indentures, to the extent that any such provisions are in force and applicable to this Indenture;
 - (d) “**Authenticated**” means (a) with respect to the issuance of a Warrant Certificate, one which has been duly signed by the Corporation and authenticated by manual signature of an authorized signatory of the Warrant Agent, and (b) with respect to the issuance of an Uncertificated Warrant, one in respect of which the Warrant Agent has completed all Internal Procedures such that the particulars of such Uncertificated Warrant are entered in the register of holders of Warrants, and “*Authenticate*”, “*Authenticating*” and “*Authentication*” have the appropriate correlative meanings;
 - (e) “**Book Entry Only Participants**” means institutions that participate directly or indirectly in the Depository’s book entry registration system for the Warrants;
 - (f) “**Book Entry Only Warrants**” means Warrants that are to be held only by or on behalf of the Depository;
 - (g) “**Business Day**” means a day (other than a Saturday, Sunday, civic or statutory holiday) on which Canadian chartered banks are open for the transaction of regular business in the City of Montréal, Québec and in the City of Toronto, Ontario;
 - (h) “**CDS Global Warrants**” means Warrants representing all or a portion of the aggregate number of Warrants issued in the name of the Depository represented by an Uncertificated Warrant, or if requested by the Depository or the Corporation, by a Warrant Certificate;
 - (i) “**CDSX**” means the settlement and clearing system of the Depository for equity and debt securities in Canada;
 - (j) “**Closing Date**” means November 10, 2020 or such other date as the Underwriter and the Corporation agree for the closing of the Offering;
 - (k) “**Common Shares**” means fully paid and non-assessable common shares in the capital of the Corporation;
 - (l) “**Compensation Option**” means an aggregate of 191,414 compensation options of the Corporation issuable to the Underwriter on the date hereof in connection with the Offering, with each Compensation Option entitling the holder thereof to acquire one Unit at an exercise price of \$3.60 for a period of 24 months from the closing of the Offering.
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- (m) “**Confirmation**” has the meaning ascribed thereto in Section 5.1(c);
 - (n) “**Corporation**” means PyroGenesis Canada Inc., a corporation existing under the laws of Canada;
 - (o) “**Corporation’s Auditor**” means the firm of accountants appointed by the shareholders of the Corporation and serving as the auditor of the Corporation at the relevant time;
 - (p) “**Counsel**” means a legal counsel or a firm of legal counsels retained by the Warrant Agent or retained by the Corporation and acceptable to the Warrant Agent, which may or may not be counsel for the Corporation;
 - (q) “**Current Market Price**” of a Common Share at any date means the price per share equal to the weighted average price at which the Common Shares have traded during the 20 consecutive Trading Days ending on the third Trading Day immediately prior to such date, on any stock exchange on which such shares are listed as may be selected for such purpose by the Directors or, if such shares are not listed on any stock exchange, then on such over-the-counter market in Canada as may be selected for such purpose by the Directors, provided further that if the Common Shares are not then listed on any Canadian stock exchange or traded in the over-the counter market, then the Current Market Price shall be determined by such firm of independent chartered accountants as may be selected by the Directors;
 - (r) “**Depository**” means CDS Clearing and Depository Services Inc. or such other person as is designated in writing by the Corporation to act as depository in respect of the Warrants;
 - (s) “**Designated Provinces**” means each of the provinces of Canada where Units are sold;
 - (t) “**Director**” means a director of the Corporation and, unless otherwise specified herein, a reference to an action by the directors means an action by the directors of the Corporation as a board or, whenever duly empowered, action by a committee of such board;
 - (u) “**Dividend**” means any dividends paid by the Corporation.
 - (v) “**Exchange Basis**” means, at any time, the number of Warrant Shares which a Warrantholder is entitled to receive upon the exercise of the rights attached to the Warrants pursuant to the terms of this Indenture, as the number may be adjusted pursuant to Article 4 of this Indenture, with such number equal to one Warrant Share per Warrant as of the Closing Date;
 - (w) “**Exercise Date**” with respect to any Warrant means the date on which such Warrant is duly surrendered for exercise in accordance with the provisions of this Indenture;
 - (x) “**Exercise Price**” means \$4.50 for each Warrant Share, subject to adjustment in accordance with the provisions of this Indenture;
 - (y) “**Expiry Date**” means November 10, 2022, subject to Section 2.2(e);
 - (z) “**Expiry Time**” means 5:00 p.m. (Toronto time) on the Expiry Date or the New Expiry Date, as applicable;
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- (aa) “**Extraordinary Resolution**” has the meaning set forth in section 6.13(a);
 - (bb) “**Indenture**”, “**herein**”, “**hereto**”, “**hereunder**”, “**hereof**”, “**hereby**” and similar expressions mean or refer to this Indenture and not to any particular Article, Section, paragraph, clause, subdivision or portion hereof and include any indenture, deed or instrument supplemental or ancillary hereto; and the expressions “**Article**”, “**Section**” and “**paragraph**” followed by a number mean and refer to the specified Article, Section or paragraph of this Indenture;
 - (cc) “**Internal Procedures**” means in respect of the making of any one or more entries to, changes in or deletions of any one or more entries in the register at any time (including without limitation, original issuance or registration of transfer of ownership) the minimum number of the Warrant Agent’s internal procedures customary at such time for the entry, change or deletion made to be complete under the operating procedures followed at the time by the Warrant Agent, it being understood that neither preparation and issuance shall constitute part of such procedures for any purpose of this definition;
 - (dd) “**Issue Date**” means (i) the date of this Indenture; or (ii) in connection with the Compensation Options, each date that a Compensation Option is duly exercised by the holder thereof;
 - (ee) “**Meeting**” means a meeting of the Warranholders in respect of any resolution including an Extraordinary Resolution;
 - (ff) “**New Expiry Date**” has the meaning ascribed thereto in Section 2.2(e);
 - (gg) “**Offering**” has the meaning ascribed thereto in the recitals of this Indenture;
 - (hh) “**Offering Price**” means \$3.60;
 - (ii) “**Officer’s Certificate**” means a certificate signed by a senior officer of the Corporation;
 - (jj) “**Over-Allotment Option**” means the over-allotment option granted by the Corporation to the Underwriter, exercisable, in whole or in part, any time for period of 30 days after the Closing Date, enabling it to purchase (i) up to 437,550 additional number of Units (for the purpose of this paragraph, “**Over-Allotment Units**”); (ii) up to 218,775 additional number of additional Warrants (for the purpose of this paragraph, “**Over-Allotment Warrants**”); (iii) up to 437,550 additional number of additional Common Shares (for the purpose of this paragraph, “**Over-Allotment Unit Shares**”); or (iv) combination of Over-Allotment Units, Over-Allotment Warrants and Over-Allotment Unit Shares, so long as the aggregate number of Over-Allotment Units, Over-Allotment Warrants and Over-Allotment Unit Shares does not exceed 437,550 Over-Allotment Units or Over-Allotment Unit Shares, and 218,775 Over-Allotment Warrants;
 - (kk) “**SEC**” means the United States Securities and Exchange Commission;
 - (ll) “**Securities Regulators**” means, collectively, the securities commissions or other applicable securities regulatory authorities of each of the Designated Provinces;
 - (mm) “**Subsidiary of the Corporation**” means an entity of which voting securities carrying a majority of the votes attached to all outstanding voting securities of the entity are owned, directly or indirectly, by the Corporation or by one or more subsidiaries of the Corporation, or by the Corporation and one or more subsidiaries of the Corporation, and, as used in this definition, voting securities means securities, other than debt securities, carrying a voting right to elect Directors either under all circumstances or under some circumstances that may have occurred and are continuing;
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- (nn) “**successor entity**” has the meaning ascribed thereto in Section 7.3;
 - (oo) “**Trading Day**” means any day on which the facilities of the TSXV, or, if the Common Shares are not listed thereon, the facilities of any stock exchange on which the Common Shares are listed, are open for trading;
 - (pp) “**TSXV**” means the TSX Venture Exchange;
 - (qq) “**U.S. Exchange Act**” means the United States *Securities Exchange Act of 1934*, as amended;
 - (rr) “**Uncertificated Warrant**” means any Warrant that is not a certificated Warrant;
 - (ss) “**Underwriter**” means Mackie Research Capital Corporation;
 - (tt) “**Unit Share**” means one Common Share issued as part of a Unit;
 - (uu) “**United States**” has the meaning ascribed thereto in Regulation S under the U.S. Securities Act;
 - (vv) “**Units**” means units of the Corporation issued under the Offering, with each Unit comprised of one Unit Share and one-half of one Warrant;
 - (ww) “**U.S. Person**” means a U.S. person as that term is defined in Regulation S under the U.S. Securities Act;
 - (xx) “**U.S. Securities Act**” means the United States *Securities Act of 1933*, as amended;
 - (yy) “**Warrant**” means a Common Share purchase warrant of the Corporation created by the Corporation and issued and Authenticated hereunder, which, for the avoidance of doubt, includes the Common Share purchase warrants underlying each of the Over-Allotment Option and the Compensation Options, and entitling the holder thereof, until the Expiry Time, to purchase Warrant Shares on the basis of one Warrant Share for each Warrant upon payment of the Exercise Price in accordance with this Indenture, subject to adjustment as set out herein;
 - (zz) “**Warrant Agent**” means the warrant agent under this Indenture, initially being AST Trust Company (Canada), in its capacity as warrant agent, having an office in Montréal, Québec, and in Toronto, Ontario, or such other address as it shall inform the Corporation and Warrantholders from time to time;
 - (aaa) “**Warrant Certificate**” means a certificate evidencing one or more Warrants issuable hereunder, substantially in the form attached hereto as Schedule “A”;
 - (bbb) “**Warrant Share**” means each whole Common Share issuable upon the exercise of a Warrant in accordance with this Indenture; and
 - (ccc) “**Warrantholder**” or “**holder**” means the person entered in the register hereinafter mentioned as holders of Warrants outstanding at such time;
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- (ddd) **“Warrantholders’ Request”** means an instrument signed in one or more counterparts by Warrantholders entitled to acquire in the aggregate not less than 25% of the aggregate number of all then outstanding Warrants, requesting the Warrant Agent to take some action or proceeding specified therein;
- (eee) **“written direction of the Corporation”** and **“certificate of the Corporation”** and any other document required to be signed by the Corporation, means, respectively, a written direction, request, consent, certificate or other document signed in the name of the Corporation by any officer or Director and may consist of one or more instruments so executed.

1.2 Headings

The division of this Indenture into Articles, Sections or other subdivisions, the provision of a Table of Contents and the insertion of headings are for convenience of reference only and shall not affect the construction or interpretation of this Indenture or the Warrants.

1.3 Gender

Words importing the singular number also include the plural and vice versa and words importing the masculine gender include the feminine gender.

1.4 Weekends and Holidays

If the date for the taking of any action under this Indenture expires on a day which is not a Business Day, such action may be taken on the next succeeding Business Day with the same force and effect as if taken within the period for the taking of such action.

1.5 Meaning of “Outstanding”

Every Warrant represented by a Warrant Certificate countersigned by the Warrant Agent or Uncertificated Warrant that has been Authenticated and delivered to the holder thereof is deemed to be outstanding until it is cancelled or delivered to the Warrant Agent for cancellation. Where a new Warrant Certificate has been issued pursuant to Section 2.9 to replace one which has been mutilated, lost, stolen or destroyed, the Warrants represented by only one of such Warrant Certificates are counted for the purpose of determining the aggregate number of Warrants outstanding. A Warrant Certificate representing a number of Warrants which has been partially exercised will be deemed to be outstanding only to the extent of the unexercised portion of the Warrants.

1.6 Time

Time is of the essence hereof and of each Warrant Certificate.

1.7 Applicable Law

This Indenture and each Warrant Certificate are subject to and construed in accordance with the laws of the Province of Québec and the federal laws of Canada applicable therein. Each of the parties hereto, which shall include the Warrantholders, irrevocably attorns to the exclusive jurisdiction of the courts of the Province of Québec with respect to all matters arising out of this Indenture and the transactions contemplated herein.

1.8 Severability

Wherever possible, each provision hereof shall be interpreted in such manner as to be effective and valid under Applicable Legislation. In the event that any provision hereof shall be determined to be invalid, illegal or unenforceable in any respect under Applicable Legislation the validity, legality and enforceability of the remainder of such provision and any other provision hereof shall not be affected or impaired thereby.

1.9 Currency

All references to currency herein are to Canadian dollars unless otherwise indicated.

1.10 Conflicts

In the event of any conflict or inconsistency between the provisions of this Indenture and the Warrant Certificates, the provisions of this Indenture will govern.

1.11 Schedule

The attached Schedule "A" is incorporated into and forms part of this Indenture.

ARTICLE 2 ISSUE OF WARRANTS

2.1 Creation and Form of Warrants

A total of up to 1,772,982 Warrants (subject to adjustment as herein provided) are hereby created and authorized to be issued in accordance with the terms and conditions hereof. By written order of the Corporation, (i) the Warrant Agent shall deliver Warrant Certificates to Warrantholders and record the name of the Warrantholders on the Warrant register and (ii) Uncertificated Warrants shall be Authenticated by the Warrant Agent and deposited with the Depository, all in accordance with this Article 2. Registration of interests in Warrants held by the Depository may be evidenced by a position appearing on the register for Warrants of the Warrant Agent for an amount representing the aggregate number of such Warrants outstanding from time to time.

2.2 Terms of Warrants.

- (a) Subject to the applicable conditions for exercise set out in Article 5 having been satisfied and subject to adjustment in accordance with Section 4.1, and subject to acceleration of the Expiry Date in accordance with Section 2.2(e), each Warrant shall entitle each Warrantholder thereof, upon exercise at any time after the Issue Date and prior to the Expiry Time, to acquire one Warrant Share upon payment of the Exercise Price.
 - (b) No fractional Warrants shall be issued or otherwise provided for hereunder and Warrants may only be exercised in a sufficient number to acquire whole numbers of Common Shares.
 - (c) Each Warrant shall entitle the holder thereof to such other rights and privileges as are set forth in this Indenture.
 - (d) The number of Common Shares which may be purchased pursuant to the Warrants and the Exercise Price therefor shall be adjusted upon the events and in the manner specified in Section 4.1.
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- (e) Notwithstanding any other provisions herein, if at any time before the Expiry Date, the volume weighted average trading price of the Common Shares on the TSXV (or if the Common Shares are not listed on the TSXV, then on such other recognized Canadian stock exchange on which the Common Shares are then listed) is greater than \$6.75 over any 20 consecutive Trading Days, the Corporation shall be entitled, within 15 days of the occurrence of such event, to accelerate the Expiry Date of the Warrants to the date that is 30 days following the date that notice of such acceleration is provided to the Warrant Agent and to the Warranholders (the “**New Expiry Date**”) in writing specifying the New Expiry Date (the “**Acceleration Notice**”). From and after the New Expiry Date specified in such Acceleration Notice, no Warrants may be issued or exercised, and all unexercised Warrants shall be void and of no effect following the Expiry Time on the New Expiry Date. For greater certainty, following the due issuance of an Acceleration Notice, the “**Expiry Date**” shall mean the New Expiry Date.

2.3 Form of Warrants, Certificated Warrants

The Warrants may be issued in both certificated and uncertificated form. All Warrants issued in certificated form shall be evidenced by a Warrant Certificate (including all replacements issued in accordance with this Indenture), substantially in the form set out in Schedule “A” hereto, which shall be dated as of the applicable Issue Date, shall bear such distinguishing letters and numbers as the Corporation may, with the approval of the Warrant Agent, prescribe, and shall be issuable in any denomination excluding fractions. All Warrants issued to the Depository may be in either a certificated or uncertificated form, such uncertificated form being evidenced by a book position on the register of Warranholders to be maintained by the Warrant Agent.

2.4 Book Entry Only Warrants

- (a) Registration of beneficial interests in and transfers of Warrants held by the Depository shall be made only through the book entry registration system and no Warrant Certificates shall be issued in respect of such Warrants except where physical certificates evidencing ownership in such securities are required or as set out herein or as may be requested by the Depository, as determined by the Corporation, from time to time. Except as provided herein, owners of beneficial interests in any CDS Global Warrants shall not be entitled to have Warrants registered in their names and shall not receive or be entitled to receive Warrants in definitive form or to have their names appear in the register. Notwithstanding any terms set out herein, Warrants having any legend set forth in Section 2.5(g) herein and held in the name of the Depository may only be held in the form of Uncertificated Warrants with the prior consent of the Warrant Agent and in accordance with the Internal Procedures of the Warrant Agent.
- (b) Notwithstanding any other provision in this Indenture, no CDS Global Warrants may be exchanged for Warrants registered, and no transfer of any CDS Global Warrants may be registered, in the name of any person other than the Depository for such CDS Global Warrants or a nominee thereof unless:
- (i) the Depository notifies the Corporation that it is unwilling or unable to continue to act as depository in connection with the Book Entry Only Warrants and the Corporation is unable to locate a qualified successor;
 - (ii) the Corporation determines that the Depository is no longer willing, able or qualified to discharge properly its responsibilities as holder of the CDS Global Warrants and the Corporation is unable to locate a qualified successor;
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- (iii) the Depository ceases to be a clearing agency or otherwise ceases to be eligible to be a depository and the Corporation is unable to locate a qualified successor;
- (iv) the Corporation determines that the Warrants shall no longer be held as Book Entry Only Warrants through the Depository;
- (v) such right is required by Applicable Legislation, as determined by the Corporation and the Corporation's Counsel;
- (vi) the Warrant is to be Authenticated to or for the account or benefit of a person in the United States or a U.S. Person; or
- (vii) such registration is effected in accordance with the internal procedures of the Depository and the Warrant Agent;

following which, Warrants for those holders requesting the same shall be registered and issued to the beneficial owners of such Warrants or their nominees as directed by the holder. The Corporation shall provide an Officer's Certificate giving notice to the Warrant Agent of the occurrence of any event outlined in this Section 2.4(b).

- (c) Subject to the provisions of this Section 2.4, any exchange of CDS Global Warrants for Warrants which are not CDS Global Warrants may be made in whole or in part in accordance with the provisions of Section 2.10, *mutatis mutandis*. All such Warrants issued in exchange for a CDS Global Warrant or any portion thereof shall be registered in such names as the Depository for such CDS Global Warrants shall direct and shall be entitled to the same benefits and subject to the same terms and conditions (except insofar as they relate specifically to CDS Global Warrants) as the CDS Global Warrants or portion thereof surrendered upon such exchange.
 - (d) Every Warrant that is Authenticated upon registration or transfer of a CDS Global Warrant, or in exchange for or in lieu of a CDS Global Warrant or any portion thereof, shall be Authenticated in the form of, and shall be, a CDS Global Warrant, unless such Warrant is registered in the name of a person other than the Depository for such CDS Global Warrant or a nominee thereof.
 - (e) Notwithstanding anything to the contrary in this Indenture, a CDS Global Warrant will be issued as an Uncertificated Warrant, unless otherwise requested in writing by the Depository or the Corporation.
 - (f) The rights of beneficial owners of Warrants who hold securities entitlements in respect of the Warrants through the book entry registration system shall be limited to those established by Applicable Legislation and agreements between the Depository and the Book Entry Only Participants and between such Book Entry Only Participants and the beneficial owners of Warrants who hold securities entitlements in respect of the Warrants through the book entry registration system, and such rights must be exercised through a Book Entry Only Participant in accordance with the rules and procedures of the Depository.
 - (g) Notwithstanding anything herein to the contrary, neither the Corporation nor the Warrant Agent nor any agent thereof shall have any responsibility or liability for:
 - (i) the electronic records maintained by the Depository relating to any ownership interests or any other interests in the Warrants or the depository system maintained by the Depository, or payments made on account of any ownership interest or any other interest of any person in any Warrant represented by an electronic position in the book entry registration system (other than the Depository or its nominee);
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- (ii) maintaining, supervising or reviewing any records of the Depository or any Book Entry Only Participant relating to any such interest; or
 - (iii) any advice or representation made or given by the Depository or those contained herein that relate to the rules and regulations of the Depository or any action to be taken by the Depository on its own direction or at the direction of any Book Entry Only Participant.
- (h) The Corporation may terminate the application of this Section 2.4 in its sole discretion in which case all Warrants shall be evidenced by Warrant Certificates registered in the name of a person other than the Depository.

2.5 Certificated Warrants

- (a) For Warrants issued in certificated form, the form of certificate representing Warrants shall be substantially as set out in Schedule "A" hereto or such other form as is authorized from time to time by the Warrant Agent. Each Warrant Certificate shall be Authenticated manually on behalf of the Warrant Agent. Each Warrant Certificate shall be signed by any one duly authorized signatory of the Corporation, whose signature shall appear on the Warrant Certificate and may be printed, lithographed or otherwise mechanically reproduced thereon and, in such event, certificates so signed are as valid and binding upon the Corporation as if it had been signed manually. Any Warrant Certificate which has two signatures as hereinbefore provided shall be valid notwithstanding that one or more of the persons whose signature is printed, lithographed or mechanically reproduced no longer holds office at the date of issuance of such certificate. The Warrant Certificates may be engraved, printed or lithographed, or partly in one form and partly in another, as the Corporation, with the approval of the Warrant Agent, may determine.
 - (b) The Warrant Agent shall Authenticate Uncertificated Warrants (whether upon original issuance, exchange, registration of transfer or otherwise) by completing its Internal Procedures and the Corporation shall, and hereby acknowledges that it shall, thereupon be deemed to have duly and validly issued such Uncertificated Warrants under this Indenture. Such Authentication shall be conclusive evidence that such Uncertificated Warrant has been duly issued hereunder and that the holder or holders are entitled to the benefits of this Indenture. The register shall be final and conclusive evidence as to all matters relating to Uncertificated Warrants with respect to which this Indenture requires the Warrant Agent to maintain records or accounts. In case of differences between the register at any time and any other time the register at the later time shall be controlling, absent manifest error and such Uncertificated Warrants are binding on the Corporation.
 - (c) No Warrant shall be considered issued and shall be valid or obligatory or shall entitle the holder thereof to the benefits of this Indenture, until it has been Authenticated by the Warrant Agent. Authentication by the Warrant Agent, including by way of entry on the register, shall not be construed as a representation or warranty by the Warrant Agent as to the validity of this Indenture or of such Warrant Certificates or Uncertificated Warrants (except the due Authentication thereof) or as to the performance by the Corporation of its obligations under this Indenture and the Warrant Agent shall in no respect be liable or answerable for the use made of the Warrants or any of them or of the consideration thereof. Authentication by the Warrant Agent shall be conclusive evidence as against the Corporation that the Warrants so Authenticated have been duly issued hereunder and that the holder thereof is entitled to the benefits of this Indenture.
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- (d) No Warrant Certificate shall be considered issued and Authenticated or, if Authenticated, shall be obligatory or shall entitle the holder thereof to the benefits of this Indenture, until it has been Authenticated by manual signature by or on behalf of the Warrant Agent. Such Authentication on any such Warrant Certificate shall be conclusive evidence that such Warrant Certificate is duly Authenticated and is valid and a binding obligation of the Corporation and that the holder is entitled to the benefits of this Indenture.
- (e) No Uncertificated Warrant shall be considered issued and shall be obligatory or shall entitle the holder thereof to the benefits of this Indenture, until it has been Authenticated by entry on the register of the particulars of the Uncertificated Warrant. Such entry on the register of the particulars of an Uncertificated Warrant shall be conclusive evidence that such Uncertificated Warrant is a valid and binding obligation of the Corporation and that the holder is entitled to the benefits of this Indenture.
- (f) The Authentication by the Warrant Agent of any Warrants whether by way of entry on the register or otherwise shall not be construed as a representation or warranty by the Warrant Agent as to the validity of the Indenture or such Warrants (except the due Authentication thereof) or as to the performance by the Corporation of its obligations under this Indenture and the Warrant Agent shall in no respect be liable or answerable for the use made of the Warrants or any of them or the proceeds thereof. Authentication by the Warrant Agent shall be conclusive evidence as against the Corporation that the Warrants so Authenticated have been duly issued hereunder and that the holder thereof is entitled to the benefits of this Indenture.
- (g) Each CDS Global Warrant originally issued in Canada and held by the Depository, and each CDS Global Warrant issued in exchange therefor or in substitution thereof shall bear or be deemed to bear the following legend or such variations thereof as the Corporation may prescribe from time to time:

“UNLESS THIS CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF CDS CLEARING AND DEPOSITORY SERVICES INC. (“CDS”) TO PYROGENESIS CANADA INC. (THE “ISSUER”) OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY CERTIFICATE ISSUED IN RESPECT THEREOF IS REGISTERED IN THE NAME OF CDS, OR IN SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF CDS (AND ANY PAYMENT IS MADE TO CDS OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF CDS), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL SINCE THE REGISTERED HOLDER HEREOF, CDS, HAS A PROPERTY INTEREST IN THE SECURITIES REPRESENTED BY THIS CERTIFICATE HEREIN AND IT IS A VIOLATION OF ITS RIGHTS FOR ANOTHER PERSON TO HOLD, TRANSFER OR DEAL WITH THIS CERTIFICATE.”

2.6 Transferability and Ownership of Warrants

- (a) The Corporation hereby appoints the Warrant Agent as registrar of the Warrants and shall cause the Warrant Agent to keep at its Toronto office a register in which the Warrant Agent shall enter the names and addresses of the Warrantholders and other particulars, prescribed by law, of the Warrants held by them, together with a record of transfers in which particulars of all transfers of Warrants will be recorded. The Warrant Agent shall cause the register to be open at all reasonable times for inspection by the Corporation, the Underwriter and any Warrantholder.
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- (b) The Warrant Agent shall maintain records and accounts concerning the Warrants, whether certificated or uncertificated, which shall contain the information called for below with respect to each Warrant, together with such other information as may be required by law or as the Warrant Agent may elect to record. All such information shall be kept in one set of accounts and records which the Warrant Agent shall designate (in such manner as shall permit it to be so identified as such by an unaffiliated party) as the register of the holders of Warrants. The information to be entered for each account in the register of Warrants at any time shall include (without limitation):
- (i) the name and address of the Warrantholders, the date of Authentication thereof and the number of Warrants;
 - (ii) whether such Warrant is a Certificated Warrant or an Uncertificated Warrant and, if a Warrant Certificate, the unique number or code assigned to and imprinted thereupon and, if an Uncertificated Warrant, the unique number or code assigned thereto if any;
 - (iii) if any portion thereof has been exercised, the date and price of such exercise and the remaining balance of such Warrants;
 - (iv) whether such Warrant has been cancelled; and
 - (v) a register of transfers in which all transfers of Warrants and the date and other particulars of each transfer shall be entered.

The register shall be available for inspection by the Corporation and or any Warrantholder during the Warrant Agent's regular business hours on a Business Day. Any Warrantholder exercising such right of inspection shall first provide an affidavit in form satisfactory to the Corporation and the Warrant Agent stating the name and address of the Warrantholder and agreeing not to use the information therein except in connection with an effort to call a meeting of Warrantholders or to influence the voting of Warrantholders at any meeting of Warrantholders.

- (c) Once an Uncertificated Warrant has been Authenticated, the information set forth in the register with respect thereto at the time of Authentication may be altered, modified, amended, supplemented or otherwise changed only to reflect exercise or proper instructions to the Warrant Agent from the holder as provided herein, except that the Warrant Agent may act unilaterally to make purely administrative changes internal to the Warrant Agent and changes to correct errors. Each person who becomes a holder of an Uncertificated Warrant, by his, her or its acquisition thereof shall be deemed to have irrevocably (i) consented to the foregoing authority of the Warrant Agent to make such minor error corrections and (ii) agreed to pay to the Warrant Agent, promptly upon written demand, the full amount of all loss and expense (including without limitation reasonable legal fees of the Corporation and the Warrant Agent plus interest, at an appropriate then prevailing rate of interest to the Warrant Agent), sustained by the Corporation or the Warrant Agent as a proximate result of such error if but only if and only to the extent that such present or former holder realized any benefit as a result of such error and could reasonably have prevented, forestalled or minimized such loss and expense by prompt reporting of the error or avoidance of accepting benefits thereof whether or not such error is or should have been timely detected and corrected by the Warrant Agent; provided, that no person who is a bona fide purchaser shall have any such obligation to the Corporation or to the Warrant Agent.
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- (d) The Warrant Certificates may only be transferred by the Warrantholder (or its legal representatives or its attorney duly appointed), in accordance with Applicable Legislation and upon compliance with the conditions herein, on the register kept at the office of the Warrant Agent pursuant to Section 2.6(a) by delivering to the Warrant Agent's Toronto office a duly executed Form of Transfer attached as Appendix "2" to the Warrant Certificate and complying with such other reasonable requirements as the Corporation and the Warrant Agent may prescribe and such transfer shall be duly noted on the register by the Warrant Agent. In the case of Uncertificated Warrants, the Warrants may only be transferred in accordance with the procedures of the Depository under its book entry registration system.
 - (e) Notwithstanding anything contained in this Indenture or in the Warrant Certificate, the Warrant Agent, relying solely on the Form of Transfer or such other reasonable requirements as the Corporation and Warrant Agent may prescribe pursuant to Section 2.6(d) or this Section, shall not register any transfer of a Warrant unless the transfer is made in compliance with this Section.
 - (f) Warrants, or any of the underlying Warrant Shares, may only be offered, sold, pledged or otherwise transferred (i) to the Corporation, or (ii) outside the United States in compliance with Rule 904 of Regulation S under the U.S. Securities Act and in compliance with applicable state and foreign laws.
 - (g) If a Warrant Certificate is tendered for transfer, the Warrant Agent shall not register such transfer if the Corporation has provided prior written instructions to the Warrant Agent to the effect that the Corporation believes such transfer would not comply with the U.S. Securities Act or applicable U.S. state securities laws.
 - (h) The Corporation shall direct the Warrant Agent as to matters related to the applicable hold periods and applicable securities legislation. The Warrant Agent shall have no obligation to ensure or verify compliance with any Applicable Legislation or regulatory requirements on the issue, exercise or transfer of any Warrants or any Warrant Shares or other securities issuable upon the exercise of any Warrants. The Warrant Agent shall be entitled to process all proffered transfers and exercises of Warrants upon the presumption that such transfers or exercises are permissible pursuant to all Applicable Legislation and regulatory requirements and the terms of this Indenture. The Warrant Agent may assume for the purposes of this Indenture that the address on the register of Warrantholders of any Warrantholder is such Warrantholder's actual address and is also determinative of the Warrantholder's residency and that the address of any transferee to whom any Warrants or any Warrant Shares are to be registered, as shown on the transfer document, is the transferee's actual address and is also determinative of the transferee's residency.
 - (i) A person who furnishes evidence that he is, to the reasonable satisfaction of the Warrant Agent:
 - (i) the executor, administrator, heir or legal representative of the heirs of the estate of a deceased Warrantholder;
 - (ii) a guardian, committee, trustee, curator or tutor representing a Warrantholder who is an infant, an incompetent person or a missing person; or
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(iii) a liquidator or a trustee in bankruptcy for a Warrantholder,

may, as hereinafter stated, by surrendering such evidence together with the Warrant Certificate in question to the Warrant Agent (by delivery or mail as set forth in Section 9.1 hereof), and subject to such reasonable requirements as the Warrant Agent may prescribe and all applicable securities legislation and requirements of regulatory authorities, become noted upon the register of Warrantholders. After receiving the surrendered Warrant Certificate and upon the person surrendering the Warrant Certificate meeting the requirements as set forth in this Section 2.6(i) the Warrant Agent shall forthwith give written notice thereof together with confirmation as to the identity of the person entitled to become the holder to the Corporation. Forthwith after receiving written notice from the Warrant Agent as aforesaid, the Corporation shall cause a new Warrant Certificate to be issued and sent to the new holder and the Warrant Agent shall alter the register of holders accordingly.

- (j) The Corporation and the Warrant Agent shall deem and treat the registered holder of any Warrant as the absolute legal and beneficial owner thereof for all purposes, free from all equities or rights of set off or counterclaim between the Corporation and any previous holder of such Warrant, save in respect of equities of which the Corporation is required to take notice by statute or by order of a court of competent jurisdiction, and neither the Corporation nor the Warrant Agent is affected by any notice to the contrary.
- (k) Subject to the provisions of this Indenture and Applicable Legislation, each Warrantholder is entitled to the rights and privileges attaching to the Warrants, and the issue of the Warrant Shares by the Corporation upon the exercise of Warrants by any Warrantholder in accordance with the terms and conditions herein contained shall discharge all responsibilities of the Corporation and the Warrant Agent with respect to such Warrants and neither the Corporation nor the Warrant Agent is bound to inquire into the title of any such registered holder.
- (l) A reasonable charge will be levied on a presenter of a Warrant Certificate pursuant to this Indenture for the transfer of any Warrant. Either the Warrantholder or the Corporation will assume this charge.
- (m) Notwithstanding any other provision of this Section 2.6, in connection with any transfer of Warrants, the transferor and transferee shall comply with all reasonable requirements of the Warrant Agent as the Warrant Agent may deem necessary.

2.7 Warrantholders Not Shareholders

Except as is expressly provided herein, nothing in this Indenture or in the holding of a Warrant Certificate, entitlement to a Warrant or otherwise, shall, in itself, confer or be construed as conferring upon a Warrantholder any right or interest whatsoever as a shareholder, including, but not limited to, the right to vote at, to receive notice of, or to attend, meetings of shareholders or any other proceedings of the Corporation, or the right to Dividends and other allocations.

2.8 Countersigning

The Warrant Agent shall countersign Warrant Certificates and Authenticate Uncertificated Warrants upon the written direction of the Corporation. No Warrant Certificate shall be issued, or if issued, is valid or exercisable or entitles the holder thereof to the benefits of this Indenture until the Warrant Certificate has been manually countersigned by the Warrant Agent or the Uncertificated Warrant has been Authenticated by the Warrant Agent, as the case may be. The countersignature or Authentication by or on behalf of the Warrant Agent will be conclusive evidence as against the Corporation that the Warrant Certificate so countersigned or Uncertificated Warrant so Authenticated has been duly issued hereunder and that the holder is entitled to the benefit hereof. The countersignature by or on behalf of the Warrant Agent on any Warrant Certificate or the Authentication of any Uncertificated Warrant by or on behalf of the Warrant Agent is not to be construed as a representation or warranty by the Warrant Agent as to the validity of this Indenture or of the Warrants or as to the performance by the Corporation of its obligations under this Indenture and the Warrant Agent is in no way liable or answerable for the use made of the Warrants or the proceeds from the issuance thereof, except as specified by this Indenture. The countersignature or Authentication, as the case may be, by or on behalf of the Warrant Agent is only a representation and warranty of the Warrant Agent that the Warrant Certificate has been duly countersigned by or on behalf of the Warrant Agent or the Uncertificated Warrant has been duly Authenticated by or on behalf of the Warrant Agent pursuant to the provisions of this Indenture.

2.9 Loss, Mutilation, Destruction or Theft of Warrants

In case any of the Warrant Certificates issued and countersigned hereunder is mutilated or lost, destroyed or stolen, the Corporation, in its discretion, may issue and thereupon the Warrant Agent will countersign and deliver a new Warrant Certificate of like date and tenor in exchange for and in place of the one mutilated, lost, destroyed or stolen and upon surrender and cancellation of such mutilated Warrant Certificate or in lieu of and in substitution for such lost, destroyed or stolen Warrant Certificate and the substituted Warrant Certificate entitles the holder thereof to the benefits hereof and ranks equally in accordance with its terms with all other Warrants issued hereunder.

The Warrantholder applying for the issue of a new Warrant Certificate pursuant to this Section shall bear the cost of the issue thereof and in case of loss, destruction or theft shall, as a condition precedent to the issue thereof, furnish to the Corporation and the Warrant Agent such evidence of ownership and of the loss, destruction or theft of the Warrant Certificate so lost, destroyed or stolen as is satisfactory to the Corporation and the Warrant Agent in their discretion. The Corporation and the Warrant Agent may also, as a condition precedent to issuing a new Warrant Certificate, require such applicant to furnish an indemnity and surety bond in amount and form satisfactory to the Corporation and Warrant Agent in their discretion, and the applicant shall pay the reasonable charges of the Corporation and the Warrant Agent in connection therewith.

2.10 Exchange of Warrants

A Warrantholder may at any time prior to the Expiry Time, by written instruction delivered to the Warrant Agent at the office of the Warrant Agent set forth in Section 2.6(a), exchange its Warrant Certificates for Warrant Certificates evidencing Warrants in other denominations representing in the aggregate the same number of Warrants under the Warrant Certificates so surrendered, in which case the Warrant Agent may make a charge sufficient to reimburse it for any government fees or charges required to be paid and such reasonable fees as the Warrant Agent may determine for every Warrant Certificate issued upon exchange. The Warrantholder surrendering such Warrant Certificate shall bear such fee and charge. Payment of the charges is a condition precedent to the exchange of the Warrant Certificate. The Corporation shall sign and the Warrant Agent shall countersign all Warrant Certificates necessary to carry out exchanges as aforesaid. Any Warrant Certificate from the holder (or such other instructions, in form satisfactory to the Warrant Agent), tendered for exchange shall be surrendered to, and cancelled by the Warrant Agent.

2.11 Ranking

All Warrants will have the same attributes and rank *pari passu* regardless of the date of actual issue.

2.12 Purchase of Warrants for Cancellation

Subject to Applicable Legislation, the Corporation may, at any time or from time to time, purchase all or any of the Warrants in the market, by private contract or otherwise, on such terms as the Corporation may determine. Any such purchase shall be made at the lowest price or prices at which, in the opinion of the Directors, such Warrants are then obtainable plus reasonable costs of purchase. In the case of Certificated Warrants, the Warrant Certificates representing the Warrants purchased hereunder by the Corporation shall, immediately following purchase, be delivered to and cancelled by the Warrant Agent and reflected accordingly on the register of Warrants. In the case of Uncertificated Warrants, the Warrants purchased pursuant to this Section shall be reflected accordingly on the register of Warrants and in accordance with procedures prescribed by the Depository under the book entry registration system. No Warrants shall be issued in substitution thereof.

ARTICLE 3 COVENANTS OF THE CORPORATION

3.1 General Covenants.

The Corporation covenants with the Warrant Agent that so long as any Warrants remain outstanding:

- (a) it will reserve and keep available a sufficient number of Common Shares for the purpose of enabling it to satisfy its obligations to issue Common Shares upon the exercise of the Warrants;
 - (b) it will cause the Common Shares from time to time acquired pursuant to the exercise of the Warrants to be duly issued and delivered in accordance with the Warrants and the terms hereof;
 - (c) upon payment of the aggregate Exercise Price therefor, all Common Shares which shall be issued upon exercise of the right to acquire provided for herein shall be fully paid and nonassessable;
 - (d) it will use reasonable commercial efforts to maintain its existence;
 - (e) it will use reasonable commercial efforts to ensure that all Common Shares outstanding or issuable from time to time (including without limitation the Common Shares issuable on the exercise of the Warrants) continue to be or are listed and posted for trading on the TSXV or such other stock exchange acceptable to the Corporation and ensure that the Warrant Shares will be accepted for a period of 24 months following the Closing Date, provided that this clause shall not be construed as limiting or restricting the Corporation from completing a consolidation, amalgamation, arrangement, takeover bid, merger or like transaction that would result in the Common Shares ceasing to be listed and posted for trading on such exchange simultaneously with or as soon as practicable following their issue.
 - (f) it will make all requisite filings under applicable Canadian securities legislation including those necessary to remain a reporting issuer not in default in each of the provinces and other Canadian jurisdictions where it is or becomes a reporting issuer for a period of 24 months after the Closing Date; and
 - (g) generally, it will well and truly perform and carry out all of the acts or things to be done by it as provided in this Indenture.
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3.2 Warrant Agent's Remuneration and Expenses.

The Corporation covenants that it will pay to the Warrant Agent from time to time reasonable remuneration for its services hereunder and will pay or reimburse the Warrant Agent upon its request for all reasonable expenses, disbursements and advances incurred or made by the Warrant Agent in the administration or execution of the trusts hereby created (including the reasonable compensation and the disbursements of its Counsel and all other advisers and assistants not regularly in its employ) both before any default hereunder and thereafter until all duties of the Warrant Agent hereunder shall be finally and fully performed, except any such expense, disbursement or advance as may arise out of or result from the Warrant Agent's gross negligence, willful misconduct or bad faith. Any amount owing hereunder and remaining unpaid after 30 days from the invoice date will bear interest at the then current rate charged by the Warrant Agent against unpaid invoices and shall be payable upon demand. This Section shall survive the resignation or removal of the Warrant Agent and/or the termination of this Indenture.

3.3 Performance of Covenants by Warrant Agent.

If the Corporation fails to perform any of its covenants contained in this Indenture and the Corporation has not rectified such failure within ten (10) Business Days after receiving notice of such failure by the Warrant Agent, the Warrant Agent may notify the Warrantheolders of such failure on the part of the Corporation or may itself perform any of the covenants capable of being performed by it, but shall be under no obligation to perform said covenants or to notify the Warrantheolders of such performance by it. No such performance, expenditure or advance by the Warrant Agent shall relieve the Corporation of any default hereunder or of its continuing obligations under the covenants herein contained.

3.4 Enforceability of Warrants.

The Corporation covenants and agrees that it is duly authorized to create and issue the Warrants to be issued hereunder and that the Warrants, when issued and Authenticated as herein provided, will be valid and enforceable against the Corporation in accordance with the provisions hereof and the terms hereof and that, subject to the provisions of this Indenture, the Corporation will cause the Common Shares from time to time acquired upon exercise of Warrants issued under this Indenture to be duly issued and delivered in accordance with the terms of this Indenture.

ARTICLE 4 **ADJUSTMENT OF NUMBER OF WARRANT SHARES**

4.1 Adjustment of Number of Warrant Shares

The subscription rights in effect under the Warrants for Warrant Shares shall be subject to adjustment from time to time as follows:

- (a) if and whenever, at any time from the date hereof and prior to the Expiry Time, the Corporation:
 - (i) subdivides, re-divides or changes its outstanding Common Shares into a greater number of shares;
 - (ii) consolidates, reduces or combines its outstanding Common Shares into a smaller number of shares; or
 - (iii) issues Common Shares or securities exchangeable for or convertible to Common Shares ("**Convertible Securities**") to the holders of all or substantially all of the outstanding Common Shares by way of a stock dividend or other distribution (other than the issue of Common Shares or Convertible Securities to such holders upon the exercise of Warrants or any outstanding options);
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then, the Exercise Price in effect on the effective date of such subdivision, re-division, change, reduction, combination, consolidation, issuance or on the record date of such distribution, as the case may be, shall (A), in the case of the events referred to in (i) or (iii) above, be decreased in proportion to the number of outstanding Common Shares resulting from such subdivision, re-division, change or distribution, or (B), in the case of the events referred to in (ii) above, be increased in proportion to the number of outstanding Common Shares resulting from such reduction, combination or consolidation. Any Common Shares owned by or held for the account of the Corporation shall be deemed not to be outstanding for the purpose of any such computation. Such adjustment shall be made successively whenever any event referred to in this Section 4.1(a) shall occur. Upon any adjustment of the Exercise Price pursuant to this Section 4.1(a), the Exchange Basis shall be contemporaneously adjusted by multiplying the number of Common Shares theretofore obtainable on the exercise thereof by a fraction of which (i) the numerator shall be the Exercise Price in effect immediately prior to such adjustment and (ii) the denominator shall be the Exercise Price resulting from such adjustment;

- (b) if and whenever at any time from the date hereof and prior to the Expiry Time, the Corporation shall fix a record date for the issuance of rights, options or warrants to all or substantially all the holders of its outstanding Common Shares entitling them, for a period expiring not more than 45 days after such record date, to subscribe for or purchase Common Shares (or securities convertible or exchangeable into Common Shares) at a price per Common Share (or having a conversion or exchange price per Common Share) less than 95% of the Current Market Price on such record date (a “**Rights Offering**”), the Exercise Price shall be adjusted immediately after such record date so that it shall equal the amount determined by multiplying the Exercise Price in effect on such record date by a fraction, of which the numerator shall be the total number of Common Shares outstanding on such record date plus a number of Common Shares equal to the number arrived at by dividing the aggregate price of the total number of additional Common Shares offered for subscription or purchase (or the aggregate conversion or exchange price of the convertible or exchangeable securities so offered) by the Current Market Price, and of which the denominator shall be the total number of Common Shares outstanding on such record date plus the total number of additional Common Shares offered for subscription or purchase or into which the convertible or exchangeable securities so offered are convertible or exchangeable; any Common Shares owned by or held for the account of the Corporation shall be deemed not to be outstanding for the purpose of any such computation; such adjustment shall be made successively whenever such a record date is fixed; to the extent that no such rights or warrants are exercised prior to the expiration thereof, the Exercise Price shall be readjusted to the Exercise Price which would then be in effect if such record date had not been fixed or, if any such rights or warrants are exercised, to the Exercise Price which would then be in effect based upon the number of Common Shares (or securities convertible or exchangeable into Common Shares) actually issued upon the exercise of such rights or warrants, as the case may be. Upon any adjustment of the Exercise Price pursuant to this Section 4.1(b), the Exchange Basis will be adjusted immediately after such record date so that it will equal the rate determined by multiplying the Exchange Basis in effect on such record date by a fraction, of which the numerator shall be the Exercise Price in effect immediately prior to such adjustment and the denominator shall be the Exercise Price resulting from such adjustment. Such adjustment will be made successively whenever such a record date is fixed, provided that if two or more such record dates or record dates referred to in this Section 4.1(b) are fixed within a period of 25 Trading Days, such adjustment will be made successively as if each of such record dates occurred on the earliest of such record dates;
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- (c) if and whenever, at any time from the date hereof and prior to the Expiry Time, the Corporation fixes a record date for the making of a distribution to all or substantially all the holders of its outstanding Common Shares of (i) securities of any class, whether of the Corporation or any other entity (other than Common Shares or securities convertible or exchangeable for Common Shares), (ii) rights, options or warrants to subscribe for or purchase Common Shares (or other securities convertible into or exchangeable for Common Shares), other than pursuant to a Rights Offering; (iii) evidences of its indebtedness or (iv) any property or other assets then, in each such case, the Exercise Price shall be adjusted immediately after such record date so that it shall equal the price determined by multiplying the Exercise Price in effect on such record date by a fraction, of which the numerator shall be the total number of Common Shares outstanding on such record date multiplied by the Current Market Price on such record date, less the excess, if any, of the fair market value on such record date, as determined by the Corporation (whose determination shall be conclusive), of such securities or other assets so issued or distributed over the fair market value of any consideration received therefor by the Corporation from the holders of the Common Shares, and of which the denominator shall be the total number of Common Shares outstanding on such record date multiplied by such Current Market Price; any Common Shares owned by or held for the account of the Corporation shall be deemed not to be outstanding for the purpose of any such computation; such adjustment shall be made successively whenever such a record date is fixed; to the extent that such distribution is not so made, the Exercise Price shall be readjusted to the Exercise Price which would then be in effect if such record date had not been fixed. Upon any adjustment of the Exercise Price pursuant to this Section 4.1(c), the Exchange Basis will be adjusted immediately after such record date so that it will equal the rate determined by multiplying the Exchange Basis in effect on such record date by a fraction, of which the numerator shall be the Exercise Price in effect immediately prior to such adjustment and the denominator shall be the Exercise Price resulting from such adjustment;
- (d) if and whenever, at any time from the date hereof and prior to the Expiry Time, there is a reclassification of the Common Shares or a change in the Common Shares into other shares or securities, or a capital reorganization of the Corporation other than as described in clauses (a), (b) or (c) of this Section 4.1 or a consolidation, amalgamation, arrangement or merger of the Corporation with or into any other body corporate, trust, partnership or other entity, or a transfer, sale or conveyance of the property and assets of the Corporation as an entirety or substantially as an entirety to any other body corporate, trust, partnership or other entity, any Warrantholder who has not exercised its right of acquisition as at the effective date of such reclassification, change, capital reorganization, consolidation, amalgamation, arrangement or merger, transfer, sale or conveyance, upon the exercise of such right thereafter, shall be entitled to receive upon payment of the Exercise Price and shall accept, in lieu of the number of Warrant Shares that prior to such effective date the Warrantholder would have been entitled to receive, the kind and number of shares or other securities or property of the Corporation or of the body corporate, trust, partnership or other entity resulting from such merger, arrangement, amalgamation or consolidation, or to which such transfer, sale or conveyance may be made, as the case may be, that such Warrantholder would have been entitled to receive on such reclassification, change, capital reorganization, consolidation, amalgamation, arrangement or merger, transfer, sale or conveyance, if, on the record date or effective date thereof, as the case may be, the Warrantholder had been the registered holder of the number of Warrant Shares to which prior to such record date or effective date, as the case may be, it was entitled to acquire upon the exercise of the Warrants. The Corporation shall not carry into effect any action requiring an adjustment pursuant to this Section 4.1(d) unless all necessary steps have been taken so that the Warrantholders are thereafter entitled to receive such kind and number of shares, other securities or property. To give effect to or to evidence the provisions of this Section 4.1(d), the Corporation's successor, or such purchasing body corporate, partnership, trust or other entity, as the case may be, shall, prior to or contemporaneously with any such reclassification, change, capital reorganization, consolidation, amalgamation, arrangement, merger, transfer, sale or conveyance, enter into an indenture which shall provide, to the extent possible, for the application of the provisions set forth in this Indenture with respect to the rights and interests thereafter of the Warrantholders to the end that the provisions set forth in this Indenture shall thereafter correspondingly be made applicable, as nearly as may reasonably be possible, with respect to any shares, other securities or property to which a Warrantholder is entitled on the exercise of its acquisition rights thereafter. Any indenture entered into between the Corporation and the Warrant Agent pursuant to the provisions of this Section 4.1(d) shall be a supplemental indenture entered into pursuant to the provisions of Article 7 hereof. Any indenture entered into between the Corporation, any successor to the Corporation or such purchasing body corporate, partnership, trust or other entity and the Warrant Agent shall provide for adjustments which shall be as nearly equivalent as may be practicable to the adjustments provided in this Section 4.1 and which shall apply to successive reclassifications, changes, capital reorganizations, amalgamations, arrangements, consolidations, mergers, transfers, sales or conveyances;
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- (e) where this Section 4.1 requires that an adjustment becomes effective immediately after a record date or effective date, as the case may be, for an event referred to herein, the Corporation may defer, until the occurrence of that event, issuing to the Warrantholder exercising his acquisition rights after the record date or effective date, as the case may be, and before the occurrence of that event the adjusted number of Warrant Shares, other securities or property issuable upon the exercise of the Warrants by reason of the adjustment required by that event, provided, however, that the Corporation shall deliver to such Warrantholder an appropriate instrument evidencing such Warrantholder's right to receive such additional Common Shares upon the occurrence of the event requiring such adjustment. If the Corporation relies on this Section 4.1(e) to defer issuing an adjusted number of Warrant Shares, other securities or property to a Warrantholder, the Warrantholder has the right to receive any distributions made on the adjusted number of Warrant Shares, other securities or property declared in favour of holders of record on and after the date of exercise or such later date as the Warrantholder would, but for the provisions of this Section 4.1(e), have become the holder of record of the adjusted number of Warrant Shares, other securities or property; in any case in which Section 4.1(a)(iii), Section 4.1(b) or Section 4.1(c) require that an adjustment be made to the Exercise Price, no such adjustment shall be made if the Warrantholders of the outstanding Warrants receive, subject to any required stock exchange or regulatory approval, the rights or warrants referred to in Section 4.1(a)(iii), Section 4.1(c) or the shares, rights, options, warrants, evidences of indebtedness or assets referred to in Section 4.1(b), as the case may be, in such kind and number as they would have received if they had been holders of Common Shares on the applicable record date or effective date, as the case may be, by virtue of their outstanding Warrant having then been exercised into Common Shares at the Exercise Price in effect on the applicable record date or effective date, as the case may be;
- (f) the adjustments provided for in this Section 4.1 are cumulative. After any adjustment pursuant to this Section 4.1, the term "Warrant Shares" where used in this Indenture is interpreted to mean securities of any class or classes which, as a result of such adjustment and all prior adjustments pursuant to this Section, the Warrantholder is entitled to receive upon the exercise of his Warrant, and the number of Warrant Shares obtainable in any exercise made pursuant to a Warrant is interpreted to mean the number of Warrant Shares or other property or securities a Warrantholder is entitled to receive, as a result of such adjustment and all prior adjustments pursuant to this Section 4.1, upon the full exercise of a Warrant;
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- (g) notwithstanding anything in this Article 4, no adjustment (i) shall be made in the acquisition rights attached to the Warrants if the issue of Common Shares is being made pursuant to (A) any share incentive plan, restricted share plan, stock option or stock purchase plan in force from time to time for Directors, officers, employees or consultants of the Corporation or (B) the satisfaction of existing instruments issued at the date hereof, and (ii) of the Exercise Price shall be required unless such adjustment would require an increase or decrease of at least 1% in the Exercise Price then in effect;
- (h) in the event of a question arising with respect to the adjustments provided for in this Section 4.1, that question shall be conclusively determined by the Corporation's Auditor or, if they are unwilling or unable to act, such independent nationally recognized chartered accountants as may be selected by the Directors of the Corporation, acting reasonably, who shall have access to all necessary records of the Corporation, and a determination by the Corporation's Auditor is binding upon the Corporation, the Warrant Agent, all Warrantheolders and all other persons interested therein; and
- (i) no adjustment in the number of Warrant Shares obtainable upon exercise of Warrants shall be made in respect of any event described in this Section 4.1, if the Warrantheolders are entitled to participate in such event on the same terms, *mutatis mutandis*, as if the Warrantheolders had exercised their Warrants prior to or on the effective date or record date of such event.

4.2 Proceedings Prior to any Action Requiring Adjustment

As a condition precedent to the taking of any action which requires an adjustment in any of the acquisition rights pursuant to the Warrants, including the number of Warrant Shares obtainable upon the exercise thereof, the Corporation shall take any corporate action which may, in its opinion, be necessary in order that the Corporation or any successor to the Corporation has reserved, allotted and set aside for issuance Common Shares in its authorized capital and may validly and legally issue as fully paid and nonassessable all the Warrant Shares and may validly and legally deliver all other securities or property which the Warrantheolders are entitled to receive on the full exercise of the Warrants in accordance with the provisions hereof.

4.3 Certificate of Adjustment

The Corporation shall from time to time immediately, but in any event within three (3) Business Days after the occurrence of any event which requires an adjustment as provided in Section 4.1, deliver a written notice to the Warrantheolders and the Warrant Agent specifying the nature of the event requiring the adjustment, the amount of the adjustment necessitated thereby, and setting forth in reasonable detail the method of calculation and the facts upon which the calculation is based, which certificate shall be supported by a certificate of the Corporation's Auditors verifying such calculation.

4.4 Protection of Warrant Agent

The Warrant Agent:

- (a) is entitled to act and rely on any adjustment calculation of the Corporation or the Corporation's Auditor;
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- (b) is not at any time under any duty or responsibility to any Warrantholder to determine whether any facts exist which require any adjustment contemplated by Section 4.1, or with respect to the nature or extent of any such adjustment when made, or with respect to the method employed in making the same;
- (c) is not accountable with respect to the validity or value (or the kind or amount) of any shares or other securities or property which may at any time be issued or delivered upon the exercise of the rights attaching to any Warrant;
- (d) is not responsible for any failure of the Corporation to issue, transfer or deliver certificates for the Warrant Shares upon the surrender of any Warrants for the purpose of the exercise of such rights or to comply with any of the covenants contained in this Article 4; and
- (e) shall not incur any liability or responsibility whatsoever or be in any way responsible for the consequence of any breach on the part of the Corporation of any of the representations, warranties or covenants herein contained or of any acts of the directors, officers, employees, agents or servants of the Corporation.

4.5 Notice of Special Matters

The Corporation covenants with the Warrant Agent that, so long as any Warrants remain outstanding, it will give seven (7) calendar days' prior written notice in the manner provided for in Article 9 to the Warrant Agent, each Warrantholder and to the Underwriter of any event which requires an adjustment to the subscription rights attaching to any of the Warrants pursuant to this Article 4. The Corporation covenants and agrees that such notice shall contain the particulars of such event in reasonable detail and, if determinable, the required adjustment, in the manner provided for in Article 9. The Corporation further covenants and agrees that it shall promptly, as soon as the adjustment calculations are reasonably determinable, file a certificate of the Corporation with the Warrant Agent, on which the Warrant Agent may act and rely, showing how such adjustment shall be computed, which certificate shall be supported by a certificate of the Corporation's Auditors verifying such calculation.

4.6 No Action After Notice

The Corporation covenants with the Warrant Agent that it will not close its transfer books or take any other corporate action which might deprive a Warrantholder of the opportunity of exercising the Warrants during the period of seven (7) calendar days after giving of the notice set forth in Section 4.3 and Section 4.5.

4.7 Other Action

If the Corporation, after the date hereof, shall take any action affecting the Common Shares other than action described in Section 4.1, which in the reasonable opinion of the directors of the Corporation would materially affect the rights of Warrantholders, the Exercise Price and/or Exchange Basis, the number of Common Shares which may be acquired upon exercise of the Warrants shall be adjusted in such manner and at such time, by action of the Directors, acting reasonably and in good faith, in their sole discretion as they may determine to be equitable to the Warrantholders in the circumstances, provided that no such adjustment will be made unless any requisite prior approval of any stock exchange on which the Common Shares are listed for trading has been obtained.

ARTICLE 5
EXERCISE AND CANCELLATION OF WARRANTS

5.1 Exercise of Warrants

- (a) Warrantholders who wish to exercise the Warrants, in the case of Warrant Certificates, held by them in order to acquire Warrant Shares must (i) duly complete and execute exercise form(s) in the form attached as Appendix “1” to the Warrant Certificate(s) (the “Exercise Form”), in accordance with the instructions attached as Appendix “3” to the Warrant Certificate, which form may be amended by the Corporation with the consent of the Warrant Agent, if such amendment does not, in the reasonable opinion of the Corporation and the Warrant Agent, which may be based on the advice of Counsel, materially and adversely affect the rights, entitlements and interests of the Warrantholders, and (ii) deliver such certificate(s), the executed Exercise Form and a certified cheque, bank draft or money order or wire transfer or similar transfer of funds payable to or to the order of the Corporation for the aggregate Exercise Price to the Warrant Agent. The Warrants represented by a Warrant Certificate shall be deemed to be surrendered (i) upon personal delivery of such certificate, Exercise Form and aggregate Exercise Price or (ii), if such documents are sent by mail or other means of transmission, upon actual receipt thereof by the Warrant Agent at the office referred to above.
 - (b) Exercise is subject to compliance with and may be restricted by the securities laws of the Designated Provinces and the United States and applicable states thereof and is further subject to the Warrantholders providing such assurances and executing such documents as may, in the reasonable opinion of the Corporation or the Warrant Agent, be required to ensure compliance with applicable securities legislation. If, at the time of the voluntary exercise of the Warrants pursuant to this Section 5.1, there remain restrictions on resale under applicable securities legislation on the Warrant Shares so acquired, the Corporation, may, if required on the advice of Counsel, endorse the certificates representing the Warrant Shares with respect to those restrictions.
 - (c) A beneficial owner of Uncertificated Warrants evidenced by a security entitlement in respect of Warrants in the book entry registration system who desires to exercise his or her Warrants must do so by causing a Book Entry Only Participant to deliver to the Depository on behalf of the entitlement holder, notice of the owner’s intention to exercise Warrants in a manner acceptable to the Depository. Forthwith upon receipt by the Depository of such notice, as well as payment for the aggregate Exercise Price, the Depository shall deliver to the Warrant Agent a confirmation of its intention to exercise Warrants (as applicable, a “**Confirmation**”) in a manner acceptable to the Warrant Agent, including by electronic means through the book entry registration system, including CDSX. A beneficial owner of Warrants issued in uncertificated form who desires to exercise his or her Warrants must do so by causing a Book Entry Only Participant to deliver to the Depository on behalf of the entitlement holder, notice of the owner’s intention to exercise Warrants in a manner acceptable to the Depository.
 - (d) Payment representing the aggregate Exercise Price must be provided to the appropriate office of the Book Entry Only Participant in a manner acceptable to it. A notice in form acceptable to the Book Entry Only Participant and payment from such beneficial owner should be provided to the Book Entry Only Participant sufficiently in advance so as to permit the Book Entry Only Participant to deliver notice and payment to the Depository and for the Depository in turn to deliver written notice and payment to the Warrant Agent prior to Expiry Time. The Depository will initiate the exercise by way of the Confirmation and forward the aggregate Exercise Price electronically to the Warrant Agent and the Warrant Agent will execute the exercise by causing the issuance to the Depository through the book entry registration system of the Warrant Shares to which the exercising Warrantholder is entitled pursuant to the exercise. Any expense associated with the exercise process will be for the account of the entitlement holder exercising the Warrants and/or the Book Entry Only Participant exercising the Warrants on its behalf.
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- (e) By causing a Book Entry Only Participant to deliver notice to the Depository, a beneficial owner shall be deemed to have irrevocably surrendered his or her Warrants so exercised and appointed such Book Entry Only Participant to act as his or her exclusive settlement agent with respect to the exercise and the receipt of Warrant Shares in connection with the obligations arising from such exercise.
 - (f) Any notice which the Depository determines to be incomplete, not in proper form or not duly executed shall for all purposes be void and of no effect and the exercise to which it relates shall be considered for all purposes not to have been exercised thereby. A failure by a Book Entry Only Participant to exercise or to give effect to the settlement thereof in accordance with the Warrantholder's instructions will not give rise to any obligations or liability on the part of the Corporation or Warrant Agent to the Book Entry Only Participant or the Warrantholder.
 - (g) Any exercise form or Exercise Form referred to in this Section 5.1 shall be signed by the Warrantholder, or its executors or administrators or other legal representatives or an attorney of the Warrantholder, duly appointed by an instrument in writing satisfactory to the Warrant Agent but such exercise form need not be executed by the Depository.
 - (h) Any exercise referred to in this Section 5.1 shall require that the entire Exercise Price for Warrant Shares subscribed must be paid at the time of subscription and such Exercise Price and original Exercise Form executed by the Warrantholder or the Confirmation from the Depository must be received by the Warrant Agent prior to the Expiry Time.
 - (i) Warrants may only be exercised pursuant to this Section 5.1 by or on behalf of a Warrantholder, as applicable, who makes the certifications set forth on the Exercise Form.
 - (j) If the form of Exercise Form set forth in the Warrant Certificate shall have been amended, the Corporation shall cause the amended Exercise Form to be forwarded to all Warrantholders.
 - (k) Exercise Forms and Confirmations must be delivered to the Warrant Agent at any time during the Warrant Agent's actual business hours on any Business Day prior to the Expiry Time. Any Exercise Form or Confirmation received by the Warrant Agent after business hours on any Business Day other than the Expiry Date will be deemed to have been received by the Warrant Agent on the next following Business Day.
 - (l) Any Warrant with respect to which a Confirmation is not received by the Warrant Agent before the Expiry Time shall be deemed to have expired and become void and all rights with respect to such Warrants shall terminate and be cancelled.
 - (m) Within three (3) Business Days after the date of due exercise of a Warrant, the Warrant Agent shall cause to be delivered or mailed to the person or persons in whose name or names the Warrant is registered or to such address as the Warrantholder may specify in writing to the Warrant Agent upon exercise of a Warrant or, if so specified in writing by the holder, cause to be delivered to such person or persons a certificate or certificates for the appropriate number of Warrant Shares subscribed for, or any other appropriate evidence of the issuance of Warrant Shares to such person or persons in respect of Warrant Shares issued under the book entry registration system.
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5.2 Restriction on Exercise by Persons in the United States and U.S. Persons

Warrants may not be exercised by a U.S. Person or person within the United States or by or on behalf of any person in the United States or U.S. Person; and no Common Shares issued upon exercise of Warrants may be delivered to any address in the United States unless the holder provides documentation satisfactory to the Corporation and the Warrant Agent (which may, at the option of the Corporation and Warrant Agent, include an opinion from U.S. counsel to the holder that is in satisfactory form to the Corporation and Warrant Agent) to the effect that such exercise is being made in transaction that is exempt from the registration requirements of the U.S. Securities Act. Any Warrant Shares so issued in the United States or to U.S. Persons will be “restricted securities” within the meaning of Rule 144(a)(3) under the U.S. Securities Act and will be issued in physical certificated form bearing a legend describing applicable transfer restrictions under the U.S. Securities Act.

5.3 Effect of Exercise of Warrants

Upon the exercise of the Warrants, each Warrantholder is, at that time, deemed to have become the holder or holders of record of the Warrant Shares in respect of which such Warrantholder’s Warrants are exercised or are deemed to have been exercised, unless the transfer registers of the Corporation shall be closed by law on such date, in which case the Warrant Shares acquired shall be deemed to have been issued and such person or persons deemed to have become the holder or holders of record of such Warrant Shares on the date on which such transfer registers are next reopened. It is hereby understood that in order for persons to whom Common Shares are to be issued, to become holders of Common Shares on record on the Exercise Date, beneficial holders of Uncertificated Warrants must commence the exercise process sufficiently in advance so that the Warrant Agent is in receipt of all items of exercise at least one Business Day prior to such Exercise Date.

5.4 Partial Exercise

Any Warrantholder may acquire a number of Warrant Shares less than the number of Warrant Shares which the holder is entitled to acquire pursuant to the surrendered Warrant Certificate(s). In the event of any exercise of a number of Warrants less than the number which the holder is entitled to exercise pursuant to the surrendered Warrant Certificates, the Warrantholder upon such exercise shall, in addition to the number of Warrant Shares acquired pursuant to the Warrants exercised, be entitled to receive, without charge therefor, a new Warrant Certificate(s) in respect of the balance of the Warrants represented by the surrendered Warrant Certificate(s) and which were not then exercised.

5.5 Warrants Void After Exercise Time

After the exercise of a Warrant as provided in this Article 5, the holder of the Warrant so exercised no longer has any rights either under this Indenture or the Warrant, other than the right to receive certificates or other evidence of ownership as provided herein representing the Warrant Shares, and the Warrant is void and of no value or effect.

5.6 Fractions of Warrant Shares

- (a) Where a Warrantholder is entitled to receive, as a result of the adjustments provided for in Section 4.1 or otherwise, on the exercise or partial exercise of its Warrants a fraction of a Warrant Share, such right may only be exercised in respect of such fraction in combination with another Warrant or other Warrants which in the aggregate entitle the Warrantholder to receive a whole number of Warrant Shares; and
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- (b) If a Warrantholder is not able to, or elects not to, combine Warrants so as to be entitled to acquire a whole number of Warrant Shares, the Warrantholder may not exercise the right to acquire a fractional Warrant Share, and, as a result, has the right to acquire only that number of Warrant Shares equal to the next lowest whole number of Warrant Shares and no cash will be paid in lieu of any fractional Warrant Shares.

5.7 Accounting and Recording

The Warrant Agent shall promptly notify in writing the Corporation with respect to Warrants exercised. The Warrant Agent shall record the particulars of the Warrants exercised which include the name or names and addresses of the persons who become holders of Warrant Shares on exercise pursuant to this Article 5 and the number of Warrant Shares issued. Within three (3) Business Days of the exercise of each Warrant pursuant to Section 5.1, the Warrant Agent shall provide those particulars in writing to the Corporation. The Warrant Agent shall promptly account to the Corporation with respect to Warrants exercised, and shall promptly forward to the Corporation (or into an account or accounts of the Corporation with the bank or trust company designated by the Corporation for that purpose), all monies received by the Warrant Agent on the subscription of Common Shares through the exercise of Warrants. All such monies and any securities or other instruments, from time to time received by the Warrant Agent, shall be received in trust for, and shall be segregated and kept apart by the Warrant Agent for the benefit of the Warrantholders and the Corporation as their interests may appear.

5.8 Cancellation of Surrendered Warrants

All Warrant Certificates surrendered pursuant to Article 5 or transferred or exchanged pursuant to Article 2 shall be cancelled by the Warrant Agent and, upon such circumstances, all Uncertificated Warrants shall be deemed cancelled and so noted on the register by the Warrant Agent. Upon request by the Corporation, the Warrant Agent shall furnish to the Corporation a cancellation certificate identifying the Warrant Certificates and Uncertificated Warrants so cancelled, the number of Warrants evidenced thereby, the number of Common Shares, if any, issued pursuant to such Warrants, as applicable, and the details of any Warrant Certificates issued, or Uncertificated Warrant entries made, in substitution or exchange for such Warrant Certificates and Uncertificated Warrants cancelled.

5.9 Expiration of Warrants

Immediately after the Expiry Time, all rights under any Warrant in respect of which the right of acquisition provided for herein shall not have been exercised shall cease and terminate and each Warrant shall be void and of no further force or effect.

ARTICLE 6 **MEETINGS OF THE WARRANTHOLDERS**

6.1 Convening Meetings

The Warrant Agent or the Corporation may convene a Meeting at any time at the expense of the Corporation. Upon receipt of a Warrantholders' Request, the Warrant Agent or the Corporation shall convene a Meeting, provided that, in the case of the Warrant Agent, it has been indemnified and funded to its reasonable satisfaction by the Corporation or the Warrantholders signing the Warrantholders' Request for the costs of convening and holding a Meeting. If the Warrant Agent or the Corporation fails to convene the Meeting within thirty (30) days after being duly requisitioned to do so whether by the Corporation or a Warrantholders' Request and indemnified and funded as aforesaid, the Warrantholders holding not less than 25% of the aggregate number of all then outstanding Warrants may themselves convene a Meeting, the notice for which must be signed by a person that those Warrantholders specify, provided that the Warrant Agent and Corporation receive notice of the Meeting in accordance with Section 6.3. A written requisition must state, generally, the reason for the Meeting and business to be transacted at the Meeting.

6.2 Place of Meeting

Every Meeting must be held in Montréal (Québec) or at such other place that the Warrant Agent and Corporation approve, at a location specified by the Corporation.

6.3 Notice

The Warrant Agent or the Corporation, as the case may be, shall give written notice of each Meeting to each Warrantholder, the Warrant Agent (unless the Meeting has been called by the Warrant Agent) and the Corporation (unless the Meeting has been called by the Corporation) in the manner specified in Article 9 at least twenty one (21) calendar days before the date of the Meeting. The Warrant Agent shall give written notice of each Adjourned Meeting to each Warrantholder in the manner specified in Article 9 at least seven (7) calendar days before the date of the Adjourned Meeting. The notice for a Meeting must state the time and place of the Meeting and, generally, the reason for the Meeting and the business to be transacted at the Meeting, together with such additional information as may be required to sufficiently inform the Warrantholders regarding the business to be transacted at the Meeting. The notice for an Adjourned Meeting must state the time and place of the Adjourned Meeting but need not specify the business to be transacted at an Adjourned Meeting. The accidental omission by the Warrant Agent or the Corporation, as the case may be, to give notice of a Meeting or an Adjourned Meeting to a Warrantholder does not invalidate a resolution passed at a Meeting or Adjourned Meeting.

6.4 Persons Entitled to Attend

The Corporation may and the Warrant Agent shall, each by its authorized representatives including Directors, officers, employees and agents, attend every Meeting and Adjourned Meeting but neither the Corporation nor the Warrant Agent has the right to vote unless they are acting in their capacity as Warrantholder or a proxy for a Warrantholder. The legal advisors of the Corporation, the Warrant Agent, and any Warrantholders, respectively, may also attend a Meeting or Adjourned Meeting but do not have the right to vote, unless they have the right to vote as a Warrantholder.

6.5 Quorum

Subject to the provisions of Section 6.18, at any meeting of the Warrantholders, a quorum shall consist of two or more Warrantholders present in person or by proxy and entitled to purchase at least 25% of the aggregate number of all then outstanding Warrants.

6.6 Chair

The Warrant Agent shall nominate a natural person as the chair of a Meeting or Adjourned Meeting. If the person so nominated is not present within 15 minutes after the time set for holding the Meeting or Adjourned Meeting, the Warrantholders present in person or represented by proxy shall choose one of their number to be chair. The chair may vote any Warrants for which he or she is the registered holder. The chair does not need to be a Warrantholder.

6.7 Power to Adjourn

The chair of any Meeting at which a quorum of the Warrantholders is present may, with the consent of the Meeting, adjourn any such meeting. Notice of such adjournment will be given in accordance with Section 6.3 with such other requirements, if any, as the Meeting may prescribe.

6.8 Adjourned Meeting

Without limiting the generality of Section 6.7, if a quorum of the Warranholders is not present within 30 minutes after the time fixed for holding a Meeting, the Meeting stands adjourned to a date not less than ten (10) calendar days and not more than thirty (30) calendar days later, at a place determined in accordance with Section 6.2, and at a time specified by the chair. The Warrant Agent shall in accordance with Section 6.3 send a notice of the Adjourned Meeting to each Warranholder and the Corporation. At an Adjourned Meeting, two or more Warranholders or persons representing Warranholders by proxy constitutes a quorum for the transaction of business for which the Meeting was convened. Any business may be brought before or dealt with at an Adjourned Meeting which might have been dealt with at the original meeting in accordance with the notice calling the same. No business shall be transacted at any meeting unless a quorum be present at the commencement of business. At the adjourned meeting, the two or more Warranholders present in person or by proxy shall form a quorum and may transact the business for which the meeting was originally convened, notwithstanding that they may not be entitled to acquire at least 25% of the aggregate number of all then outstanding Warrants.

6.9 Show of Hands

Subject to a poll and except as otherwise required herein, every question submitted to a Meeting or Adjourned Meeting, except an Extraordinary Resolution, shall be decided, in the first instance, by the majority of votes in a show of hands. If the vote is tied, the chair does not have a casting vote and the motion will not be carried. On a show of hands, each Warranholder present in person or represented by proxy and entitled to vote is entitled to one vote for each Common Share that such Warranholder present in person (or represented by proxy and entitled to vote) can acquire pursuant to its unexercised Warrants. At any such meeting, unless a poll is duly demanded as herein provided, a declaration by the chairman that a resolution has been carried or carried unanimously or by a particular majority or lost or not carried by a particular majority shall be conclusive evidence of the fact.

6.10 Poll

When requested by a Warranholder acting in person or by the proxy representing the Warranholder and entitled to acquire in the aggregate at least 5% of the aggregate number of Common Shares that can be acquired pursuant to the then outstanding Warrants, and on every Extraordinary Resolution, the chair of a Meeting or Adjourned Meeting shall request a poll on a question submitted to the Meeting. Except as otherwise required herein (such as in the case of an Extraordinary Resolution), if a question has been put to a poll, that question shall be decided by the affirmative vote of not less than a majority of the votes given on the poll. If the vote is tied, the motion shall not be carried. On a poll, each Warranholder or person representing a Warranholder by proxy shall be entitled to one vote for each Common Share that such Warranholder or such Warranholder represented by proxy, as the case may be, can acquire pursuant to its unexercised Warrants. A declaration made by the chair that a resolution has been carried or lost is conclusive evidence thereof. In the case of joint Warranholders, any one of them present in person or represented by proxy may vote in the absence of the other or others but when more than one of them is present in person or by proxy, they may only vote together in respect of the Warrants of which they are joint registered holders.

6.11 Regulations

Subject to the provisions of this Indenture, the Warrant Agent, or the Corporation with the approval of the Warrant Agent, may from time to time make and, thereafter, vary regulations not contrary to the provisions of this Indenture as it deems fit providing for and governing the following:

- (a) setting a record date for a Meeting for determining Warranholders entitled to receive notice of and vote at a Meeting;
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- (b) voting by proxy, the manner in which a proxy instrument must be executed, and the production of the authority of any person signing an instrument of a proxy on behalf of a Warrantholder;
- (c) lodging and the means of forwarding the instruments appointing proxies, and the time before a Meeting or Adjourned Meeting by which an instrument appointing a proxy must be deposited;
- (d) the form of the instrument of proxy; and
- (e) any other matter relating to the conduct of a Meeting.

A regulation so made is binding and effective and votes given in accordance with such a regulation are valid. The Warrant Agent may permit Warrantholders to make proof of ownership in the manner the Warrant Agent approves.

Any regulations so made shall be binding and effective and the votes given in accordance therewith shall be valid and shall be counted. Save as such regulations may provide, the only persons who shall be recognized at any meeting as a Warrantholder, or be entitled to vote or be present at the meeting in respect thereof (subject to Section 6.4 and Section 6.18), shall be Warrantholders or proxies of Warrantholders.

6.12 Powers of Warrantholders

By Extraordinary Resolution passed pursuant to this Article 6, the Warrantholders may:

- (a) agree to any modification, abrogation, alteration, compromise or arrangement of the rights of Warrantholders or the Warrant Agent in its capacity as warrant agent hereunder (subject to the Warrant Agent's prior consent, acting reasonably) or on behalf of the Warrantholders against the Corporation whether such rights arise under this Indenture or otherwise;
 - (b) amend, alter or repeal any Extraordinary Resolution previously passed or sanctioned by the Warrantholders;
 - (c) direct or to authorize the Warrant Agent, subject to Section 8.14 hereof, to enforce any of the covenants on the part of the Corporation contained in this Indenture or to enforce any of the rights of the Warrantholders in any manner specified in such Extraordinary Resolution or to refrain from enforcing any such covenant or right;
 - (d) waive, and to direct the Warrant Agent to waive, any default on the part of the Corporation in complying with any provisions of this Indenture either unconditionally or upon any conditions specified in such Extraordinary Resolution;
 - (e) restrain any Warrantholder from taking or instituting any suit, action or proceeding against the Corporation for the enforcement of any of the covenants on the part of the Corporation in this Indenture or to enforce any of the rights of the Warrantholders;
 - (f) direct any Warrantholder who, as such, has brought any suit, action or proceeding to stay or to discontinue or otherwise to deal with the same upon payment of the costs, charges and expenses reasonably and properly incurred by such Warrantholder in connection therewith;
 - (g) assent to any change in or omission from the provisions contained in this Indenture or any ancillary or supplemental instrument that is prejudicial to the interests of the Warrantholders, as a group, and which may be agreed to by the Corporation, and to authorize the Warrant Agent to concur in and execute any ancillary or supplemental indenture embodying the change or omission;
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- (h) with the consent of the Corporation, such consent not to be unreasonably withheld, to remove the Warrant Agent or its successor in office and to appoint a new warrant agent or warrant agents to take the place of the Warrant Agent so removed; and
- (i) assent to any compromise or arrangement with any creditor or creditors or any class or classes of creditors, whether secured or otherwise, and with holders of any shares or other securities of the Corporation.

6.13 Meaning of Extraordinary Resolution

- (a) The expression “**Extraordinary Resolution**” when used in this Indenture means, subject as hereinafter provided in this Section 6.13 and in Section 6.16, a resolution (i) proposed at a meeting of Warranholders duly convened for that purpose and held in accordance with the provisions of this Article 6 at which there are present in person or by proxy Warranholders holding at least 25% of the aggregate number of all then outstanding Warrants and passed by the affirmative votes of Warranholders holding not less than 66⅔% of the aggregate number of all then outstanding Warrants, at the meeting and voted on the poll upon such resolution; or (ii) in writing signed by the holders of at least 66⅔% of the aggregate number of all then outstanding Warrants on any matter that would otherwise be voted upon at a meeting called to approve such resolution as contemplated in Section 6.13(a)(i).
- (b) If, at the meeting at which an Extraordinary Resolution is to be considered, Warranholders holding at least 25% of the aggregate number of all then outstanding Warrants are not present in person or by proxy within 30 minutes after the time appointed for the meeting, then the meeting, if convened by Warranholders or on a Warranholders’ Request, shall be dissolved; but in any other case it shall stand adjourned to such day, being not less than 10 or more than 30 calendar days later, and to such place and time as may be appointed by the chairman. Not less than 7 days’ prior notice shall be given of the time and place of such adjourned meeting in the manner provided for in Section 6.3. Such notice shall state that at the adjourned meeting the two or more Warranholders present in person or by proxy shall form a quorum, but it shall not be necessary to set forth the purposes for which the meeting was originally called or any other particulars. At the adjourned meeting the two or more Warranholders present in person or by proxy shall form a quorum and may transact the business for which the meeting was originally convened and a resolution proposed at such adjourned meeting and passed by the requisite vote as provided in Section 6.16 shall be an Extraordinary Resolution within the meaning of this Indenture notwithstanding that Warranholders entitled to acquire at least 25% of the aggregate number of all then outstanding Warrants are not present in person or by proxy at such adjourned meeting.
- (c) Subject to Section 6.16, votes on an Extraordinary Resolution shall always be given on a poll and no demand for a poll on an Extraordinary Resolution shall be necessary.

6.14 Powers Cumulative

Any one or more of the powers or any combination of the powers in this Indenture stated to be exercised by the Warranholders by Extraordinary Resolution or otherwise may be exercised from time to time and the exercise of any one or more of such powers or any combination of powers from time to time shall not be deemed to exhaust the right of the Warranholder to exercise such power or combination of powers then or thereafter from time to time.

6.15 Minutes of Meetings

Minutes and records of all resolutions and proceedings at a Meeting or Adjourned Meeting shall be made and duly entered in books to be provided by the Warrant Agent at the expense of the Corporation and shall make available those minutes and records at the office of the Corporation for inspection by a Warrantholder or his authorized representative and the Underwriter at reasonable times. If signed by the chair of the Meeting or by the chair of the next succeeding Meeting, such minutes shall be prima facie evidence of the matters therein stated and, until the contrary is proved, every such Meeting in respect of which minutes shall have been made shall be deemed to have been duly convened and held, and all the resolutions passed thereat or proceedings taken shall be deemed to have been duly passed and taken.

6.16 Written Resolutions

Notwithstanding the foregoing, a written resolution or instrument signed in one or more counterparts by the Warrantholders holding (i), in the case of an ordinary resolution, not less than a majority of the Warrants outstanding, or (ii), in the case of an Extraordinary Resolution, not less than 66 $\frac{2}{3}$ % of the aggregate number of all then outstanding Warrants, in each case is deemed to be the same as, and to have the same force and effect as, an ordinary resolution or Extraordinary Resolution, as the case may be, duly passed at a Meeting or Adjourned Meeting, as the case may be.

6.17 Binding Effect

A resolution of the Warrantholders passed pursuant to this Article 6 is binding upon all Warrantholders whether present or absent from such meeting. Upon the passing of a Warrantholders' resolution at a meeting of the Warrantholders, or upon the signing of a written resolution or instrument pursuant to Section 6.16 and delivery by the Corporation to the Warrant Agent of an original, certified or notarial copy, or copies, of such resolution as executed or passed by the Warrantholders, the Warrant Agent is entitled to and shall give effect thereto.

6.18 Holdings by the Corporation or Subsidiaries of the Corporation Disregarded

In determining whether Warrantholders holding the required number of Warrants are present at a meeting of Warrantholders for the purpose of determining a quorum or have concurred in any consent, waiver, resolution, Extraordinary Resolution, Warrantholders' Request or other action under this Indenture, Warrants owned legally or beneficially by the Corporation or any Subsidiary of the Corporation shall be disregarded. The Corporation will provide the Warrant Agent with, upon request, a certificate of the Corporation detailing their holdings and those of their subsidiaries and the various registrations.

6.19 Corporation, Warrant Agent and Agent May be Represented

The Corporation, the Warrant Agent and the Underwriters, by their respective directors, officers and employees and Counsel to the Corporation, the Warrant Agent and the Underwriters, may attend any Meeting, but shall have no vote as such unless they are acting in their capacity as a Warrantholder or a proxy for a Warrantholder.

ARTICLE 7
SUPPLEMENTAL INDENTURES, MERGER, SUCCESSORS

7.1 Provision for Supplemental Indentures for Certain Purposes

From time to time, the Corporation shall, when authorized by the Directors, and the Warrant Agent may, subject to the provisions of this Indenture, execute and deliver by their proper officers, deeds, indentures or instruments supplemental hereto, which thereafter form part hereof for any one or more or all of the following purposes:

- (a) adding to the provisions hereof such additional covenants, enforcement provisions, and release provisions (if any) as in the opinion of Counsel acceptable to the Corporation are necessary or advisable, provided the same are not, in the opinion of the Warrant Agent, relying on the advice of Counsel, prejudicial to the interests of the Warrantholders;
 - (b) adding to the covenants of the Corporation in this Indenture for the protection of the Warrantholders;
 - (c) evidencing any succession (or successive successions) of other companies to the Corporation and the covenants of, and obligations assumed by, such successor (or successors) in accordance with the provisions of this Indenture;
 - (d) setting forth any adjustments resulting from the application of the provisions of Article 4;
 - (e) providing for the issuance of additional Warrants hereunder and any consequential amendments hereto as may be required by the Warrant Agent relying on the advice of Counsel;
 - (f) making such provisions not inconsistent with this Indenture as may be necessary or desirable with respect to matters or questions arising hereunder or for the purpose of obtaining a listing or quotation of the Warrants on any stock exchange, provided that such provisions are not, in the opinion of the Warrant Agent, relying on the advice of Counsel, prejudicial to the interests of the Warrantholders;
 - (g) giving effect to an Extraordinary Resolution;
 - (h) rectifying any ambiguity, defective provision, clerical omission or mistake or manifest or other error contained herein or in any deed or indenture supplemental or ancillary hereto provided that, in the opinion of the Warrant Agent, relying on the advice of Counsel, the rights of the Warrantholders are not prejudiced thereby and provided that the Warrant Agent may, in its uncontrolled discretion, decline to enter into any such supplemental indenture which in its opinion, relying on the advice of Counsel, may not afford adequate protection to the Warrant Agent when the same will become operative;
 - (i) adding to or altering the provisions hereof in respect of the transfer of Warrants, making provision for the exchange of Warrant Certificates of different denominations, and making any modification in the form of the Warrant Certificate which does not affect the substance thereof; or
 - (j) for any other purpose not inconsistent with the provisions of this Indenture, provided that, in the opinion of the Warrant Agent, relying on the advice of Counsel, the rights of the Warrantholders are in no way prejudiced thereby.
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7.2 Corporation May Consolidate, etc. on Certain Terms

Subject to Section 4.1(d), nothing in this Indenture prevents any consolidation, amalgamation, arrangement or merger of the Corporation with or into any other body corporate or bodies corporate, or a conveyance or transfer of all or substantially all the properties and assets of the Corporation as an entirety to any body corporate lawfully entitled to acquire and operate the same, provided, however, that the body corporate formed by such consolidation, amalgamation, arrangement or into which such merger has been made, or which has acquired by conveyance or transfer all or substantially all the properties and assets of the Corporation as an entirety in circumstances resulting in the Warrantholders being entitled to receive property from or securities of such body corporate, shall execute prior to or contemporaneously with such consolidation, amalgamation, arrangement, merger, conveyance or transfer, an indenture supplemental hereto wherein the due and punctual performance and observance of all the covenants and conditions of this Indenture to be performed or observed by the Corporation are assumed by the successor body corporate. The Warrant Agent is entitled to receive and is fully protected in relying upon an opinion of Counsel that any such consolidation, amalgamation, arrangement, merger, conveyance or transfer, and a supplemental indenture executed in connection therewith, complies with the provisions of this Section.

7.3 Successor Body Corporate Substituted

In the case of the consolidation, amalgamation, arrangement, merger or transfer of the undertaking or assets of the Corporation as an entirety or substantially as an entirety to or with another entity ("**successor entity**"), the successor entity resulting from such consolidation, amalgamation, arrangement, merger or transfer (if not the Corporation) shall expressly assume, by supplemental indenture satisfactory in form to the Warrant Agent and executed and delivered to the Warrant Agent, the due and punctual performance and observance of each and every covenant and condition of this Indenture to be performed and observed by the Corporation.

ARTICLE 8

CONCERNING THE WARRANT AGENT

8.1 Duties of Warrant Agent

By way of supplement to the provisions of any statute from time to time relating to warrant agents, and notwithstanding any other provision of this Indenture, in the exercise of the rights, duties and obligations prescribed or conferred by the terms of this Indenture, the Warrant Agent shall act honestly and in good faith and shall exercise that degree of care, diligence and skill that a reasonably prudent warrant agent would exercise in comparable circumstances. The Warrant Agent shall not be liable for any action it takes or omits to take in good faith that it believes to be authorized or within the rights or powers conferred upon it by this Indenture. No provision of this Indenture shall be construed to relieve the Warrant Agent from, or require any other person to indemnify the Warrant Agent against any liability for its own gross negligence, wilful misconduct, bad faith or fraud.

8.2 Action by Warrant Agent

The Warrant Agent is not obligated to do any act or thing except where required to do so by this Indenture and, in the case of a default, only when it has actual written notice thereof.

8.3 Certificate of the Corporation

If, in the administration of its duties under this Indenture, the Warrant Agent deems it necessary or desirable that any matter be proved or established by the Corporation, prior to taking or suffering any action hereunder, the Warrant Agent may accept, act and rely upon, and shall be protected in accepting, acting and relying upon, a certificate of the Corporation as conclusive evidence of the truth of any fact relating to the Corporation or its assets therein stated and proof of the regularity of any proceedings or actions associated therewith, but the Warrant Agent may in its discretion require further evidence or information before acting or relying on any such certificate. In addition to the reports, certificates, opinions and other evidence required by this Indenture, the Corporation shall furnish to the Warrant Agent such additional evidence of compliance with any provision hereof, and in such form as may be prescribed by Applicable Legislation, under Section 8.7, or as the Warrant Agent may reasonably require by written notice to the Corporation. Whenever Applicable Legislation requires that evidence referred to in this Section 8.3 be in the form of a statutory declaration, the Warrant Agent may accept such statutory declaration in lieu of a certificate of the Corporation required by any provision hereof. Any such statutory declaration may be made by any one or more of the Chair of the board of directors of the Corporation and Chief Executive Officer, President or Chief Financial Officer of the Corporation or by any other officer or Director of the Corporation to whom such authority is delegated by the Directors from time to time.

8.4 Warrant Agent May Employ Experts

The Warrant Agent may, at the Corporation's expense, employ or retain such lawyers, accountants, engineers, appraisers or other experts, advisers or agents as it may reasonably require for the purpose of determining and discharging its duties hereunder and may pay reasonable remuneration for such services rendered to it, but it is not responsible for any negligence, misconduct, mistake or error of judgment on the part of any of them. The Corporation shall reimburse the Warrant Agent for all disbursements, costs and expenses made or incurred by the Warrant Agent in the discharge of its duties and in the management of its duties hereunder. The Warrant Agent may rely upon and act upon, and shall be protected in relying and acting upon, the opinion or advice of, or information obtained from, any such lawyer, accountant, engineer, appraiser or other expert, adviser or agent in relation to any matter arising in the administration of its duties hereof. The Warrant Agent shall not incur any liability for the acts or omissions of such lawyers, accountants, engineers, appraisers or other experts, advisers or agents employed by the Warrant Agent in good faith.

8.5 Documents, Monies, etc. Held by Warrant Agent

Any monies, securities, documents of title or other instruments that may at any time be held by the Warrant Agent shall be placed in the deposit vaults of the Warrant Agent or of any Canadian chartered bank listed in Schedule I of the Bank Act (Canada), or deposited for safekeeping with any such bank. Any written direction for release of funds received shall be received by the Warrant Agent by 3:00 p.m. (Toronto time) on the Business Day on which such release is to be made, failing which such direction will be handled on a commercially reasonable efforts basis and may result in funds being released on the next Business Day. The Warrant Agent shall have no responsibility or liability for any diminution of any funds resulting from any investment made in accordance with this Indenture, including any losses on any investment liquidated prior to maturity in order to make a payment required hereunder.

The Warrant Agent may hold cash balances constituting part or all of such monies and may, but need not, invest same in the deposit department of a Canadian chartered bank; but the Warrant Agent, its affiliates or a Canadian chartered bank shall not be liable to account for any profit to any parties to this Indenture or to any other person or entity.

8.6 Resignation and Replacement of Warrant Agent

- (a) The Warrant Agent may resign its agency and be discharged from all further obligations hereunder by giving to the Corporation and the Warrantholders written notice at least sixty (60) calendar days, or such shorter time period if acceptable to the Warrant Agent and the Corporation, before the effective date of the resignation. If the Warrant Agent resigns, or becomes incapable of acting hereunder, the Corporation shall forthwith appoint in writing a new warrant agent, unless a new Warrant Agent has already been appointed by the Warrantholders.
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- (b) Failing such appointment by the Corporation or by the Warranholders by Extraordinary Resolution, the retiring Warrant Agent, at the expense of the Corporation, or any Warranholder may apply to a Judge of the Québec Superior Court of Justice on such notice as such Judge may direct, for the appointment of a new warrant agent. The Warranholders may, by Extraordinary Resolution, remove the Warrant Agent (including a warrant agent appointed by the Corporation or by a Judge as aforesaid) and appoint a new warrant agent.
- (c) Any new Warrant Agent appointed under the provisions of this Section 8.6 shall be a corporation authorized to carry on the business of a trust company in the Province of Québec and, if required by Applicable Legislation of any other province, in such other province.
- (d) On any new appointment, the new Warrant Agent is vested with the same powers, rights, duties and obligations as if it had been originally named as Warrant Agent without any further assurance, conveyance, act or deed; but there will be immediately executed, at the expense of the Corporation, all such conveyances or other instruments as may, in the opinion of Counsel, be necessary or advisable for the purpose of assuring such powers, rights, duties and responsibilities of the new Warrant Agent, provided that, any successor Warrant Agent shall have executed an appropriate instrument accepting such appointment and, at the request of the Corporation, the predecessor Warrant Agent, upon payment of its outstanding remuneration and expenses, shall execute and deliver to the successor Warrant Agent an appropriate instrument transferring to such successor Warrant Agent all rights and powers of the Warrant Agent hereunder.
- (e) On the appointment of a new Warrant Agent, the Corporation will promptly give notice thereof to the Warranholders.
- (f) Any Warrant Certificates certified but not delivered by a predecessor Warrant Agent may be certified by the successor Warrant Agent in the name of the predecessor or successor Warrant Agent.
- (g) Any corporation in to which the Warrant Agent may be merged or consolidated or amalgamated or to which all or substantially all of its corporate trust business is sold or otherwise transferred, or any corporation resulting therefrom shall be a party, or any corporation succeeding to substantially the corporate trust business of the Warrant Agent shall be the successor to the Warrant Agent, hereunder without any further act on its part or any of the parties hereto, provided that such corporation would be eligible for appointment as successor Warrant Agent.

8.7 Indenture Legislation

The Corporation and the Warrant Agent agree that each shall at all times in relation to this Indenture and to any action to be taken hereunder, observe and comply with and be entitled to the benefits of all Applicable Legislation. If and to the extent that any provision of this Indenture limits, qualifies or conflicts with any mandatory requirement of Applicable Legislation, such mandatory requirement prevails.

8.8 Notice

The Warrant Agent shall not be bound to give any notice or do or take any act, action or proceeding by virtue of the powers conferred on it hereby unless and until it shall have required so to do under the terms hereof; nor shall the Warrant Agent be required to take notice of any default hereunder, unless and until notified in writing of such default, which notice shall distinctly specify the default desired to be brought to the attention of the Warrant Agent and in the absence of any such notice the Warrant Agent may for all purposes of this Indenture conclusively assume that no default has been made in the observance or performance of any of the representations, warranties, covenants, agreements or conditions contained herein. Any such notice will in no way limit any discretion herein given the Warrant Agent to determine whether or not the Warrant Agent will take action with respect to any default. Proof of execution of any document or instrument in writing by a holder, including a Warranholders' Request, may be made by the certificate of a notary public, or other officer with similar powers, that the person signing such instrument acknowledged to him the execution thereof, or by an affidavit of a witness to such execution, or in any other manner the Warrant Agent considers adequate, and in respect of a corporate Warranholder, shall include a certificate of incumbency of such Warranholder together with a certified resolution authorizing the person who signs such instrument to sign such instrument. The Warrant Agent shall not be bound to give notice to any person of execution hereof.

8.9 Use of Proceeds

The Warrant Agent is in no way responsible for the use by the Corporation of the proceeds of the issue hereunder.

8.10 No Inquiries

In the exercise of any right or duty hereunder the Warrant Agent, if it is acting in good faith, may act and rely, and shall be protected in so acting and relying, as to the truth of any statement or the accuracy of any opinion expressed therein, on any statutory declaration, opinion, report, certificate or other evidence furnished to the Warrant Agent pursuant to a provision hereof or of Applicable Legislation or pursuant to a request of the Warrant Agent, if the Warrant Agent examines such evidence and determines that it complies with the applicable requirements of this Indenture. The Warrant Agent may nevertheless, in its discretion, require further proof in cases where it deems further proof desirable. The Warrant Agent is not bound to make any inquiry or investigation as to the performance by the Corporation of the Corporation's covenants hereunder.

8.11 Actions by Warrant Agent to Protect Interest

The Warrant Agent shall have the power to institute and to maintain such actions and proceedings as it may consider necessary or expedient to preserve, protect or enforce its interests and the interests of the Warranholders.

8.12 Warrant Agent Not Required to Give Security

The Warrant Agent is not required to give any bonds or security with respect to the execution or administration of its duties and the powers of this Indenture.

8.13 No Conflict of Interest

The Warrant Agent represents to the Corporation that, to the best of its knowledge, at the time of the execution and delivery by it of this Indenture, there exists no material conflict of interest in the role of the Warrant Agent hereunder but if, notwithstanding the provisions of this Section 8.13, such a material conflict of interest exists, the validity and enforceability of this Indenture and the instruments issued hereunder is not affected in any manner whatsoever by reason only that such material conflict of interest exists or arises. The Warrant Agent shall, within thirty (30) calendar days after ascertaining that it has a material conflict of interest, either eliminate such material conflict of interest or resign in the manner and with the effect specified in Section 8.6.

8.14 Warrant Agent Not Ordinarily Bound

No provision of this Indenture shall require the Warrant Agent (and its officers, Directors, employees and agents) to expend or risk its (or their) own funds or otherwise incur financial liability in the performance of any of its (or their) duties or in the exercise of any of its (or their) rights or powers unless it is (or they are) so indemnified and funded. The obligation of the Warrant Agent to commence or continue any act, action or proceeding for the purpose of enforcing any rights of the Warrantholders hereunder, is conditional upon Warrantholders furnishing, when required in writing so to do by the Warrant Agent, notice specifying the act, action or proceeding which the Warrant Agent is requested to take, funds sufficient for commencing or continuing the act, action or proceeding and an indemnity reasonably satisfactory to the Warrant Agent to protect and hold harmless the Warrant Agent (and its officers, Directors, employees and agents) against any costs, charges, expenses, loss, damage or liability it may suffer by reason thereof. The Warrant Agent may, before commencing or at any time during the continuance of any such act, action or proceeding, require the Warrantholders at whose instance it is acting to deposit with the Warrant Agent the Warrants held by them, for which Warrants the Warrant Agent shall issue receipts.

8.15 Warrant Agent May Deal in Instruments

The Warrant Agent may in its personal or other capacity, buy, sell, lend upon and deal in and hold securities of the Corporation and in the Warrants and generally contract and enter into financial transactions with the Corporation or otherwise, without being liable to account for any profits made thereby.

8.16 Recitals or Statements of Fact Made by Corporation

Except for the representations contained in Sections 8.13 and 8.20, subject to the provisions hereof, the Warrant Agent is not liable for or by reason of any of the statements of fact or recitals contained in this Indenture or in the Warrant Certificates and is not required to verify the same but all such statements and recitals are and are deemed to have been made by the Corporation only.

8.17 Warrant Agent's Discretion Absolute

The Warrant Agent, except as herein otherwise provided, has, as regards to all the powers, authorities and discretions vested in it, absolute discretion as to the exercise thereof, whether in relation to the manner or as to the mode and time for the exercise thereof.

8.18 No Representations as to Validity

The Warrant Agent is not:

- (a) under any responsibility in respect of the validity of this Indenture or the execution and delivery thereof or (subject to Section 2.5(a) and Section 2.8 hereof) in respect of the validity or the execution of any Warrant Certificate;
 - (b) under any obligation to see to, or to require evidence of, the registration or filing (or renewal thereof) of this Indenture or any instrument ancillary or supplemental hereto;
 - (c) responsible for any breach by the Corporation of any covenant or condition contained in this Indenture or in any Warrant Certificate and will not incur any liability or responsibility whatever or be in any way responsible for the consequences of any breach by the Corporation of any obligation herein contained or of any act of any Director, officer, employee or agent of the Corporation; or
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- (d) by any act hereunder, deemed to make any representation or warranty as to the authorization or reservation of any securities to be issued as provided in this Indenture or in any Warrant Certificate or as to whether any shares will when issued be duly authorized or be validly issued and fully paid and non-assessable. The duty and responsibility as to all the matters and things referred to in this Section 8.18 rests upon the Corporation and not upon the Warrant Agent and the failure of the Corporation to discharge any such duty and responsibility does not in any way render the Warrant Agent liable or place upon it any duty or responsibility for breach of which it would be liable.

8.19 Acceptance of Appointment

The Warrant Agent hereby accepts the duties under this Indenture and agrees to perform the same upon the terms and conditions herein set forth or referred to unless and until discharged therefrom by resignation or in some other lawful way.

8.20 Warrant Agent's Authority to Carry on Business

The Warrant Agent represents to the Corporation that, at the date hereof, it is authorized to carry on the business of a trust company in Québec and Ontario. If, notwithstanding the provisions of this Section 8.20, it ceases to be authorized to carry on such business in Québec or Toronto, as the case may be, the validity and enforceability of this Indenture and of the Warrants issued hereunder are not affected in any manner whatsoever by reason only of such event, provided that the Warrant Agent shall, within thirty (30) calendar days after ceasing to be authorized to carry on such business in Québec or Toronto, as the case may be, either become so authorized or resign in the manner and with the effect specified in Section 8.6.

8.21 Indemnification of Warrant Agent

Without limiting any protection or indemnity of the Warrant Agent under any other provision hereof, or otherwise at law, the Corporation hereby agrees to indemnify and hold harmless the Warrant Agent and its affiliates, their successors, assigns, and each of their Directors, officers, employees and agents (the "**Indemnified Parties**") and save them harmless from and against any and all liabilities, losses, damages, penalties, claims, actions, suits, costs, charges, payments, expenses and disbursements, including reasonable legal or advisor fees and disbursements, of whatever kind and nature which may at any time be imposed on, incurred by or asserted against the Indemnified Parties in connection with the performance of its duties and obligations hereunder, other than such liabilities, losses, damages, penalties, claims, actions, suits, costs, charges, payments, expenses and other disbursements arising by reason of the gross negligence, wilful misconduct or fraud of the Warrant Agent. In the absence of gross negligence, wilful misconduct or fraud on its part, the Warrant Agent will not be liable for any action taken, suffered or omitted by it or for any error of judgment made by it in performance of its duties under this Indenture. In no event will the Warrant Agent be liable for special, indirect, consequential or punitive loss or damages of any kind whatsoever (including, but not limited to, lost profits), even if the Warrant Agent has been advised of the possibility of such damages. The Warrant Agent shall not be under any obligation to prosecute or to defend any action or suit in respect of the relationship which, in the opinion of its Counsel, may involve it in expense or liability, unless the Corporation shall, so often as required, furnish the Warrant Agent with satisfactory indemnity and funding against such expense or liability. This provision shall survive the resignation or removal of the Warrant Agent, or the termination of this Indenture.

8.22 Performance of Covenants by Warrant Agent

If the Corporation fails to perform any of its covenants contained in this Indenture, then the Corporation will notify the Warrant Agent in writing of such failure and upon receipt by the Warrant Agent of such notice, the Warrant Agent may notify the Warrantholders of such failure on the part of the Corporation and may itself perform any of the said covenants capable of being performed by it, but shall be under no obligation to perform said covenants or to notify the Warrantholders of such performance by it. All sums expended or disbursed by the Warrant Agent in so doing shall be reimbursed as provided in Section 3.2. No such performance, expenditure or disbursement by the Warrant Agent shall be deemed to relieve the Corporation of any default hereunder or of its continuing obligations under the covenants herein contained.

8.23 Third Party Interests

The Corporation hereby represents to the Warrant Agent that any account to be opened by, or interest to held by the Warrant Agent in connection with this Indenture, for or to the credit of such party, either (i) is not intended to be used by or on behalf of any third party; or (ii) is intended to be used by or on behalf of a third party, in which case such party hereto agrees to complete and execute forthwith a declaration in the Warrant Agent's prescribed form as to the particulars of such third party.

8.24 Not Bound to Act

The Warrant Agent shall retain the right not to act and shall not be liable for refusing to act if, in its sole opinion, such action would be conflicting with or contrary to the terms of this Indenture or the law or regulation of any jurisdiction or any order or directive of any court, governmental agency or other regulatory body.

8.25 Anti-Money Laundering

The Warrant Agent shall retain the right not to act and shall not be liable for refusing to act if, due to a lack of information or for any other reason whatsoever, the Warrant Agent, in its sole judgment, determines that such act might cause it to be in non-compliance with any sanctions legislation or regulation or applicable anti-money laundering or anti-terrorist legislation, regulation or guideline. Further, should the Warrant Agent, in its sole judgment, determine at any time that its acting under this Indenture has resulted in its being in non-compliance with any sanctions legislation or regulation or applicable anti-money laundering or anti-terrorist legislation, regulation or guideline, then it shall have the right to resign on ten (10) days' written notice to the Corporation, provided (i) that the Warrant Agent's written notice shall describe the circumstances of such non-compliance to the extent permitted by sanctions legislation or regulation or applicable anti-money laundering or anti-terrorist legislation, regulation or guideline; and (ii) that if such circumstances are rectified to the Warrant Agent's satisfaction within such ten (10) day period, then such resignation shall not be effective.

8.26 Not Appointed Receiver

The Warrant Agent and any person related to the Warrant Agent will not be appointed a receiver or receiver and manager or liquidator of all or any part of the assets or undertaking of the Corporation.

ARTICLE 9
NOTICES

9.1 Notice to Corporation, Warrant Agent and Underwriter

Any notice to the Corporation, Warrant Agent or Underwriter under the provisions of this Indenture is valid and effective if in writing delivered, sent by registered letter or postage prepaid:

- (a) to the Corporation at:
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PyroGenesis Canada Inc.
1744 William Street, Suite 200
Montréal, Québec H3J 1R4

Attention: P. Peter Pascali, President and Chief Executive Officer
Email: ppascali@pyrogenesis.com

with a copy to (which shall not constitute notice):

Osler, Hoskin & Harcourt, LLP
1000, De La Gauchetière Street West, Suite 2100
Montreal, Quebec, H3B 4W5 Canada

Attention: Eric Levy
Email: elevy@osler.com

(b) to the Warrant Agent at:

AST Trust Company (Canada)
1 Toronto Street, Suite 1200
Toronto, Ontario M5C 2V6 Canada

Attention: Susanne Tasche
Email: stasche@astfinancial.com

(c) to the Underwriter at (which shall not constitute notice):

Mackie Research Capital Corporation
199 Bay Street, Suite 4500
Toronto, Ontario M5L 1G2

Attention: David Keating, Managing Director, Head of Equity Capital Markets
Email: dkeating@mackieresearch.com

with a copy to (which shall not constitute notice):

Fasken Martineau DuMoulin LLP
333 Bay Street, Suite 2400
Toronto, Ontario M5H 2T6

Attention: John M. Sabetti
Email: jsabetti@fasken.com

Any notice, direction or other instrument aforesaid will, if delivered, be deemed to have been given and received on the day it was delivered and, if mailed, be deemed to have been received on the third (3rd) Business Day following the date of the postmark on such notice and, if sent by facsimile or email, be deemed to have been given and received on the day it was so sent unless it was sent:

- (i) on a day which is not a Business Day in the place to which it was sent; or
 - (ii) after 4:30 p.m. in the place to which it was sent,
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in which cases it will be deemed to have been given and received on the next day which is a Business Day in the place to which it was sent.

The Corporation or the Warrant Agent, as the case may be, may from time to time notify the other in the manner provided in this Section 9.1 of a change of address which, from the effective date of such notice and until changed by like notice, shall be the address of the Corporation or the Warrant Agent, as the case may be, for all purposes of this Indenture.

If, by reason of a strike, lockout or other work stoppage, actual or threatened, involving postal employees, any notice to be given to the Warrant Agent or to the Corporation hereunder could reasonably be considered unlikely to reach its destination, such notice shall be valid and effective only if it is delivered to the named officer of the party to which it is addressed or, if it is delivered to such party at the appropriate address provided in this Section 9.1 or by facsimile or electronic transmission or other means of prepaid, transmitted and recorded communication.

9.2 Notice to Warrantholders

Any notice to the Warrantholders under the provisions of this Indenture is valid and effective if delivered, sent by regular mail or sent by courier to each Warrantholder at its address appearing on the register of Warrants kept by the Warrant Agent or, in the case of joint holders, to the first such address, and, if delivered or couriered, shall be deemed to have been given and received on the day it was delivered and, if mailed, be deemed to have been received on the third (3rd) Business Day following the date of the postmark on such notice. Accidental error or omission in giving notice or accidental failure to mail notice to any holder will not invalidate any action or proceeding founded thereon. All notices may be given to whichever one of the Warrantholders (if more than one) is named first in the appropriate register hereinbefore mentioned, and any notice so given shall be sufficient notice to all Warrantholders of and any other persons (if any) interested in such Warrants.

If, by reason of a strike, lockout or other work stoppage, actual or threatened, involving postal employees, any notice to be given to the Warrantholders hereunder could reasonably be considered unlikely to reach its destination, such notice shall be valid and effective only if it is delivered to such Warrantholders to the address for such Warrantholders contained in the register maintained by the Warrant Agent or such notice may be given, at the Corporation's expense, by means of publication in the Globe and Mail, National Edition, or any other English language daily newspaper or newspapers of general circulation in Canada, in each two successive weeks, the first such notice to be published within 5 business days of such event, and any so notice published shall be deemed to have been received and given on the latest date the publication takes place.

ARTICLE 10 POWER OF BOARD OF DIRECTORS

10.1 Board of Directors

In this Indenture, where the Corporation is required or empowered to exercise any acts, all such acts may be exercised by the Directors, by any duly appointed committee of the Directors or by those officers of the Corporation authorized to exercise such acts.

ARTICLE 11
ENFORCEMENT

11.1 Suits

- (a) No Warrantheader has any right to institute any action, suit or proceeding at law or in equity for the purpose of enforcing the execution of any power hereunder or for the appointment of a liquidator or receiver or for a receiving order under the Bankruptcy and Insolvency Act (Canada) or to have the Corporation wound up or to file or prove a claim in any liquidation or bankruptcy proceedings or for any other remedy hereunder, unless the Warrantheaders by Extraordinary Resolution have made a request to the Warrant Agent and the Warrant Agent has been afforded reasonable opportunity to proceed or complete any action or suit for any such purpose whether or not in its own name and the Warrantheaders or any of them have furnished to the Warrant Agent, when so requested by the Warrant Agent, sufficient funds and security and indemnity satisfactory to it against the costs, expenses and liabilities to be incurred therein or thereby and the Warrant Agent has failed to act within a reasonable time or the Warrant Agent has failed to actively pursue any such act or proceeding.
- (b) Subject to the provisions of this Section and otherwise in this Indenture, all or any of the rights conferred upon a Warrantheader by the terms of a Warrant may be enforced by such Warrantheader by appropriate legal proceedings without prejudice to the right which is hereby conferred upon the Warrant Agent to proceed in its own name to enforce each and all of the provisions herein contained for the benefit of the Warrantheaders from time to time.
- (c) The Corporation shall have the right to enforce full payment of the Exercise Price of all Common Shares issued by the Warrant Agent to a Warrantheader hereunder and shall be entitled to demand such payment from the Warrantheader or alternatively to instruct the Warrant Agent to cancel the share certificates and amend the securities register accordingly.

11.2 Waiver of Default

Notwithstanding Section 12.3 below, upon the happening of any default hereunder:

- (a) the Warrantheaders of not less than 51% of the Warrants then outstanding shall have power (in addition to the powers exercisable by Extraordinary Resolution) by requisition in writing to instruct the Warrant Agent to waive any default hereunder and the Warrant Agent shall thereupon waive the default upon such terms and conditions as shall be prescribed in such requisition; or
- (b) the Warrant Agent shall have power to waive any default hereunder upon such terms and conditions as the Warrant Agent may deem advisable, if, in the Warrant Agent's opinion, relying on the opinion of Counsel, the same shall have been cured or adequate provision made therefor;

provided that no delay or omission of the Warrant Agent or of the Warrantheaders to exercise any right or power accruing upon any default shall impair any such right or power or shall be construed to be a waiver of any such default or acquiescence therein and provided further that no act or omission either of the Warrant Agent or of the Warrantheaders shall extend to or be taken in any manner whatsoever to affect any subsequent default hereunder of the rights resulting therefrom.

11.3 Immunity of Shareholders

Subject to any rights or remedies available to the Warrantholders under applicable securities legislation or otherwise, the Warrant Agent and, by the acceptance of the Warrant Certificate or other evidence of ownership in the case of Uncertificated Warrants as part of the consideration for the issue of the Warrants, the Warrantholders hereby waive and release any right, cause of action or remedy now or hereafter existing in any jurisdiction against any incorporator or any past, present or future shareholder, director, officer, employee or agent of the Corporation or of any successor corporation on any covenant, agreement, representation or warranty by the Corporation contained herein or in the Warrant Certificates.

ARTICLE 12 MISCELLANEOUS PROVISIONS

12.1 Further Assurances

The parties covenant and agree from time to time, as may be reasonably required by any party hereto, to execute and deliver such further and other documents, agreements and assurances and do all matters and things which are convenient, advisable or necessary from time to time to carry out the intention of this Indenture more effectively and completely.

12.2 Unenforceable Terms

If any term, covenant or condition of this Indenture or the application thereof to any party or circumstance is invalid or unenforceable to any extent, the remainder of this Indenture or application of such term, covenant or condition to a party or circumstance other than those to which it is held invalid or unenforceable is not affected thereby and each remaining term, covenant or condition of this Indenture is valid and enforceable to the fullest extent permitted by law.

12.3 No Waiver

No consent or waiver, express or implied, by either party to or of any breach or default by the other party in the performance by the other party of its obligations hereunder is deemed or construed to be a consent or waiver to or of any other breach or default in the performance of obligations hereunder by such party. Failure on the part of either party to complain of any act or failure to act by the other party or to declare the other party in default, irrespective of how long such failure continues, does not constitute a waiver by such party of its rights hereunder.

12.4 Limitation of Liability

The obligations hereunder are not personally binding upon, nor shall resort hereunder be had to, the private property of any of the past, present or future directors or shareholders of the Corporation or of any successor corporation or any of the past, present or future officers, employees or agents of the Corporation or of any successor corporation, but only the property of the Corporation or of any successor corporation shall be bound in respect hereof.

12.5 Force Majeure

Neither party shall be liable to the other, or held in breach of this Indenture, if prevented, hindered, or delayed in the performance or observance of any provision contained herein by reason of act of God, riots, terrorism, acts of war, epidemics, governmental action or judicial order, earthquakes, or any other similar causes (including, but not limited to, mechanical, electronic or communication interruptions, disruptions or failures). Performance times under this Indenture shall be extended for a period of time equivalent to the time lost because of any delay that is excusable under this Section.

12.6 SEC Certification

The Corporation confirms that as at the date of execution of this Indenture it does not have a class of securities registered pursuant to Section 12 of the U.S. Exchange Act or have a reporting obligation pursuant to Section 15(d) of the U.S. Exchange Act. The Corporation covenants that in the event that (i) any class of its securities shall become registered pursuant to Section 12 of the U.S. Exchange Act or the Corporation shall incur a reporting obligation pursuant to Section 15(d) of the U.S. Exchange Act, or (ii) any such registration or reporting obligation shall be terminated by the Corporation in accordance with the U.S. Exchange Act, the Corporation shall promptly deliver to the Warrant Agent an Officer's Certificate (in a form agreed by the Warrant Agent) notifying the Warrant Agent of such registration or termination and providing such other information as the Warrant Agent reasonably requires at the time. The Corporation acknowledges that the Warrant Agent is relying upon the foregoing representation and covenants in order to meet certain SEC obligations with respect to those clients who are subject to the periodic reporting requirements of the SEC.

12.7 Privacy Matters

The parties acknowledge that the Warrant Agent may, in the course of providing services hereunder, collect or receive financial and other personal information about such parties and/or their representatives, as individuals, or about other individuals related to the subject matter hereof, and use such information for the following purposes:

- (a) to provide the services required under this Indenture and other services that may be requested from time to time;
- (b) to help the Warrant Agent manage its servicing relationships with such individuals;
- (c) to meet the Warrant Agent's legal and regulatory requirements; and
- (d) if Social Insurance Numbers are collected by the Warrant Agent, to perform tax reporting and to assist in verification of an individual's identity for security purposes.

Each party acknowledges and agrees that the Warrant Agent may receive, collect, use and disclose personal information provided to it or acquired by it in the course of this Indenture for the purposes described above and, generally, in the manner and on the terms described in its Privacy Code, which the Warrant Agent shall make available on its website, <https://www.astfinancial.com/ca-en> or upon request, including revisions thereto. The Warrant Agent may transfer personal information to other companies in or outside of Canada that provide data processing and storage or other support in order to facilitate the services it provides.

Further, each party agrees that it shall not provide or cause to be provided to the Warrant Agent any personal information relating to an individual who is not a party to this Indenture unless that party has assured itself that such individual understands and has consented to the aforementioned uses and disclosures.

12.8 Enurement

This Indenture enures to the benefit of and is binding upon the parties hereto and their respective successors and assigns and subject to Section 8.6(g) may not be assigned by either party hereto without the consent in writing of the other party, such consent not to be unreasonably withheld.

12.9 Counterparts and Formal Date

This Indenture may be executed in several counterparts, each of which when so executed shall be deemed to be an original and such counterparts together shall constitute one and the same instrument and notwithstanding their date of execution shall be deemed to be dated as of the Closing Date.

12.10 Satisfaction and Discharge of Indenture

Upon the date by which there shall have been delivered to the Warrant Agent for exercise, cancellation or destruction all Warrants theretofore certified hereunder and if all certificates required to be issued in compliance with the provisions hereof have been issued and delivered hereunder, this Indenture (except for any indemnities given to the Warrant Agent) shall cease to be of further effect and the Warrant Agent, on demand of and at the cost and expense of the Corporation and upon delivery to the Warrant Agent of a certificate of the Corporation stating that all conditions precedent to the satisfaction and discharge of this Indenture have been complied with, and upon payment to the Warrant Agent of the fees and other remuneration payable to the Warrant Agent, the Warrant Agent shall execute proper instruments acknowledging satisfaction of and discharging this Indenture. Notwithstanding the foregoing, the indemnities provided to the Warrant Agent by the Corporation hereunder shall remain in full force and effect and survive the termination of this Indenture.

12.11 Provisions of Indenture and Warrants for the Sole Benefit of Parties and Warrantholders

Nothing in this Indenture or the Warrants, expressed or implied, shall give or be construed to give to any person other than the parties hereto and the holders from time to time of the Warrants any legal or equitable right, remedy or claim under this Indenture, or under any covenant or provision therein contained, all such covenants and provisions being for the sole benefit of the parties hereto and the Warrantholders.

12.12 Rights of Rescission and Withdrawal for Holders

Should a holder of Warrants exercise any legal, statutory, contractual or other right of withdrawal or rescission that may be available to it, and the holder's funds which were paid on exercise have already been released to the Company by the Warrant Agent, the Warrant Agent shall not be responsible for ensuring the exercise is cancelled and a refund is paid back to the holder. In such cases, the holder shall seek a refund directly from the Company and subsequently, the Company, upon surrender to the Company or the Warrant Agent of any underlying shares that may have been issued, or such other procedure as agreed to by the parties hereto, shall instruct the Warrant Agent in writing, to cancel the exercise transaction and any such underlying shares on the register, which may have already been issued upon the Warrant exercise. In the event that any payment is received from the Company by virtue of the holder being a shareholder for such Warrants that were subsequently rescinded, such payment must be returned to the Company by such holder. The Warrant Agent shall not be under any duty or obligation to take any steps to ensure or enforce that the funds are returned pursuant to this section, nor shall the Warrant Agent be in any other way responsible in the event that any payment is not delivered or received pursuant to this section. Notwithstanding the foregoing, in the event that the Company provides the refund to the Warrant Agent for distribution to the holder, the Warrant Agent shall return such funds to the holder as soon as reasonably practicable, and in so doing, the Warrant Agent shall incur no liability with respect to the delivery or non-delivery of any such funds.

Each original purchaser of Warrants will have a non-assignable contractual right of rescission if the Prospectus (including documents incorporated herein by reference) or any amendment thereto contains a misrepresentation (within the meaning of the *Securities Act* (Ontario)). This contractual right of rescission shall be subject to the defences, limitations and other provisions described under part XXIII of the *Securities Act* (Ontario), and is in addition to any other right or remedy available to original purchasers under section 130 of the *Securities Act* (Ontario) or otherwise at law. For greater certainty, the contractual right of rescission will entitle such original purchasers to receive the amount paid upon conversion, exchange or exercise, as well as the amount paid for the original Warrant, upon surrender of the underlying securities acquired thereby, in the event that the Prospectus (as supplemented or amended) contains a misrepresentation, provided that: (i) the conversion, exchange or exercise takes place within 180 days of the date of the purchase of the Units under this Prospectus; and (ii) the right of rescission is exercised within 180 days of the date of the purchase of the Units under this Prospectus. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province for the particulars of this right of action for damages, or consult with a legal adviser.

12.13 Language

The parties have expressly required this Indenture and all other documents required or permitted to be given or entered into pursuant hereto to be drawn up in the English language only. *Les parties ont expressément demandé que la présente convention ainsi que tout autre document à être ou pouvant être donné ou conclu en vertu des dispositions des présentes, soient rédigés en langue anglaise seulement.*

12.14 Formal Date and Effective Date

For the purpose of convenience this Indenture is referred to as bearing the formal date that is on the first page of this Indenture, however, notwithstanding such formal date, this Indenture becomes effective as between the Corporation and any particular Warrantholder upon the date of issuance of Warrants to such Warrantholder.

[Signature Page Follows]

IN WITNESS WHEREOF the parties hereto have executed this Indenture under the hands of their proper officers in that behalf as of the date first written above.

PYROGENESIS CANADA INC.

Per: (s) P. Peter Pascali
Name: P. Peter Pascali
Title: President, Chief Executive Officer

AST TRUST COMPANY (CANADA)

Per: (s) Bertrand Gély
Name: Bertrand Gély
Title: Relationship Manager

Per: (s) Susanne Tasche
Name: Susanne Tasche
Title: Corporate Actions Relationship
Manager

(Signature Page – Warrant Indenture)

SCHEDULE "A"

FORM OF WARRANT CERTIFICATE

INCLUDE ON WARRANT CERTIFICATES ISSUED TO CDS:

"UNLESS THIS CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF CDS CLEARING AND DEPOSITORY SERVICES INC. ("CDS") TO PYROGENESIS CANADA INC. (THE "ISSUER") OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY CERTIFICATE ISSUED IN RESPECT THEREOF IS REGISTERED IN THE NAME OF CDS, OR IN SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF CDS (AND ANY PAYMENT IS MADE TO CDS OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF CDS), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL SINCE THE REGISTERED HOLDER HEREOF, CDS, HAS A PROPERTY INTEREST IN THE SECURITIES REPRESENTED BY THIS CERTIFICATE HEREIN AND IT IS A VIOLATION OF ITS RIGHTS FOR ANOTHER PERSON TO HOLD, TRANSFER OR DEAL WITH THIS CERTIFICATE."

WARRANT CERTIFICATE

PYROGENESIS CANADA INC.
(a corporation existing under the laws of Canada)

| | |
|--|---|
| No. W-[Warrant]-2020 CUSIP NO: · ISIN: · | [Number] WARRANTS entitling the holder to acquire one Common Share for each Warrant, subject to adjustment as set out below |
|--|---|

THIS IS TO CERTIFY that, for value received, [Name] (the “**Warrantholder**”) is the registered holder of the number of common share purchase warrants (the “**Warrants**”) stated above and is entitled, on exercise of these Warrants upon and subject to the terms and conditions set forth herein and in the Indenture (as defined below), to purchase, at any time before the Expiry Time (as defined below), the number of fully paid and non-assessable common shares without par value (the “**Common Shares**”) in the capital of PyroGenesis Canada Inc. (the “**Corporation**”) as is equal to the number of Warrants represented hereby at an exercise price of \$4.50 per Common Share (subject to adjustment as set out below and in the Indenture).

The Warrants represented by this certificate are issued under and pursuant to a certain indenture (the “**Indenture**”) made as of November 10, 2020 (the “**Closing Date**”) between the Corporation and the Warrant Agent, to which Indenture and any instruments supplemental thereto reference is hereby made for a full description of the rights of the holders of the Warrants and the terms and conditions upon which such Warrants are, or are to be, issued and held, all to the same effect as if the provisions of the Indenture and all instruments supplemental thereto were herein set forth, to all of which provisions the holder of these Warrants by acceptance hereof assents. Capitalized terms used but not otherwise defined herein have the meaning ascribed to them in the Indenture. In the event of any conflict or inconsistency between the provisions of the Indenture and the provisions of this Warrant Certificate, except those that are necessary by context, the provisions of the Indenture shall prevail. The Corporation will furnish to the holder of this Warrant Certificate, upon request and without charge, a copy of the Indenture.

The Warrants represented by this Warrant Certificate are only exercisable at or prior to 5:00 p.m. (Toronto time) (the “**Expiry Time**”) on November 10, 2022 (the “**Expiry Date**”), provided that, if at any time before the Expiry Date, the volume weighted average trading price of the Common Shares on the TSX Venture Exchange (“**TSXV**”) (or if the Common Shares are not listed on the TSXV, then on such other recognized Canadian stock exchange on which the Common Shares are then listed) is greater than \$6.75 over any 20 consecutive Trading Days, the Corporation shall be entitled, within 15 days of the occurrence of such event, to accelerate the Expiry Date of the Warrants to the date that is 30 days following the date that notice of such acceleration is provided to AST Trust Company (Canada) (the “**Warrant Agent**”, which expression includes any successor agent appointed under the Indenture) and to the Warrantholders (the “**New Expiry Date**”) in writing specifying the New Expiry Date (the “**Acceleration Notice**”). From and after the Expiry Time on the New Expiry Date specified in such Acceleration Notice, no Warrants may be issued or exercised, and all unexercised Warrants shall be void and of no effect following the New Expiry Date. For greater certainty, following the due issuance of an Acceleration Notice, the “**Expiry Date**” shall mean the New Expiry Date.

The right to purchase Common Shares may only be exercised by the Warrantholder within the time set forth above by:

- a) duly completing and executing the exercise form (the “**Exercise Form**”) attached hereto in Appendix “1” in accordance with the instructions attached hereto in Appendix “3”; and
- b) surrendering this warrant certificate (the “**Warrant Certificate**”), with the Exercise Form to the Warrant Agent at the principal office of the Warrant Agent, at 1 Toronto Street, Suite 1200, Toronto, Ontario M5C 2V6, together with a certified cheque, bank draft or money order in the lawful money of Canada payable to or to the order of the Corporation in an amount equal to the purchase price of the Common Shares so subscribed for.

The surrender of this Warrant Certificate, the duly completed Exercise Form and payment as provided above will be deemed to have been effected only on personal delivery thereof to, or if sent by mail or other means of transmission on actual receipt thereof by, the Warrant Agent at its principal office as set out above. Any such exercise is subject to compliance with, and may be restricted by, Applicable Legislation or the laws of the United States. If, at the time of the exercise of the Warrants, there remain restrictions on resale under Applicable Legislation or the laws of the United States on the Common Shares acquired, the Corporation may endorse the certificates representing the Common Shares acquired with respect to such resale restrictions.

The Common Shares in respect of which the Warrants are exercised will be deemed to have been issued on the date of such exercise, at which time the Warrantholder will be deemed to have become the holder of record of such Common Shares.

After the exercise of Warrants, the Warrant Agent shall within three (3) Business Days of such exercise cause to be mailed or delivered to the Warrantholder at its address specified in the register for the Warrants maintained by the Warrant Agent or as otherwise specified in the Exercise Form, certificates for the appropriate number of Common Shares issuable in respect of such Warrants or any other appropriate evidence of the issuance of Common Shares to such Warrantholder in respect of Common Shares issued under the book entry registration system, not exceeding those which such Warrantholder is entitled to acquire pursuant to the Warrants so exercised. If the holder of this Warrant Certificate exercises some but not all of the Warrants represented hereby, he or she will be entitled to receive, without charge, a new Warrant Certificate representing the unexercised number of the Warrants represented hereby. No fractional Common Shares will be issued upon exercise of any Warrant.

The holder of this Warrant Certificate may at any time up to the Expiry Time, upon written instruction delivered to the Warrant Agent and payment of the charges provided for in the Indenture and otherwise in accordance with the provisions of the Indenture, exchange this Warrant Certificate for other Warrant Certificates evidencing Warrants entitling the holder to acquire in the aggregate the same number of Common Shares as may be acquired under this Warrant Certificate.

The Warrant Indenture contains provisions for the adjustment of the Exercise Price payable for each Common Share upon the exercise of Warrants and the number of Common Shares issuable upon the exercise of Warrants in the events and in the manner set forth therein.

The Indenture also contains provisions making binding on all holders of Warrants outstanding thereunder resolutions passed at meetings of holders of Warrants held in accordance with the provisions of the Indenture and instruments in writing signed by Warrantholders of Warrants entitled to purchase a specific majority of the Common Shares that can be purchased pursuant to such Warrants.

The holding of the Warrants evidenced by this Warrant Certificate does not constitute the Warrantholder a shareholder of the Corporation or entitle such holder to any right or interest except as expressly provided herein and in the Indenture.

The Warrants may only be transferred by the Warrantholder (or its legal representatives or its attorney duly appointed), on the register kept at the office of the Warrant Agent, in accordance with applicable laws and upon compliance with the conditions set out in the Indenture, by delivering to the Warrant Agent's Toronto office a duly executed Form of Transfer attached as Appendix "2" hereto and complying with such other reasonable requirements as the Corporation and the Warrant Agent may prescribe, and such transfer shall be duly noted on the register by the Warrant Agent.

Neither the Warrants nor the Common Shares issuable upon exercise hereof have been or will be registered under the United States Securities Act of 1933, as amended (the "U.S. Securities Act"), or U.S. state securities laws. The Warrants may not be exercised in the United States, or by or on behalf of, or for the account or benefit of, a U.S. person or a person in the United States, unless (i) this Warrant and such Common Shares have been registered under the U.S. Securities Act and the applicable laws of any such state, or (ii) an exemption from such registration requirements is available and the requirements set forth in the Exercise Form have been satisfied. "United States" and "U.S. person" are as defined in Regulation S under the U.S. Securities Act. The holder understands that the Warrants represented hereby may not be exercised within the United States or by or for the account or benefit of a U.S. person or a person in the United States, and the Common Shares issuable upon exercise of such Warrants may not be delivered within the United States unless the holder provides documentation satisfactory to the Corporation and the Warrant Agent (which may, at the option of the Corporation and Warrant Agent, include an opinion from U.S. counsel to the holder that is in satisfactory form to the Corporation and Warrant Agent) to the effect that such exercise is being made in transaction that is exempt from the registration requirements of the U.S. Securities Act. Any Warrant Shares so issued in the United States or to U.S. Persons will be "restricted securities" within the meaning of Rule 144(a)(3) under the U.S. Securities Act and will be issued in physical certificated form bearing a legend describing applicable transfer restrictions under the U.S. Securities Act.

After the exercise of any of the Warrants represented by this Warrant Certificate, the Warrantholder shall no longer have any rights under either the Indenture or this Warrant Certificate with respect to such Warrants, other than the right to receive certificates representing the Common Shares issuable on the exercise of those Warrants, and those Warrants shall be void and of no further value or effect.

Time shall be of the essence hereof.

This Warrant Certificate will not be valid for any purpose until it has been countersigned by or on behalf of the Warrant Agent from time to time in accordance with the Indenture.

This Warrant Certificate shall be construed in accordance with the laws of the Province of Québec and the federal laws of Canada applicable therein and shall be treated in all respects as a Québec contract.

The parties have expressly required this Warrant Certificate and all other documents required or permitted to be given or entered into pursuant hereto to be drawn up in the English language only. *Les parties ont expressément demandé que le présent certificat ainsi que tout autre document à être ou pouvant être donné ou conclu en vertu des dispositions des présentes, soient rédigés en langue anglaise seulement.*

[Remainder of page intentionally left blank. Signature page follows.]

IN WITNESS WHEREOF the Corporation has caused this Warrant Certificate to be executed by its duly authorized officer as of [·], 2020.

PYROGENESIS CANADA INC.

By: _____
P. Peter Pascali, President and Chief Executive Officer

COUNTERSIGNED BY the Warrant Agent in , Canada as of [·], 2020.

AST TRUST COMPANY (CANADA)

By: _____
Authorized Signatory

APPENDIX "1"

WARRANT CERTIFICATE - EXERCISE FORM

TO: PYROGENESIS CANADA INC. (the "Corporation")

AND TO: AST TRUST COMPANY (CANADA)

1. The undersigned holder of the Warrants evidenced by this Warrant Certificate hereby irrevocably subscribes for and exercises the right to acquire Common Shares in the capital of the Corporation (or such number of other securities or property to which such Warrants entitle the undersigned in lieu thereof or in addition thereto under the provisions of the accompanying Warrant Certificate) according to the provisions of the Warrant Certificate and the provisions of the Indenture referenced in the accompanying Warrant Certificate. Any capitalized term in this exercise form that is not otherwise defined herein, shall have the meaning ascribed thereto in the Warrant Certificate.
2. Exercise Price Payable: (the number in point 1 above multiplied by \$4.50, subject to adjustment).
3. The Common Shares (or other securities or property) are to be registered as follows:

Name: _____(Print clearly)

Address in full: _____

Number of Common Shares: _____

4. Such securities should be sent by courier to:

Name: _____(Print clearly)

Address in full: _____

- Please check if the certificates representing the Common Shares are to be delivered at the office where this Warrant Certificate is surrendered, failing which such certificates will be mailed to the address set out above. Certificates will be delivered or mailed as soon as practicable after the surrender of this Warrant Certificate to the Warrant Agent.

If the number of Warrants exercised is less than the number of Warrants represented hereby, the undersigned requests that the new Warrant Certificate representing the balance of the Warrants be registered in the name of the undersigned and should be sent by courier to:

Name: _____(Print clearly)

Address in full: _____

The undersigned represents that it is (check one):

- (i) not in the United States; (ii) not a U.S. person and is not exercising such Warrant on behalf of a U.S. person or a person in the United States; and (iii) is not executing this exercise form in the United States. For purposes hereof, "United States" and "U.S. person" shall have the meanings given to such terms in Regulation S under the U.S. Securities Act of 1933, as amended (the "U.S. Securities Act"); or

Concurrently herewith is providing documentation satisfactory to the Corporation and the Warrant Agent (which may, at the option of the Corporation and Warrant Agent, include an opinion from U.S. counsel to the holder that is in satisfactory form to the Corporation and Warrant Agent) to the effect that such exercise is being made in transaction that is exempt from the registration requirements of the U.S. Securities Act. Any Warrant Shares so issued in the United States or to U.S. Persons will be “restricted securities” within the meaning of Rule 144(a)(3) under the U.S. Securities Act and will be issued in physical certificated form bearing a legend describing applicable transfer restrictions under the U.S. Securities Act.

DATED at , , this day of , 20.

| | |
|---|--|
| Signature Witnessed or Guaranteed (See instructions to Warranholders in Appendix "3") | (Signature of Warranholder, to be the same as appears on the face of this Warrant Certificate) |
| Name of Warranholder: Address (Please print): | <hr/> <hr/> <hr/> |

Notes to Warranholders:

1. In order to voluntarily exercise the Warrants represented by this certificate, prior to the Expiry Time, and be deemed to have become the holder or holders of records of the Warrant Shares pursuant to section 5.3 of the Indenture, this exercise form must be delivered to the Warrant Agent, together with this Warrant Certificate. Refer to the instructions to Warranholders attached as Appendix "3" to this Warrant Certificate.
2. If this exercise form indicates that the Common Shares are to be issued to a person or persons other than the registered holder of this Warrant Certificate, the signature of such holder on the exercise form must be guaranteed by a Canadian Schedule 1 chartered bank, a member of the Securities Transfer Association Medallion Program (STAMP), a member of the Stock Exchange Medallion Program (SEMP) or a member of the New York Stock Exchange Inc. Medallion Signature Program (MSP).
3. The undersigned understands that upon the exercise of the Warrants issued in the United States or to, or for the account or benefit of, a U.S. person or a person in the United States, the underlying Common Shares will continue to be "restricted securities" within the meaning of Rule 144(a)(3) under the U.S. Securities Act and may be offered, sold or otherwise transferred only (i) to the Corporation; or (ii) outside the United States in accordance with Rule 904 of Regulation S under the U.S. Securities Act, and in each case in compliance with applicable laws and regulations of Canada or the provinces thereof, provided that the Form of Transfer also complies with the transfer restrictions set forth in Section 2.6 of this Indenture.

APPENDIX "2"

WARRANT CERTIFICATE - FORM OF TRANSFER

THE WARRANTS REPRESENTED BY THIS CERTIFICATE MAY NOT BE TRANSFERRED TO A U.S. PERSON OR TO ANY PERSON IN THE UNITED STATES OR TO OR FOR THE ACCOUNT OR BENEFIT OF A U.S. PERSON OR PERSON IN THE UNITED STATES.

TO: PYROGENESIS CANADA INC. (the "Corporation")

AND TO: AST TRUST COMPANY (CANADA)

FOR VALUE RECEIVED the undersigned hereby sells, assigns and transfers to

(print name and address) the Warrants represented by this Warrant Certificate and hereby irrevocably constitutes and appoints _____ as its attorney with full power of substitution to transfer the said securities on the appropriate register of the Warrant Agent.

The undersigned hereby certifies that the transfer of these securities is not being made to, and the offer of these securities was not made to, and the person named above is not, a person in the United States or a U.S. person (a "U.S. Person") (as such terms are defined in Regulation S under the U.S. Securities Act of 1933, as amended (the "U.S. Securities Act")).

In the case of Warrants held by, or for the account or benefit of, a person in the United States or a "U.S. Person", the undersigned hereby represents, warrants and certifies that (one (only) of the following must be checked):

- (a) the transfer is being made only to the Corporation; or
- (b) the transfer is being made outside the United States in accordance with Rule 904 of Regulation S under the U.S. Securities Act, and in compliance with any applicable laws and regulations of Canada or the provinces thereof.

[Remainder of page intentionally left blank. Signature page follows.]

DATED this · day of ·, 20·.

**SPACE FOR GUARANTEES OF)
SIGNATURES (BELOW))**

| | |
|------------------------|---|
|))) _____) | _____ Signature of Transferor _____ Name of Transferor |
|------------------------|---|

CERTAIN REQUIREMENTS RELATING TO TRANSFERS – READ CAREFULLY

The signature(s) of the transferor(s) must correspond with the name(s) as written upon the face of this certificate(s), in every particular, without alteration or enlargement, or any change whatsoever. All securityholders or a legally authorized representative must sign this form. The signature(s) on this form must be guaranteed in accordance with the transfer agent’s then current guidelines and requirements at the time of transfer. Notarized or witnessed signatures are not acceptable as guaranteed signatures. As at the time of closing, you may choose one of the following methods (although subject to change in accordance with industry practice and standards):

- **Canada and the United States:** A Medallion Signature Guarantee obtained from a member of an acceptable Medallion Signature Guarantee Program (STAMP, SEMP, NYSE, MSP). Many commercial banks, savings banks, credit unions, and all broker dealers participate in a Medallion Signature Guarantee Program. The Guarantor must affix a stamp bearing the actual words “Medallion Guaranteed”, with the correct prefix covering the face value of the certificate.
- **Canada:** A Signature Guarantee obtained from an authorized officer of the Royal Bank of Canada, Scotia Bank or TD Canada Trust. The Guarantor must affix a stamp bearing the actual words “Signature Guaranteed”, sign and print their full name and alpha numeric signing number. Signature Guarantees are not accepted from Treasury Branches, Credit Unions or Caisse Populaires unless they are members of a Medallion Signature Guarantee Program. For corporate holders, corporate signing resolutions, including certificate of incumbency, are also required to accompany the transfer, unless there is a “Signature & Authority to Sign Guarantee” Stamp affixed to the transfer (as opposed to a “Signature Guaranteed” Stamp) obtained from an authorized officer of the Royal Bank of Canada, Scotia Bank or TD Canada Trust or a Medallion Signature Guarantee with the correct prefix covering the face value of the certificate.
- **Outside North America:** For holders located outside North America, present the certificates(s) and/or document(s) that require a guarantee to a local financial institution that has a corresponding Canadian or American affiliate which is a member of an acceptable Medallion Signature Guarantee Program. The corresponding affiliate will arrange for the signature to be over-guaranteed.

OR

The signature(s) of the transferor(s) must correspond with the name(s) as written upon the face of this certificate(s), in every particular, without alteration or enlargement, or any change whatsoever. The signature(s) on this form must be guaranteed by an authorized officer of Royal Bank of Canada, Scotia Bank or TD Canada Trust whose sample signature(s) are on file with the transfer agent, or by a member of an acceptable Medallion Signature Guarantee Program (STAMP, SEMP, NYSE, MSP). Notarized or witnessed signatures are not acceptable as guaranteed signatures. The Guarantor must affix a stamp bearing the actual words: "SIGNATURE GUARANTEED", "MEDALLION GUARANTEED" OR "SIGNATURE & AUTHORITY TO SIGN GUARANTEE", all in accordance with the transfer agent's then current guidelines and requirements at the time of transfer. For corporate holders, corporate signing resolutions, including certificate of incumbency, will also be required to accompany the transfer unless there is a "SIGNATURE & AUTHORITY TO SIGN GUARANTEE" Stamp affixed to the Form of Transfer obtained from an authorized officer of the Royal Bank of Canada, Scotia Bank or TD Canada Trust or a "MEDALLION GUARANTEED" Stamp affixed to the Form of Transfer, with the correct prefix covering the face value of the certificate.

APPENDIX “3”

WARRANT CERTIFICATE - INSTRUCTIONS TO WARRANTHOLDERS

TO EXERCISE:

If the Warrantholder exercises Warrants prior to the Expiry Time pursuant to section 5.1 of the Indenture, it must complete, sign and deliver:

- (a) the Exercise Form, attached as Appendix “1”;
- (b) the Warrant Certificates; and
- (c) a certified cheque, bank draft or money order in lawful money of Canada, payable to or to the order of the Corporation in an amount equal to the Exercise Price multiplied by the number of Warrant Shares subscribed for to the Warrant Agent. In the event that the payment of the aggregate Exercise Price is in the form of an uncertified cheque or unguaranteed funds, the Warrant Agent shall be entitled to delay the time of payment of the Exercise Price to the Corporation until such uncertified or unguaranteed funds have cleared in the ordinary course of the financial institution upon which the same are drawn,

to the Warrant Agent indicating the number of Common Shares to be acquired. In such case, the signature of such registered holder on the Exercise Form must be witnessed.

TO TRANSFER:

If the Warrantholder wishes to transfer Warrants, then the Warrantholder must complete, sign and deliver (as appropriate):

- (a) the Transfer Form attached as Appendix “2”; and
- (b) the Warrant Certificates,

to the Warrant Agent indicating the number of Warrants to be transferred.

If the Warrant Certificate is transferred, the Warrantholder’s signature on the Transfer Form must be guaranteed by an authorized officer of a chartered bank or an investment dealer who is a member of a recognized stock exchange.

For the protection of the holder, it would be prudent to use registered mail if forwarding by mail.

GENERAL:

If the Transfer Form or Exercise Form is signed by a trustee, executor, administrator, curator, guardian, attorney, officer of a corporation or any person acting in a fiduciary or representative capacity, the Warrant Certificate must also be accompanied by evidence of authority to sign satisfactory to the Warrant Agent.

The name and address of the Warrant Agent is:

AST Trust Company (Canada)
1 Toronto Street, Suite 1200
Toronto, Ontario M5C 2V6
Attn : Corporate Actions Department



**PyroGenesis Provides Update
on its Iron Ore Pelletization Torch Business**

MONTREAL, Quebec (GlobeNewswire – November 12, 2020) - PyroGenesis Canada Inc. (TSX-V: PYR; OTCQB: PYRNF; FRA: 8PY) (the “Company” or “PyroGenesis”), a high-tech company that designs, develops, manufactures and commercializes advanced plasma processes and products, is pleased to provide an update on the Company’s iron ore pelletization plasma torch business.

Mr. P. Peter Pascali, CEO and Chair of PyroGenesis, provides this update in the following Q&A format. The questions, for the most part, are derived from inquiries received from investors, and analysts:

Q1. For those who are new to the story, could you please provide us with some background on your high-powered (~ 1 MW range) plasma torch business and how it relates to the iron ore pelletization industry?

A. Most certainly.

For background, pelletization is the process in which iron ore is concentrated before shipment, thus significantly reducing the cost of transportation, and providing a required feedstock for blast furnaces. In conventional technologies, the process heat is provided by fuel oil or natural gas burners (both environmentally damaging). The combustion, in the burners, of fossil fuels results in the production of greenhouse gases (“GHG”), mainly CO₂. Plasma torches, by contrast, utilize renewable electricity and as such offer an environmentally attractive alternative to fossil fuel burners.

In January 2019, PyroGenesis was contracted for a 900kW plasma torch with a client which we later disclosed to be RISE Energy Technology Center AB (“RISE”) of Sweden. RISE was engaged in addressing the Swedish government’s commitment to zero carbon emissions¹; namely that within the iron ore pelletization industry. The ultimate objective was to determine the benefits, if any, of replacing traditional fossil fuel burners used in iron ore pelletization with plasma torches. We delivered the plasma torch and completed testing in 9 months.

Of note, PyroGenesis has a patented process to replace fossil fuel burners with PyroGenesis’ clean burning plasma torches, thereby reducing GHG emissions, for the iron ore pelletization industry.

Q2. So, PyroGenesis has the patent to replace fossil fuel burners with plasma torches in the iron ore pelletization industry?

A. Yes, we do. In other industries, we expect to leverage off of our first mover advantage developed in the iron ore pelletization industry.

¹ <https://www.ssab.com/company/sustainability/sustainable-operations/hybrit>

Q3. The RISE contract went well. What happened next?

A. Our original goal was simply to have our torches be a contender in Sweden's strategy to reduce GHG emissions in the iron ore pelletization industry. What we did not realize at the time, was the impact this would have on the industry as a whole. As noted above, we successfully completed the RISE contract in 9 months, which once made public, had a resounding effect as we apparently were addressing a significant concern in the industry with respect to GHG emissions reduction. Given this interest, we were approached by several companies in the industry which we have come to term Client A, B and C. Two of the three wanted to immediately engage in a modelling contract, and the third is in the process of considering such. We prefer to engage in a modelling-first-step as it helps quantify parameters that may be specific to the client.

Modelling is a computer-based simulation of the performance of PyroGenesis' proprietary plasma torches using the specific parameters in a particular iron ore pelletization plant. The goal is to demonstrate the benefits of replacing existing fossil fuel burners with plasma torches and/or identify unanticipated or hidden costs/side effects.

To date, between RISE and the modelling we have done, two of the most important benefits demonstrated were i) that replacing fossil fuel burners with plasma torches was a simple replacement, plug and play process, and ii) that PyroGenesis' proprietary plasma torches significantly reduce GHG emissions. There have been no unanticipated or hidden costs.

Furthermore, we have noticed that our patented plasma torch technology, not only has economic and environmental advantages, but may also address environmental policies and legislation being implemented worldwide. For example, the European Union (EU), as part of the EU's 2030 climate and energy framework and contribution to the Paris Agreement², has put in place legislation to reduce emissions by at least 40% by 2030.

As a result, many companies in the field are implementing business strategies directed at reducing GHG emissions. As an example, a major international iron ore pelletizer has dedicated approx. US \$2B towards their goal of reducing their carbon emission by 33% by 2030³.

We believe PyroGenesis is uniquely positioned to address such opportunities.

Q4. Interesting...so replacing fossil fuel burners with plasma torches might be able to economically, and significantly, reduce the GHG emissions in the iron ore pelletization industry?

A. Correct.

Management has internally estimated that a typical pellet plant producing 10 million metric tonnes of pellets annually emits approximately one million metric tonnes of CO₂⁴. The total world pellet production of 400 million metric tonnes of pellets represents a potential market for torch sales in excess of \$10B worldwide.

² https://ec.europa.eu/clima/policies/strategies/progress_en

³ <http://www.vale.com/brasil/EN/sustainability/Pages/carbonneutral.aspx>

⁴ M. Huerta, J. Bolen, M. Okrutny, I. Cameron and K. O'Leary, "Guidelines for Selecting Pellet Plant Technology", Iron Ore Conference 2015 Proceedings, Perth, WA, July 13-15, 2015

The world pellet industry generates about 40 million metric tonnes of CO₂ every year. The use of plasma torches running off a clean electrical grid would reduce these emissions significantly. For reference, 40 million tonnes of CO₂ represent the combined yearly emissions of 8.7 million US passenger vehicles⁵.

The impact of replacing fossil fuel burners with plasma torches not only resonates in the iron ore pelletization industry, where we are patent protected, but also in other industries such as the aluminum, cement and glass industries, who are also pressured to reduce GHG emissions.

Q5. What is your business model for replacing fossil fuel burners with plasma torches, specifically in the iron ore pelletization industry which seems to be the low-hanging fruit?

A. This is a very good question.

Our offering is geared to address the need to develop fossil fuel free energy-mining-iron-steel value chain and thereby provide a basis for governance and industrial strategies for transformative change. Until recently, the business model was simply to sell torches (with an internal target of \$3MM NPV per torch) with the recurring revenue derived from typical maintenance and spare parts contracts.

We now have come to appreciate the economics of leasing torches instead of an outright sell. This model has clear advantages to both parties; little-to-no CAPEX to the buyer, healthy recurring revenue stream to the seller. At this stage, we see this to be the fastest way to grow this business segment, and is a significant strategy-shift for the Company as it relates to this offering, and which we expect will play a key role in our position/ongoing discussions with clients.

Q6. Wouldn't this leasing model be capital intensive?

A. Yes and no.

It is capital intensive of course, however, there are major leasing companies we can team up with to provide this service. Given the size and credit worthiness of the client, together with a proven technology, we do not see this to be an issue. Had the client been small, their credit worthiness not be conducive to leasing, or the technology not be proven, then the burden would be on PyroGenesis to provide that capital, and we do not see ourselves engaging in that type of financing.

Q7. In closing, can you give us a status/update on the existing agreements/contracts under discussion?

A. Certainly.

All of our projects are on track and progressing nicely. As previously disclosed on September 1st, 2020, we have received a draft contract from Client A, which is still in the final stages of completion. The fact that we received this contract from Client A, on the heels of a successful modelling contract, who is a significant player in the industry, clearly demonstrates the impact that PyroGenesis' proprietary plasma torches are having on iron ore pelletization GHG reduction strategies. If signed, and successfully deployed, one might expect they would start a program to replace their fossil fuel burners with PyroGenesis' plasma torches. Although nothing is certain, we are definitely on the right track with Client A.

⁵ <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>

Client B has finalized their modelling contract, and like Client A, has moved to contract negotiations and requested a quote for an initial order of four torches which we have recently provided.

Client C is moving forward as well. We are confident that they will agree to enter into a modeling contract before an initial order of torches is placed. We find this to be the most prudent next step.

We are also in discussion with potential clients in other industries to replace their fossil fuel burners with PyroGenesis' plasma torches.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Receives Final Approval to Graduate
to the Toronto Stock Exchange**

MONTREAL, QUEBEC (GlobeNewswire – November 18th, 2020) - PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce that it has received final approval from the Toronto Stock Exchange ("TSX") to graduate from the TSX Venture Exchange ("TSXV") and list its common shares ("Common Shares") on the TSX.

The Company's Common Shares will be listed for trading on the TSX at the opening of markets on Friday, November 20, 2020 under its current trading symbol "PYR". In connection with the listing of the Common Shares on the TSX, the last day of trading on the TSXV will be Thursday, November 19, 2020 and the Common Shares will be delisted from the TSXV effective as of the commencement of trading on the TSX. Shareholders will not be required to take any action in connection with the graduation and listing on the TSX.

"It is indeed a pleasure to be able to announce today that PyroGenesis is uplisting to the most senior exchange in Canada, the TSX, this Friday. We are very pleased to announce this significant achievement for PyroGenesis that confirms our development and growth as a company. I want to take this opportunity to thank the team at PyroGenesis, as well as the professionals who guided us; particularly our legal advisors," said Mr. Peter Pascali, CEO and Chair of PyroGenesis. "We also would like to thank the TSXV for providing us with the platform to grow into the Company we are today, and attract a solid stable of investors. It is important to recognize that a platform, be it the TSXV or the TSX, is only part of the equation. The PyroGenesis team, technologies, as well as the solid base of business, and business relationships we have developed, while on the TSXV, are well suited for this graduation."

"We look forward to this uplisting and the additional credibility that the Company will gain by trading on the most significant stock exchange in Canada, which is also one of the largest in North America¹," added Ms. Rodayna Kafal, VP IR & Comms. and Director of PyroGenesis. "We anticipate that this step change will provide PyroGenesis with greater visibility in the marketplace and access to a broader and more diverse range of international and institutional investors."

¹ <https://www.investopedia.com/terms/t/toronto-stock-exchange-tsx.asp#:~:text=Established%20in%201852%20and%20owned,significant%20stock%20exchange%20in%20Canada>

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SOURCE PyroGenesis Canada Inc.

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Receives Confirmation that the first 5,000 TPY DROSRITE™
System Successfully Passes Factory Acceptance Test**

MONTREAL, QUEBEC (GlobeNewswire – November 19th, 2020) - PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce that, further to its press release dated September 22nd, 2020, PyroGenesis' technology successfully passed the Factory Acceptance Test ("FAT"), conducted by Drosrite International LLC ("DI"), on behalf of their client, for the first 5,000 TPY DROSRITE™ System.

"The success of this FAT testing marks an important milestone for PyroGenesis and DI," said Mr. P. Peter Pascali, CEO and Chair of PyroGenesis. "Once again, we are proud to see the DROSRITE™ technology being adopted successfully, this time, for use in one of the premier aluminum smelters in the world. It indeed validates PyroGenesis' DROSRITE™ technology, as it has become the dross processing solution of choice for an extremely discerning end-user. As one might expect, we have seen a significant increase in interest in our DROSRITE™ technology given that the DI contract, with its client, was awarded primarily based on the DROSRITE™ technology."

The testing was held at DI's supplier's manufacturing facility, in the United States of America ("USA"), where the end user evaluated the equipment during, and after, the assembly process. The end user verified that the 5,000 TPY DROSRITE™ System was manufactured and operated in accordance with, amongst other things, design specifications. Based on this successful testing, the end user decided to forego performing an additional FAT test on the second 5,000 TPY DROSRITE™ System. Both Systems are expected to be shipped from the USA to the Middle East, within the next four (4) weeks, and are expected to arrive approx. two (2) months thereafter.

Before shipping, PyroGenesis is expected to receive an additional ~\$2.6MM from DI (representing total receipt from DI to date of over \$10MM under the previously disclosed +\$25MM DROSRITE™ contract to deliver five (5) 5,000 TPY DROSRITE™ Systems, plus two (2) 10,000 TPY DROSRITE™ Systems).

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RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis Signs Initial Plasma Torch Contract
with Major Iron Ore Producer**

MONTREAL, QUEBEC (GlobeNewswire – November 24th, 2020) - PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that it has signed an initial plasma torch contract (the "Contract") to provide one high powered (approx. 1MW) plasma torch with ancillary equipment (the "Torch"), with Client A (the "Client"), a major iron ore producer, for approx. \$1.8MM. This does not include continued after-sale services, which was not the subject of these initial negotiations. It is expected that future sales with this Client will include a separate continued after-sale services agreement. The Client is a multi-billion-dollar international producer of iron ore pellets, one of the largest in the industry, whose name will remain confidential for competitive reasons. The Client, which has committed to reduce its greenhouse gas ("GHG") emissions, has over ten (10) plants, each possibly requiring up to 50 plasma torches.

"This is a major milestone for PyroGenesis as it is the first time we have sold a torch system to a major iron ore pelletizer. The first commercial sale is always the hardest in any industry. It is not a secret that the ultimate goal is to replace their fossil fuel burners with our plasma torches. Of note, the preamble to the Contract states '*...whereas [Client's Name] has demonstrated a willingness to replace its fossil fuel burners with PyroGenesis' proprietary plasma torches with the goal of reducing greenhouse gases in a furtherance of its stated policy to do so...*', which I believe sums up the significance of this announcement," said Mr. P. Peter Pascali, CEO and Chair of PyroGenesis. "We have indeed crossed a threshold. This was our preferred rollout strategy, as it now enables us to better quantify all outstanding aspects of replacing fossil fuel burners with plasma torches, and thus be better positioned to price any additional benefits into future orders. We cannot overemphasize the opportunity this presents. That is not to say that there are no risks moving forward, or that future contracts are guaranteed. That is definitely not true. There are no guarantees, however we can say with certainty that we are conservatively ticking the boxes one by one."

"With this announcement, PyroGenesis is on its way to assuming a leadership role in reducing greenhouse gas emissions using PyroGenesis' proprietary plasma torches," said Mr. Pierre Carabin, Chief Technology Officer and Chief Strategist of PyroGenesis. "We look forward to leveraging this success into other industries and becoming a premier environmental company geared toward reducing greenhouse gas emissions across all our business segments."

The Contract announced today is a direct result of our recent success in the previously disclosed modeling contract which confirmed, amongst other things, that replacing fossil fuel burners with PyroGenesis' proprietary plasma torches could potentially address the Client's GHG reduction strategy/policy. (Press Release dated September 1st, 2020)

As previously disclosed, PyroGenesis has the process patent to replace fossil fuel burners with PyroGenesis' clean plasma torches in the iron ore pelletization industry, thereby reducing GHG emissions. (Press Release dated September 1st, 2020)

Management has estimated internally that a typical pellet plant producing 10 million metric tonnes of pellets annually emits approximately one million metric tonnes of CO₂¹. The total world pellet production of 400 million metric tonnes of pellets represents a potential market for torch sales in excess of \$10B worldwide. The world pellet industry generates about 40 million metric tonnes of CO₂ every year. The use of plasma torches running off a clean electrical grid would reduce these emissions significantly. For reference, 40 million tonnes of CO₂ represent the combined yearly emissions of 8.7 million US passenger vehicles².

It is expected, with multiple orders, that PyroGenesis would source long lead items ahead of time, and as such, it is expected that the time from contract to final assembly/installation at a client's facility will be from a couple of weeks up to four (4) months.

Pelletization is the process in which iron ore is concentrated before shipment, thus significantly reducing the cost of transportation, and providing a required feedstock for blast furnaces. In conventional technologies, the process heat is provided by fuel oil or natural gas burners (both environmentally damaging). The combustion, in the burners, of fossil fuels results in the production of greenhouse gases ("GHG"), mainly CO₂. Plasma torches, by contrast, utilize renewable electricity and as such offer an environmentally attractive alternative to fossil fuel burners.

¹ M. Huerta, J. Bolen, M. Okrutny, I. Cameron and K. O'Leary, "Guidelines for Selecting Pellet Plant Technology", Iron Ore Conference 2015 Proceedings, Perth, WA, July 13-15, 2015

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**PyroGenesis Announces Q3 2020 Results:
Revenues \$8.1MM; Net Income \$15.3MM; Gross Margin 67.9%,
Current Backlog \$36.4MM; Basic EPS \$0.10**

MONTREAL, QUEBEC (GlobeNewswire – November 25th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA:8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch systems, is pleased to announce today its financial and operational results for the third-quarter ended September 30th, 2020.

“We are happy to be announcing Q3 2020 financial results, which are simply historical. We have posted quarterly revenues of over \$8MM which is more than we have posted for any full year in recent memory. This reflects the successful processing of the backlog of signed contracts which we have previously announced. As of this writing, we have also retired all significant debt and raised over \$12MM in a bought-deal, leaving us with over \$17MM of cash on hand, positioning us very well for the future,” said Mr. P. Peter Pascali, CEO and Chair of PyroGenesis. “Of note, net income from operations of \$3.1MM (before share-based expenses) is quite significant, and when combined with the results from our strategic investment, has contributed to a basic EPS of \$0.10 for the quarter, and basic EPS of \$0.13 for the 9 months, both of which have exceeded previous guidance. We expect this trend to continue.”

Q3 2020 results reflect the following highlights:

- Revenues of \$8,149,427, an increase of 289% from \$2,097,437 over the same period in Q3 2019;
 - Comprehensive income of \$15,325,996 an increase of 16 times that posted in Q3 2019 - (\$965,032);
 - Net income from operations before share-based expenses of \$3.1MM vs (\$1MM) posted over the same period in 2019;
 - Positive cash flow from operations for three and nine months 2020 of \$2.4MM and \$1.6MM respectively versus (\$0.85MM) and (\$2.8MM) over the same periods in 2019;
 - Gross margin of 67.9% an increase of 22.7% over the same period in Q3 2019;
 - Cash on hand at September 30, 2020 of \$2,095,519 (December 31, 2019 - \$34,431);
 - Backlog of signed contracts of \$36.4MM.
 - Basic Earnings per Share (EPS) of \$0.10 for Q3 2020 and \$0.13 for 9 months ending 2020.
-

OUTLOOK

The third quarter continues to reflect the results of the strategic long term focusing/positioning which has been taking place over the past several years.

To date during 2020, PyroGenesis has with respect to:

(i) Business Segments:

- a) received significant payments under the \$20MM+ contract with Drosrite International, thereby validating announcements made during 2019;
- b) established a relationship with a US based tunneling company for plasma torches;
- c) signed a contract for approx. \$3MM with HPQ Nano Silicon Powders Inc, a wholly owned subsidiary of HPQ Silicon Resources Inc, to exploit the benefits of the novel PUREVAP™ Nano Silicon Reactor (NSiR) to make nano Silicon powder for the battery market,
- d) established a relationship with an OEM in North America with the intent to eventually supply powders for their 3D printing needs. This augments our relationship with Aubert & Duval, while at the same time de-risking our dependence on them;
- e) closed the long-awaited order of \$11.5MM for the US Navy. This contract was for two plasma waste destruction systems, one for each ship in the US Navy's two-ship build;
- f) established itself in the iron ore pelletization industry as a supplier of plasma torches geared to replacing existing fossil fuel burners and thereby reducing greenhouse gas (GHG) emissions. Interest is also gaining traction in other industries with GHG emissions reduction targets, and

(ii) Financials:

- a) retired a \$3MM convertible debenture in full, and repaid all other term loans;
 - b) benefited from early conversion of warrants maturing in 2021 and beyond of approx. \$4MM;
 - c) bought back approximately 1.3 million shares under a Normal Course Issuer Bid at an average price of approximately 0.75;
 - d) increased the Company's investment in HPQ, which has subsequently experienced a significant increase in market capitalization;
 - e) posted profitable operations in Q3 2020 (even after a onetime non-cash charge of approx. \$3MM for share based compensation);
 - f) posted positive cash flow from operations; for three and nine months 2020 of \$2.4 MM and \$1.6MM respectively versus (\$0.849 MM) and (\$2.8MM) over the same periods in 2019;
 - g) booked backlog of signed contracts of approx. \$36.4MM as of November 25th, 2020;
 - h) closed a \$12MM bought deal (oversubscribed by >100%);
 - i) graduated to the most senior exchange in Canada, the Toronto Stock Exchange (TSX).
-

At the time of this writing, the Company is well positioned with a clean balance sheet, over \$17MM in cash on hand, and a healthy backlog of approx. \$36.4MM.

One of the most significant developments in 2020 is the emergence of the Company as a credible provider of GHG reducing technologies to the iron ore pelletization industry with its patented plasma torch process geared to replacing fossil fuel burners. The Company is not only well positioned to address this opportunity with iron ore pelletizers, but to also leveraging off of this first mover advantage in other industries which are also under pressure to reduce GHG emissions and are similarly using fossil fuel burners (such as the cement, aluminum and glass industries).

The Company is already repositioning its offerings to address the world-wide need for solution to reduce GHG emissions, and expects a significant increase in interest in its offerings as a result. The Company is selectively considering strategic alliances with technologies/technology providers which could accelerate this strategic focus with a goal to become a world leader in GHG emissions reduction. The Company has, as of November 25th, 2020, approximately \$6MM of in-the-money warrants and options expiring in 2020 and 2021. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial obligations) which is not reflected as an asset on the balance sheet.

Financial Summary

Revenues

PyroGenesis recorded revenue of \$8,149,427 in the third quarter of 2020 (“Q3, 2020”), representing an increase of 289% compared with \$2,097,437 recorded in the third quarter of 2019 (“Q3, 2019”).

Revenues recorded during the nine months ended September 30, 2020 were generated primarily from:

- (i) DROSRITE™ related sales of \$6,384,563 (2019 - \$Nil)
 - (ii) PUREVAP™ related sales of \$2,883,819 (2019 - \$328,733)
 - (iii) torch related sales of \$897,822 (2019 - \$1,932,353)
 - (iv) the development and support related to systems supplied to the U.S. Military of \$478,132 (2019 - \$500,946)
-

Cost of Sales and Services and Gross Margins

Cost of sales and services before amortization of intangible assets was \$2,610,119 in Q3 2020, representing an increase of 128% compared with \$1,145,080 in Q3 2019, primarily due to an increase in employee compensation \$530,860 (Q3, 2019 - \$434,624), subcontracting \$480,602 (Q3, 2019 - \$79,579) and direct material \$1,423,762 (Q3, 2019 - \$516,552).

In Q3 2020, manufacturing overhead & other and foreign exchange increased to \$198,351 (Q3, 2019 - \$164,730). The gross margin for Q3 2020 was \$5,532,526 or 67.9% of revenue compared to a gross margin of \$947,090 or 45.2% of revenue for Q3 2019. As a result of the type of contracts being executed (the nature of project activity), as well as the composition of the cost of sales and services, the mix between labour, materials and subcontracts may be significantly different.

Investment tax credits recorded against cost of sales are related to projects that qualify for tax credits from the provincial government of Quebec. Qualifying tax credits decreased to \$23,456 in Q3 2020, compared with \$50,405 in Q3 2019. This represents a decrease of 53% year-over-year. In total, for the nine months, the Company earned refundable investment tax credits of \$62,844 against cost of sales in Q3 2020. The Company continues to make investments in research and development projects involving strategic partners and government bodies.

The amortization of intangible assets of \$6,782 in Q3 2020 and \$5,267 for Q3 2019 relates to patents and deferred development costs. Of note, these expenses are non-cash items and will be amortized over the duration of their expected lives.

Selling, General and Administrative Expenses

Included within Selling, General and Administrative expenses ("SG&A") are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for Q3, 2020 were significantly impacted by a non-cash item, namely, share-based expenses as a result of the Company issuance of stock options to directors and employees which had an attributed expense value of \$3,017,408 for Q3, 2020. SG&A (net of share-based expenses) were 28% of revenues in Q3 2020 (70%, of revenues in Q3 2019).

SG&A excluding the costs associated with share-based expenses (a non-cash item in which options vest over a four-year period), was \$2,294,394 representing an increase of 54% compared with \$1,485,803 reported for Q3, 2019. On a year-to-date basis, SG&A expenses before share-based expenses were \$5,141,456 compared with \$4,349,616 in the same period in 2019.

The increase in SG&A expenses in Q3, 2020 over the same period in 2019 is mainly attributable to the net effect of:

- an increase of 76% in employee compensation, primarily due to an increase in commissions,
- an increase of 59% for professional fees, primarily due to an increase in legal fees related to the uplisting to the TSX, accounting fees and patent expenses,
- an increase of 91% in office and general expenses, is primarily due to an increase in computer, internet, security and safety expenses,
- travel costs decreased by 91%, due to decrease in travel abroad,
- depreciation on property and equipment decreased by 57%, primarily due to lower amounts of property and equipment being depreciated,
- depreciation on right of use assets increased by 16% due to higher amounts of right of use assets being depreciated,
- investment tax credits did not increase or decrease resulting in an unchanged variance,
- government grants decreased by 100% due to lower level of activities supported by such grants and,
- other expenses increased by 30%, primarily due to higher insurance expenses.

Separately, share based expenses increased by \$3,017,408, or in Q3, 2020, over the same period in 2019 primarily as a result of stock options granted on July 16, 2020. This was directly impacted by the vesting structure of the stock option plan with 50% of the options vesting on the grant date requiring an immediate recognition of that cost.

For comparison purposes, had the vesting structure allocated 25% instead of 50% of the July 16, 2020 stock options granted on the grant date the share-based expenses would have resulted in an approximate amount of \$2,500,000 a significant decrease of \$517,408. Similarly had the vesting structure allocated 10% instead of 50% of the July 16, 2020 stock options granted on the grant date the share-based expenses would have resulted in an approximate amount of \$1,150,000 a significant reduction of \$1,867,408 in SG&A expenses. A comparative chart is provided below:

Share-based expenses with comparative structures

| | <u>Structure</u> | <u>Expense</u> |
|---------------|------------------|---------------------|
| Actual | 50% | \$ 3,017,408 |
| Hypothetical | 25% | \$ 2,500,000 |
| Hypothetical | 10% | \$ 1,150,000 |

Research and Development (“R&D”) Costs

The Company incurred \$131,955 of net R&D costs in Q3, 2020, compared with \$236,535 in Q3, 2019, representing a decrease of 44%. During the first nine months of fiscal 2020, net spending on internal R&D was \$151,176 as compared to \$544,954 in 2019, primarily due to an increase in government grants received of \$366,254 in the nine months ending September 30, 2020 compared to \$204,525 during the same period in 2019.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and Experimental Development (“SR&ED”) tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see “Cost of Sales” above).

Net Finance Costs

Finance costs for Q3, 2020 totaled (\$16,370) as compared with \$246,352 for Q3, 2019, representing a decrease of 107%. The decrease in finance costs in Q3, 2020 is primarily attributable to the decrease in interest accretion on convertible liability instruments, and the decrease associated with the capitalized finance costs on borrowing costs as well as the retirement of debt. Of note, there is a Nil balance of convertible liability instruments at the end of Q3,2020.

Strategic Investments

The adjustment to the fair market value of strategic investments in Q3 2020 resulted in a gain of \$15,220,857 compared to a gain in the amount of \$70,717 in Q3 2019, representing an increase of \$15,150,140. The increase is primarily attributable to the increased market share value of common shares and warrants owned by the Company of HPQ Silicon Resources Inc.

Net Comprehensive Loss

The net comprehensive income for Q3 2020, of \$15,325,996 compared to a loss of \$965,032 in Q3 2019, represents an increase of \$16,291,028. The difference of \$16,291,028 in the comprehensive income in Q3 2020 is primarily attributable to the factors described above (net), which are summarized as follows:

- (i) an increase in product and service-related revenue of \$6,051,990 in Q3 2020,
 - (ii) an increase in product cost of sales and services totaling \$1,466,554, primarily due to an increase in subcontracting and direct materials
 - (iii) an increase of SG&A expenses of \$3,811,850 in Q3, 2020 is primarily due to an increase in share-based payments, and employee compensation,
 - (iv) a decrease in R&D expenses of \$104,580 primarily due to a decrease in employee compensation, and an increase in government grants,
 - (v) a decrease in net finance costs of \$262,722 in Q3, 2020, primarily due to capitalized finance costs on borrowing costs and a decrease in accretion costs of convertible liability instruments,
 - (vi) an increase of \$15,150,140 in the fair market value of strategic investments.
-

EBITDA

EBITDA in Q3, 2020 was \$15,464,504 compared with an EBITDA loss of \$556,963 for Q3, 2019, representing an increase of 2,877% year-over-year. The \$16,021,467 increase in EBITDA in Q3 2020, compared with Q3 2019, is due to the increase in comprehensive income of \$16,291,028, a decrease in depreciation on property and equipment of \$25,833, an increase in depreciation of right of use assets of \$17,479, an increase in amortization of intangible assets of \$1,515 and a decrease in finance charges of \$262,722.

Adjusted EBITDA in Q3, 2020 was \$18,481,912 compared with an Adjusted EBITDA loss of \$542,814 for Q3, 2019, representing an increase of 3,505%. The increase of \$19,024,726 in the Adjusted EBITDA in Q3, 2020 is attributable to an increase in EBITDA of \$16,021,467 and an increase of \$3,003,259 in share-based payments.

Modified EBITDA in Q3, 2020 was \$3,261,055 compared with a Modified EBITDA loss of \$613,531 for Q3, 2019, representing an increase of 632%. The increase in the Modified EBITDA in Q3, 2020 is attributable to the increase in the Adjusted EBITDA of \$19,024,726 offset by the increase in the change of fair value of investments of \$15,150,140.

Liquidity

The Company has incurred, in the last several years, operating losses and negative cash flows from operations, resulting in an accumulated deficit of \$41,978,687 and a negative working capital of \$4,712,539 as at Q3 2020, (December 31, 2019 - \$60,237,656 and \$10,492,102 respectively). Furthermore, as at Q3 2020, the Company's current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$2,095,519 (December 31, 2019 - \$34,431). The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.

Revenue generated from active projects has begun to produce sufficient positive cash flow to fund operations. The Company has a strong backlog from signed contracts totaling \$36.4MM, and a pipeline of prospective new projects resulting in the Company's business plan becoming less dependent on raising additional funds to finance operations within and beyond the next 12 months. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so, should it need to, in the future. If the Company is unable to obtain sufficient additional financing when needed, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward- looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward- looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the Toronto Stock Exchange (TSX), its Regulation Services Provider (as that term is defined in the policies of the TSX) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, VP IR/Comms & Strategic BD,
Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com
RELATED LINKS: <http://www.pyrogenesis.com/>



NOTICE OF CHANGE OF STATUS

**filed in conformity with:
REGULATION 51-102 – Section 11.2 (b)**

Via SEDAR

November 26th, 2020

Dear Sirs/Mesdames,

Further to the Company's news release dated and filed on SEDAR November 18, 2020, announcing the last day of trading of the Common Shares of the Company on the TSXV on November 19, 2020, and the commencement of trading of the Common Shares of the Company on the TSX on November 20, 2020, please be advised that the Company has ceased to be a "venture issuer", as per the definition thereof set out in *Regulation 51-102 respecting Continuous Disclosure Obligations* (V-1.1, r. 24).

Sincerely,

PYROGENESIS CANADA INC.

per

/s/ Sara-Catherine L. Tolszczuk

Sara-Catherine L. Tolszczuk

Legal Counsel

PyroGenesis Canada Inc.

Condensed

Interim Consolidated Financial Statements

Three and the nine months ended September 30, 2020 and 2019

(Unaudited)

CONDENSED INTERIM CONSOLIDATED FINANCIAL STATEMENTS

The accompanying unaudited financial statements of PyroGenesis Canada Inc. have been prepared by and are the responsibility of the Company's management. The Company's independent auditor has not performed a review of these unaudited condensed interim consolidated financial statements for the period ended September 30, 2020

PyroGenesis Canada Inc.

Condensed Interim Consolidated Statements of Financial Position
(unaudited)

| | September 30, 2020 | December 31, 2019 |
|--|--------------------|--------------------|
| | \$ | \$ |
| Assets | | |
| <i>Current assets</i> | | |
| Cash | 2,095,519 | 34,431 |
| Accounts receivable [note 5] | 5,186,728 | 210,540 |
| Costs and profits in excess of billings on uncompleted contracts and projects [note 6] | 144,060 | 122,980 |
| Investment tax credits and government wage subsidy [note 7] | 567,060 | 709,395 |
| Deposits | 596,638 | 150,322 |
| Prepaid expenses | 108,378 | 96,886 |
| Total current assets | 8,698,383 | 1,324,554 |
| <i>Non-current assets</i> | | |
| Inventories | 10,068 | 10,068 |
| Deposits | 290,359 | 178,105 |
| Strategic investments [note 8] | 23,539,814 | 1,609,354 |
| Property and equipment | 2,486,925 | 1,977,481 |
| Right of use assets | 3,802,794 | 3,742,769 |
| Intangible assets | 910,034 | 736,898 |
| Total assets | 39,738,377 | 9,579,229 |
| Liabilities | | |
| <i>Current liabilities</i> | | |
| Accounts payable and accrued liabilities [note 9] | 3,821,505 | 4,913,155 |
| Billings in excess of costs and profits on uncompleted contracts [note 10] | 9,359,669 | 3,084,657 |
| Term loans [note 11] | - | 496,000 |
| Promissory notes payable to the controlling shareholder and CEO | - | 284,956 |
| Current portion of lease liabilities | 229,748 | 139,529 |
| Convertible liability instruments [note 12] | - | 2,898,358 |
| Total current liabilities | 13,410,922 | 11,816,655 |
| <i>Non-current liabilities</i> | | |
| Lease liabilities | 2,821,052 | 3,845,497 |
| Total liabilities | 16,231,974 | 15,662,152 |
| Shareholders' equity [note 13] | | |
| Common shares and warrants | 56,048,727 | 47,073,243 |
| Contributed surplus | 9,436,363 | 6,679,730 |
| Equity portion of convertible debentures [note 12] | - | 401,760 |
| Deficit | (41,978,687) | (60,237,656) |
| Total shareholders' equity (deficiency) | 23,506,403 | (6,082,923) |
| Total liabilities and shareholders' equity | 39,738,377 | 9,579,229 |

Going concern disclosure, related party transactions, contingent liabilities, subsequent events [notes 1(b), 18, 20, 23]

Approved on behalf of the Board:

[Signed by P. Peter Pascali] P. Peter Pascali

[Signed by Michael Blank] Michael Blank

PyroGenesis Canada Inc.

Condensed interim Consolidated Statements of Comprehensive Income (Loss)
(unaudited)

| | Three months ended September 30, | | Nine months ended September 30, | |
|--|-------------------------------------|-------------|------------------------------------|-------------|
| | 2020 \$ | 2019 \$ | 2020 \$ | 2019 \$ |
| Revenues [note 4] | 8,149,427 | 2,097,437 | 10,996,789 | 3,747,649 |
| Cost of sales and services [note 15] | 2,616,901 | 1,150,347 | 3,930,257 | 2,538,538 |
| Gross profit | 5,532,526 | 947,090 | 7,066,532 | 1,209,111 |
| Expenses (income) | | | | |
| Selling, general and administrative [note 15] | 5,311,802 | 1,499,952 | 8,253,369 | 4,425,834 |
| Research and development | 131,955 | 236,535 | 151,176 | 544,954 |
| Net finance costs [note 16] | (16,370) | 246,352 | 493,295 | 773,269 |
| | 5,427,387 | 1,982,839 | 8,897,840 | 5,744,057 |
| Net income (loss) from operations | 105,139 | (1,035,749) | (1,831,308) | (4,534,946) |
| Changes in fair market value of strategic investments [note 8] | 15,220,857 | 70,717 | 20,628,298 | 437,600 |
| Net comprehensive income (loss) | 15,325,996 | (965,032) | 18,796,990 | (4,097,346) |
| Earnings (loss) per share [note 17] | | | | |
| Basic | 0.10 | (0.01) | 0.13 | (0.03) |
| Diluted | 0.09 | (0.01) | 0.12 | (0.03) |

The accompanying notes form an integral part of the condensed interim consolidated financial statements.

PyroGenesis Canada Inc.

Condensed Interim Consolidated Statements of Changes in Shareholders' Equity (Deficiency)
(unaudited)

| | Number of common shares | Common shares and warrants | Contributed Surplus | Equity portion of convertible debentures | Deficit | Total |
|--|----------------------------|-------------------------------|------------------------|--|--------------|-------------|
| | | \$ | \$ | \$ | \$ | \$ |
| Balance - December 31, 2019 | 141,303,451 | 47,073,243 | 6,679,730 | 401,760 | (60,237,656) | (6,082,923) |
| Shares issued upon exercise of stock options | 1,858,000 | 1,018,658 | (396,059) | - | - | 622,599 |
| Shares issued upon exercise of share purchase warrants [note 13] | 5,596,467 | 4,383,858 | - | - | - | 4,383,858 |
| Conversion of debentures into shares [note 12] | 3,369,375 | 3,073,356 | - | (360,981) | - | 2,712,375 |
| Conversion of loan into shares [note 12] | 3,225,000 | 925,982 | - | (98,422) | - | 827,560 |
| Shares purchased for cancellation [note 13] | (1,285,000) | (426,370) | - | - | (538,021) | (964,391) |
| Equity component of convertible debentures [note 12] | - | - | 40,779 | (40,779) | - | - |
| Share-based payments | - | - | 3,111,913 | - | - | 3,111,913 |
| Equity component of convertible debentures issued [note 12] | - | - | - | 98,422 | - | 98,422 |
| Net income and comprehensive income | - | - | - | - | 18,796,990 | 18,796,990 |
| Balance - September 30, 2020 | 154,067,293 | 56,048,727 | 9,436,363 | - | (41,978,687) | 23,506,403 |
| Balance - December 31, 2018 | 133,501,050 | 42,863,456 | 6,795,274 | 401,760 | (51,066,540) | (1,006,050) |
| Cash received on private placement, net of issuance costs | 6,118,400 | 3,448,077 | - | - | - | 3,448,077 |
| Share-based payments | - | - | 76,218 | - | - | 76,218 |
| Below market element of short-term promissory notes | - | - | 12,566 | - | - | 12,566 |
| Net loss and comprehensive loss | - | - | - | - | (4,097,346) | (4,097,346) |
| Balance - September 30, 2019 | 139,619,450 | 46,311,533 | 6,884,058 | 401,760 | (55,163,886) | (1,566,535) |

The accompanying notes form an integral part of the condensed interim consolidated financial statements.

PyroGenesis Canada Inc.

Condensed Interim Consolidated Statements of Cash Flows
(unaudited)

| | Three months ended | | Nine months ended September 30, | |
|---|--------------------|--------------------|---------------------------------|------------------|
| | September 30, | | 2020 | 2019 |
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Cash flows provided by (used in) | | | | |
| Operating activities | | | | |
| Net income (loss) | 15,325,998 | (965,032) | 18,796,990 | (4,097,346) |
| Adjustments for: | | | | |
| Share-based payments | 3,017,409 | 14,149 | 3,111,913 | 76,218 |
| Depreciation on property and equipment | 19,125 | 44,958 | 39,238 | 145,801 |
| Depreciation of right-of-use assets | 128,971 | 111,492 | 306,541 | 326,830 |
| Amortization of intangibles assets | 6,782 | 5,267 | 20,408 | 14,824 |
| Finance costs [note 16] | 121,408 | 246,352 | 631,073 | 773,268 |
| Change in fair value of investments | (15,220,857) | (70,717) | (20,628,298) | (437,600) |
| | 3,398,836 | (613,529) | 2,277,865 | (3,198,005) |
| Net change in non-cash operating working capital items [note 14] | (1,008,940) | (235,406) | (640,447) | 397,016 |
| | 2,389,896 | (848,937) | 1,637,418 | (2,800,989) |
| Investing activities | | | | |
| Variation of inventories | - | 2,007 | - | (14,714) |
| Purchase of property and equipment | (437,057) | (298,591) | (541,512) | (631,223) |
| Additions to intangible assets | (48,282) | 35,362 | (63,893) | (111,305) |
| Variation of deposits | (108,489) | (225) | (112,254) | 10,524 |
| Proceeds on disposal of strategic investments | 2,103,024 | 261,000 | 2,103,024 | 261,000 |
| Purchase of strategic investments | (2,949,672) | - | (3,009,672) | - |
| | (1,440,476) | (447) | (1,624,307) | (485,718) |
| Financing activities | | | | |
| Repayment of R&D loans [note 11] | (247,500) | - | (461,500) | (247,200) |
| Repayment of term loans [note 11] | (115,200) | - | (115,200) | - |
| Repayment of convertible debentures [note 12] | - | - | (358,500) | - |
| Repayment of lease liabilities | (1,232,520) | (55,183) | (1,300,792) | (160,902) |
| Repayment of promissory notes payables to the controlling shareholder and CEO | - | - | (295,000) | - |
| Proceeds from loans [note 11] | - | - | - | 329,200 |
| Proceeds from convertible loans [note 12] | - | - | 903,000 | - |
| Proceeds from issuance of shares – Private placement | - | - | - | 3,554,472 |
| Proceeds from issuance of shares upon exercise of warrants [note 13] | 1,242,189 | - | 4,402,858 | - |
| Proceeds from issuance of shares upon exercise of stock options [note 13] | 15,599 | - | 603,599 | - |
| Shares purchased for cancellation [note 13] | - | - | (964,391) | - |
| Share issue costs | - | (17,400) | - | (106,395) |
| Interest paid | (84,246) | (95,141) | (366,097) | (451,382) |
| | (421,678) | (167,724) | 2,047,977 | 2,917,793 |
| Net increase (decrease) in cash | 527,742 | (1,017,108) | 2,061,088 | (368,914) |
| Cash - beginning of period | 1,567,777 | 1,293,173 | 34,431 | 644,981 |
| Cash - end of period | 2,095,519 | 276,067 | 2,095,519 | 276,067 |

PyroGenesis Canada Inc.

Condensed Interim Consolidated Statements of Cash Flows
(unaudited)

| | Three months ended | | Nine months ended September 30, | |
|--|---------------------------|-----------|--|-----------|
| | September 30, | | | |
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Supplemental cash flow disclosure | | | | |
| Non-cash transactions: | | | | |
| Interest receivable on 2019 SR&ED tax credit loan repaid before maturity (note 11) | 21,267 | - | 21,267 | - |
| Purchase of property and equipment included in accounts payables | (181,863) | 183,200 | 7,170 | 232,554 |
| Interest paid in advance, deducted from the proceeds from loan | - | 17,848 | - | 17,848 |
| Purchase of intangibles assets included in accounts payables | (120,468) | 19,007 | 129,650 | 54,369 |
| Interest included in accounts payable | 19,408 | - | - | - |
| Investments received in payment of trade accounts receivables | 395,514 | - | 395,514 | - |
| Increase in lease liabilities and right-of-use assets | 366,566 | - | 366,566 | - |

The accompanying notes form an integral part of the condensed interim consolidated financial statements

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

1. Nature of operations and going concern disclosure

(a) Nature of operations

PyroGenesis Canada Inc. (the “Company”), incorporated under the laws of the Canada Business Corporations Act, was formed on July 11, 2011. The Company owns patents of advanced waste treatment systems technology and designs, develops, manufactures and commercialises advanced plasma processes and systems. The Company is domiciled at 1744 William Street, Suite 200, Montreal, Quebec. The Company is publicly traded on the TSX Exchange under the Symbol “PYR” on the OTCQB in the USA under the symbol “PYRNF” and on the Frankfurt Stock Exchange (FSX) under the symbol “8PY”.

(b) Going concern

These condensed interim consolidated financial statements have been prepared on the going concern basis, which presumes that the Company will be able to realize its assets and discharge its liabilities in the normal course of business for the foreseeable future.

2. Basis of preparation

(a) Statement of compliance

The condensed consolidated interim financial statements have been prepared in accordance with IAS 34, Interim Financial Reporting as adopted by the International Accounting Standards Board (“IASB”), using the Canadian dollar as the reporting currency. The Canadian dollar is the functional currency of the Canadian parent company. These condensed interim consolidated financial statements are prepared in accordance with International Financial Reporting Standards (“IFRS”) and with the same accounting policies and methods of computation followed in the most recent audited consolidated annual financial statements as at and for the year ended December 31, 2019. The condensed consolidated interim financial statements do not include all of the information required for full consolidated annual financial statements. Certain information and footnote disclosures normally included in consolidated annual financial statements prepared in accordance with IFRS were omitted or condensed where such information is not considered material to the understanding of the Company’s condensed interim consolidated financial statements. These statements include the accounts of Drosrite International Inc.

These condensed interim consolidated financial statements were approved and authorized for issuance by the Board of Directors on November 25, 2020.

(b) Basis of measurement

These condensed interim consolidated financial statements have been prepared on the historical cost basis except for the investments which are accounted for at fair value.

3. Significant accounting judgments, estimates and assumptions

The significant judgments, estimates and assumptions applied by the Company’s in these condensed interim consolidated financial statements are the same as those applied by the Company in its audited annual financial statements as at and for the year ended December 31, 2020.

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

4. Revenues

During the nine months ended September 30, 2020, the Company's revenues from long-term contracts and sales of goods are generated primarily from DROSRITE™ related sales of \$6,384,563 (2019 - \$Nil), PUREVAP™ related sales of \$2,883,819 (2019 - \$328,733), Torch related sales of \$897,822 (2019 - \$1,932,353), and the development and support related to systems supplied to the U.S. Military \$478,132 (2019 - \$500,946).

Refer to note 22 for sales by geographic area and by product line.

Transaction price allocated to remaining performance obligations

As at September 30, 2020, revenue expected to be recognized in the future related to performance obligations that are unsatisfied (or partially satisfied) at the reporting date is \$34,600,000. Revenue will be recognized as the Company satisfies its performance obligations under long-term contracts, which is expected to occur over the next 3 years.

5. Accounts receivable

Details of accounts receivable were as follows:

| | September 30, 2020 | December 31, 2019 |
|---------------------------------|-------------------------------|----------------------|
| | \$ | \$ |
| 1 – 30 days | 4,839,048 | 71,423 |
| 31 – 60 days | 54,347 | 9,483 |
| 61 – 90 days | 101,290 | 17,753 |
| Greater than 90 days | 59,624 | 5,469 |
| Total trade accounts receivable | 5,054,309 | 104,128 |
| Other receivables | 132,419 | 106,412 |
| | 5,186,728 | 210,540 |

There is no allowance for expected credit losses recorded as at September 30, 2020 and December 31, 2019.

6. Costs and profits in excess of billings on uncompleted contracts and projects

As at September 30, 2020, the Company had six uncompleted contracts and projects with total billings of \$535,570 which were less than total costs incurred and had recognized cumulative revenue of \$391,510 since those contracts and projects began. This compares with five contracts with total billings of \$99,594 which were less than total costs incurred and had recognized cumulative revenue of \$223,601 as at December 31, 2019.

Changes in costs and profits in excess of billings on uncompleted contracts during the three and the nine months ended September 30, 2020 are explained by \$121,829, and \$151,023, recognized at the beginning of the year being transferred to accounts receivable, and by \$59,908, and \$172,108 resulting from changes in the measure of progress.

PyroGenesis Canada Inc.

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

7. Investment tax credits

Investment tax credits for the three and nine months ended September 30, 2020 were \$44,941 and \$132,586 (2019 - \$98,703 and \$246,201). As at September 30, 2020 investment tax credits receivable including amounts owed from 2019 related to qualifying projects from the provincial government were \$567,060 (December 31, 2019 - \$709,395).

8. Strategic investments

| | September 30, 2020 | December 31, 2019 |
|--|-------------------------------|----------------------|
| | <u>\$</u> | <u>\$</u> |
| Beauce Gold Fields (“BGF”) common shares – level 1 | 143,611 | 133,354 |
| HPQ Silicon Resources Inc. (“HPQ”) common shares - level 1 | 13,289,326 | 1,476,000 |
| HPQ warrants – level 3 | 10,106,877 | - |
| | <u>23,539,814</u> | <u>1,609,354</u> |

| | (“BGF”) shares level 1 | | HPQ shares level 1 | | (“HPQ”) Warrants level 3 | | Total investments |
|-----------------------------|---------------------------|----------------|-----------------------|-------------------|-----------------------------|-------------------|----------------------|
| | Quantity | \$ | Quantity | \$ | Quantity | \$ | \$ |
| Balance, December 31, 2018 | 1,025,794 | 102,579 | 21,350,000 | 1,281,000 | 18,750,000 | 310,537 | 1,694,116 |
| Disposals | - | - | (2,900,000) | (261,000) | - | - | (261,000) |
| Expired warrants | - | - | - | - | (1,000,000) | - | - |
| Change in the fair value | - | 30,775 | - | 456,000 | - | (310,537) | 176,238 |
| Balance, December 31, 2019 | 1,025,794 | 133,354 | 18,450,000 | 1,476,000 | 17,750,000 | - | 1,609,354 |
| Additions | - | - | 10,802,100 | 2,845,186 | 9,594,600 | 560,000 | 3,405,186 |
| Proceeds on disposal | - | - | (4,177,900) | (2,103,023) | - | - | (2,103,023) |
| Realized gain on disposal | - | - | - | 1,523,916 | - | - | 1,523,916 |
| Change in the fair value | - | 10,257 | - | 9,547,247 | - | 9,546,877 | 19,104,381 |
| Balance, September 30, 2020 | <u>1,025,794</u> | <u>143,611</u> | <u>25,074,200</u> | <u>13,289,326</u> | <u>27,344,600</u> | <u>10,106,877</u> | <u>23,539,814</u> |

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

8. Strategic investments (continued)

1,200,000 common shares and 1,200,000 warrants of HPQ were purchased in cash for an amount of \$60,000 in April 2020. 4,394,600 common shares of HPQ and 4,394,600 warrants of HPQ were received in May 2020 to settle trade receivables from HPQ in the amount of \$395,414. At the transaction date, this non-monetary transaction was measured at the fair value of the trade receivables. 4,000,000 common shares and 4,000,000 warrants were purchased in cash for an amount of \$2,400,000 in September 2020.

The fair value of the HPQ warrants was measured using the Black-Scholes option pricing model using the following assumptions:

| | | | | | |
|--|-----------|------------|-----------|-----------|-----------|
| Number of warrants | 1,500,000 | 16,250,000 | 1,200,000 | 4,394,600 | 4,000,000 |
| Exercise price (\$) | 0.15 | 0.17 | 0.410 | 0.40 | 0.61 |
| Assumptions under the Black Scholes model: | | | | | |
| Fair value of the shares (\$) | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| Risk free interest rate (%) | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| Expected dividend yield (%) | 0 | 0 | 0 | 0 | 0 |
| Expected volatility rate (%) | 146.94 | 146.36 | 114.40 | 113.79 | 113.18 |
| Expected remaining life (number of months) | 2 | 11 | 31 | 32 | 35 |

As at September 30, 2020, a gain from initial recognition of the warrants of \$951,397 (\$56,780 – 2019) has been deferred off balance sheet until realised.

9. Accounts payable and accrued liabilities

| | September 30, 2020 | December 31, 2019 |
|---|-----------------------|----------------------|
| | \$ | \$ |
| Accounts payable | 1,117,126 | 2,780,628 |
| Accrued liabilities | 2,582,744 | 1,866,823 |
| Accounts payable to the controlling shareholder | 21,221 | 214,470 |
| Accounts payable to a trust beneficially owned by the controlling shareholder | 100,414 | 51,234 |
| | <u>3,821,505</u> | <u>4,913,155</u> |

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

10. Billings in excess of costs and profits on uncompleted contracts

The amount to date of costs incurred and recognized profits less recognized losses for construction projects in progress amounted to \$12,306,014 (2019 - \$4,612,082).

Payments to date received were \$19,715,683 and \$1,950,000 of deposits on contract in progress (2019 - \$5,746,739 in cash and \$1,950,000 of other assets).

Changes in billings in excess of costs and profits on uncompleted contracts during the three and nine months ended September 30, 2020 are explained by \$368,738 and \$413,109 recognized as revenue, and an increase of \$4,157,799 and \$6,688,123 resulting from cash received excluding amounts recognized as revenue.

11. Term loans

| | Other Term Loans ¹ | 2019 SR&ED Tax Credit loan ² | 2018 SR&ED Tax Credit loan ³ | 2017 SR&ED Tax Credit loan | Total |
|-----------------------------|----------------------------------|--|--|-------------------------------|--------------|
| | \$ | \$ | \$ | \$ | \$ |
| Balance, December 31, 2018 | - | - | - | 247,200 | 247,200 |
| Additions | 115,200 | 247,500 | 214,000 | - | 576,700 |
| Conversion option | (12,800) | - | - | - | (12,800) |
| Financing costs | - | (63,558) | (54,955) | - | (118,513) |
| Effective interest | 8,533 | 1,389 | 40,691 | - | 50,613 |
| Repayment | - | - | - | (247,200) | (247,200) |
| Balance, December 31, 2019 | 110,933 | 185,331 | 199,736 | - | 496,000 |
| Fair value adjustment | - | 21,266 | - | - | 21,266 |
| Effective interest | 4,267 | 40,903 | 14,264 | - | 59,434 |
| Repayment | (115,200) | (247,500) | (214,000) | - | (576,700) |
| Balance, September 30, 2020 | - | - | - | - | - |

¹ maturing May 1, 2020 bearing interest rate of 8% per annum payable at the maturity date, repaid on July 13 and July 15, 2020.

² maturing December 23, 2020 bearing interest rate of 16.68% payable at the issuance, repaid on May 05, 2020.

³ maturing April 3, 2020 bearing interest rate of 16.68% payable at the issuance, repaid on July 28, 2020.

On May 1, 2019 the Company entered into loan agreements with unrelated individuals totaling \$115,200 bearing interest at the annual rate of 8% payable at maturity, on May 1, 2020. The other term loans are unsecured and are convertible, at 10% discount, for a variable amount, of shares into any future private placement until maturity. The fair value of the debt instrument at inception was determined using the estimated cash flows discounted using a market rate of 20%. At the inception date, the residual amount of the non derivative liability of \$12,800 associated with the conversion feature has been recorded in accounts payable and accrued liabilities. On March 31, 2020, the maturity of the other term loans was extended to July 13 and July 15, 2020 and were fully repaid on maturity dates. Upon repayment of the loans, the derivative liability of \$12,800 was reclassified in financing costs.

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

12. Convertible liability instruments

| | 2020 Convertible loan | 2018 Convertible debentures | Total |
|---|--------------------------------------|--|--------------|
| | | \$ | |
| Balance at December 31, 2018 | | 2,527,241 | 2,527,241 |
| Effective interest | | 371,117 | 371,117 |
| Balance at December 31, 2019 | - | 2,898,358 | 2,898,358 |
| Liability component at issuance | 804,578 | - | 804,578 |
| Effective interest | 22,982 | 155,642 | 178,624 |
| | 827,560 | 3,054,000 | 3,881,560 |
| Repayment of debentures including accommodation fees, in cash | - | (358,500) | (358,800) |
| Conversion into common shares | (827,560) | (2,695,500) | (3,523,060) |
| Balance, end of period | - | - | - |

2020 Convertible loan

On March 18, 2020, the Company closed a \$903,000 non-brokered secured convertible loan (“2020 Convertible loan”) at 12% per annum, with a trust whose beneficiary is the controlling shareholder and CEO of the Company. The loan bore interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis in arrears and matured September 17, 2021. The convertible loan might be converted before maturity, in whole at anytime or in part from time to time at a conversion price of \$0.25 at the option of the lender. The convertible loan was secured by a deed of hypothec charging on the universalities of movable assets.

At the issuance date, the 2020 Convertible loan was recorded as follows:

| | |
|---|---------|
| | \$ |
| Liability component | 804,578 |
| Conversion option recognized in equity, net of transaction cost of \$47,338 | 98,422 |
| Net proceeds | 903,000 |

On September 30, 2020, the 2020 Convertible loan was converted into 3,225,000 common shares. Upon conversion, the liability component of \$98,422 was allocated to share capital.

2018 Convertible debentures

On March 30, 2020, the Company reached an agreement to extend the maturity date of its \$3,000,000 2018 convertible debentures to September 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company redeemed \$300,000 (representing 10% of the principal amount), paid a onetime accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. Upon redemption, an amount of \$40,779 corresponding to the equity component was reclassified to contributed surplus.

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
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12. Convertible liability instruments (continued)

As the date of modification, the fair value of the 2018 Convertible debentures was determined using estimated cash flows discounted using a market interest rate of 17.5%. At the remeasurement date, A residual amount of \$16,875 representing the value of the conversion option equity component was classified in the shareholders' Equity (Deficiency).

Upon conversion of the debentures in May and June 2020, 3,369,375 common shares were issued and the equity component of \$360,981 was classified in share capital.

13. Shareholders' equity

Common shares and warrants

Issuance of shares

In the nine months period ended September 30, 2020, 1,858,000 common shares were issued upon the exercise of stock options for net proceeds of \$622,599. The amount credited to share capital from the exercise of stock options include an ascribe value from contributed surplus of \$396,059.

In the nine months period ended September 30, 2020, 5,596,467 common shares were issued upon the exercise of warrants for net proceeds of \$4,383,858.

In May and June 2020, the 2018 Convertible debentures and in September 2020 the Convertible loan were converted into 3,369,375 and 3,225,000 common shares, respectively (note 12).

On September 30, 2020, 3,225,000 common shares were issued upon conversion of the 2020 Convertible loan. The equity component was credited to share capital (note 13).

In April, May and June 2020, 1,285,000 common shares were repurchased for cancellation for a total amount of \$964,391. The excess of the amount paid over the carrying amount of the common shares of \$538,021 was allocated to the deficit.

Stock options

The following table sets out the activity in stock options during the three months ended September 30, 2020:

| | Number of options | Weighted average exercise price |
|-----------------------------|------------------------------|--|
| | | \$ |
| Balance – December 31, 2019 | 8,438,000 | 0.37 |
| Granted | 2,560,000 | 4.26 |
| Exercised | (1,858,000) | 0.34 |
| Forfeited | (80,000) | 0.60 |
| Balance, September 30, 2020 | 9,060,000 | 1.48 |

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13. Shareholders' equity (continued)

As at September 30, 2020, the outstanding options, as issued under the stock option plan to directors, officers, employees and consultants for the purchases of one common share per option, are as follows:

| | Number of stock options September 30, 2020 | Exercise price per option (1) \$ | Expiry date |
|--------------------|---|---|--------------------|
| September 25, 2016 | 3,000,000 | 0.18 | Sep 25, 2021 |
| November 3, 2017 | 2,480,000 | 0.58 | Nov 3, 2022 |
| May 10, 2018 | 250,000 | 0.52 | May 10, 2023 |
| July 3, 2018 | 300,000 | 0.51 | July 3, 2023 |
| October 29, 2018 | 70,000 | 0.52 | Oct 29, 2023 |
| September 29, 2019 | 400,000 | 0.51 | Sep 29, 2024 |
| January 2, 2020 | 100,000 | 0.45 | Jan 02, 2025 |
| July 16, 2020 | 2,460,000 | 4.41 | Jul 16, 2025 |
| | <u>9,060,000</u> | <u>1.48</u> | |

On January 2, 2020, the Company granted 100,000 stock options to a director of the Company. The stock options have an exercise price of \$0.45 per common share, 100% vested at grant date and are exercisable over a period of five years. On July 16, 2020, the Company granted 1,700,000 stock options to its directors. The stock options have an exercise price of \$4.41 per common share and will vest over four years with 25% vesting at the date of the grant and 25% for each subsequent year and are exercisable over a period of five years. The Company also granted 760,000 stock options to employees which have an exercise price of \$4.41 per common share. Of these options, 660,000 will vest over two years, 50% on the date of the grant and the remaining 50% will vest one year later and are exercisable over a period of five years. The remaining 100,000 options will vest over four years, 25% will vest on the date of the grant and 25% for each subsequent year thereafter and are exercisable over a period of four years.

The fair value of the stock options was estimated by applying the Black-Sholes option pricing model using the following assumptions:

| Date of grant | January 2, 2020 | July 16, 2020 |
|--|------------------------|----------------------|
| Number of options granted | 100,000 | 2,460,000 |
| Exercise price (\$) | 0.45 | 4.41 |
| Fair value of each option under the Black Scholes pricing model (\$) | 0.19 | 2.94 |
| Assumptions under the Black Scholes model: | | |
| Market share (\$) | 0.45 | 4.41 |
| Risk free interest rate (%) | 1.61 | 0.33 |
| Expected volatility (%) | 46.00 | 86.42 |
| Expected dividend yield | - | - |
| Expected life (number of months) | 60 | 60 |
| Forfeiture rate (%) | - | - |

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
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13. Shareholders' equity (continued)

Share purchase warrants

The following table reflects the activity in the share purchase warrants for the nine months ended September 30, 2020 and the number of issued and outstanding share purchase warrants at September 30, 2020:

| | Number of warrants December 31, 2019 | Issued | Exercised | Expired | Number of warrants September 30, 2020 | Price per warrant \$ | Expiry date |
|--|---|--------|--------------------|--------------------|--|----------------------------|--------------|
| Issuance of units – April 19, 2018 | 3,108,333 | - | - | (3,108,333) | - | 0.85 | Apr 19, 2020 |
| Issuance of broker warrants – April 19, 2018 | 74,000 | - | - | (74,000) | - | 0.85 | Apr 19, 2020 |
| Issuance of units – April 20, 2018 | 3,385,715 | - | - | (3,385,715) | - | 0.85 | Apr 20, 2020 |
| Issuance of units – September 28, 2018 | 3,448,276 | - | - | - | 3,448,276 | 0.58 | Jan 28, 2021 |
| Issuance of units – October 19, 2018 | 1,500,750 | - | (1,382,000) | - | 118,750 | 0.58 | Feb 13, 2021 |
| Issuance of units – December 17, 2018 | 2,244,367 | - | (998,967) | - | 1,245,400 | 0.85 | Dec 18, 2020 |
| Issuance of units – May 15, 2019 | 2,996,500 | - | (1,471,000) | - | 1,525,500 | 0.85 | May 15, 2021 |
| Issuance of units – May 24, 2019 | 2,024,500 | - | (1,244,500) | - | 780,000 | 0.85 | May 24, 2021 |
| Issuance of units – June 19, 2019 | 1,000,000 | - | (500,000) | - | 500,000 | 0.85 | Jun 19, 2021 |
| Issuance of units – October 25, 2019 | 225,000 | - | - | - | 225,000 | 0.75 | Oct 25, 2021 |
| | <u>20,007,441</u> | | <u>(5,596,467)</u> | <u>(6,568,048)</u> | <u>7,842,926</u> | <u>0.78</u> | |

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

14. Supplemental disclosure of cash flow information

Net changes in non-cash components of operating working capital

| | Three months ended September 30, | | Nine months ended September 30, | |
|--|----------------------------------|------------------|---------------------------------|----------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Decrease (increase) in: | | | | |
| Inventories | 9,245 | - | - | - |
| Accounts receivable | (4,798,293) | 87,911 | (5,350,435) | 200,082 |
| Costs and profits in excess of billings on uncompleted contracts | 61,925 | (438,169) | (21,080) | (254,344) |
| Investment tax credits receivable | 308,697 | (98,703) | 142,335 | 112,139 |
| Deposits | (140,521) | 215,880 | (446,316) | 215,880 |
| Prepaid expenses | (62,823) | (9,530) | (11,492) | (132,749) |
| Increase (decrease) in: | | | | |
| Accounts payable and accrued liabilities | (176,227) | 615,237 | (1,228,471) | 715,106 |
| Billings in excess of costs and profits on uncompleted contracts | 3,789,057 | (608,031) | 6,275,012 | (459,098) |
| | <u>(1,008,940)</u> | <u>(235,406)</u> | <u>(640,447)</u> | <u>397,016</u> |

15. Other information

Cost of sales and services for the three and nine months ended September 30, 2020 was \$2,616,901 and \$3,930,257 (2019 - \$1,150,347 and \$2,538,538). Included in cost of sales and services was the amortization of intangible assets expense for the three and nine months ended September 30, 2020 of \$6,782 and \$20,408 (2019 - \$5,267 and \$14,824).

Selling, general and administrative costs for the three and nine months ended September 30, 2020 was \$5,311,802 and \$8,253,369 (2019 - \$1,499,952 and \$4,425,834). Included in selling, general and administrative costs was depreciation on property and equipment which for the three and nine months ended September 30, 2020 of \$19,125 and \$39,238 (2019 \$44,958 and \$145,801) and depreciation of right of use assets of \$128,971 and \$306,541 (2019 -\$111,492 and \$326,830).

Employee benefits totaled \$5,020,763 and \$7,758,771 for the three and the nine months ended September 30, 2020 (2019 - \$1,406,043 and \$4,397,824) and include share-based compensation of \$3,017,409 and \$3,111,913 (2019 - \$14,149 and \$76,218).

The Company has been awarded various grants during the three and the nine months periods, which were recognized when they became receivable. The grants, received in these periods, are unconditional and amounted to \$91,459 and \$412,982 respectively (2019 - \$48,897 and \$253,588).

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
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16. Net finance costs

| | Three months ended September 30, | | Nine months ended September 30, | |
|--|---|----------------|--|----------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Finance costs | | | | |
| Interest and fees on convertible liability instruments | 27,090 | | 171,042 | |
| Interest accretion on convertible liability instruments | 15,066 | 146,237 | 182,700 | 486,952 |
| Interest on term loans | 11,165 | 8,924 | 62,073 | 22,040 |
| Interest on lease liabilities | 39,161 | 71,255 | 165,085 | 216,726 |
| Interest accretion on promissory notes | (922) | 28,640 | 17,937 | 47,271 |
| Other interest expenses | 29,848 | (8,704) | 32,236 | 279 |
| | 121,408 | 246,352 | 631,073 | 773,268 |
| Capitalized finance costs on borrowing costs on Equipment under construction | (137,778) | - | (137,778) | - |
| Net finance costs | (16,370) | 246,352 | 493,295 | 773,268 |

17. Earnings (loss) per share

The following table provides a reconciliation between the number of basic and fully diluted shares outstanding as at September 30, 2020:

| | Three months ended September 30, | | Nine months ended September 30, | |
|---|---|-------------|--|-------------|
| | 2020 | 2019 | 2020 | 2019 |
| Weighted daily average of Common shares | 150,343,350 | 135,562,639 | 145,610,701 | 136,394,401 |
| Dilutive effect of stock options | 6,073,573 | - | 5,394,875 | - |
| Dilutive effect of warrants | 6,671,219 | - | 5,160,588 | - |
| Weighted average number of diluted shares | 163,088,142 | 135,562,639 | 156,166,164 | 136,394,401 |
| Number of anti-diluted stock options, warrants, convertible debentures and convertible loans excluded from fully diluted earnings per share calculation | 2,460,000 | 33,854,441 | 2,460,000 | 33,854,441 |

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18. Related party transactions

During the three and nine months ended September 30, 2020, the Company concluded the following transactions with related parties:

An amount including rent and property taxes of \$68,687 and \$205,420 were paid to a trust whose beneficiary is the controlling shareholder and CEO of the Company (\$66,740 and \$199,842 were respectively charged in 2019). A balance representing past due rent payments to the trust of \$58,050 (December 31, 2019 - \$Nil) is included in accounts payable at September 30, 2020.

On July 28, 2020, the Company renegotiated an existing lease with a trust whose beneficiary is the controlling shareholder and CEO of the Company and exercised its option to extend the terms and payments of this same lease with a trust whose beneficiary is the controlling shareholder and CEO of the Company. The lease liability was recalculated using an annual borrowing interest rate of 4%. As a result, the lease liability and the right-of-use assets increased by \$366,566. In return the trust agreed to convert the 2020 convertible loan approximately one year before its due date. (maturity date September 18, 2021).

As at September 30, 2020, an amount of \$58,050 (December 31, 2019 - \$Nil), of interest payable and an accretion amount of \$Nil (December 31, 2019 - \$Nil), were accrued on the 2020 convertible loan of \$903,000 from a trust whose beneficiary is the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

An amount of \$1,427,698 was paid as a prepayment for rent and related property taxes and insurances to a trust whose beneficiary is the controlling shareholder and CEO of the Company (December 31, 2019 – \$Nil), of this amount \$1,178,529 is included in lease liability payments.

A balance due to the controlling shareholder and CEO of the Company amounted to \$21,221 (December 31, 2019 - \$214,470) for expense report, salary and vacation payables and is included in accounts payable and accrued liabilities as at September 30, 2020.

An amount of (\$922) and \$17,937 of interest accretion were accrued on the loan of \$295,000 from the controlling shareholder and CEO of the Company.

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18. Related party transactions (continued)

Total compensation of key management and board members for the three and nine months ended September 30, 2020 consists of the following:

| | Three months ended September 30, | | Nine months ended September 30, | |
|---|-------------------------------------|----------------|------------------------------------|----------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Salaries –officers | 323,796 | 136,000 | 704,114 | 388,000 |
| Pension contributions | 8,195 | 2,040 | 14,061 | 6,120 |
| Fees – Board of Directors | 40,000 | - | 84,000 | - |
| Share – based compensation – officers | 1,098,610 | - | 1,163,909 | - |
| Share – based compensation - Board of Directors | 362,215 | - | 381,008 | - |
| Other benefits – officers | 250,724 | 3,374 | 488,577 | 10,252 |
| Total compensation | 2,083,540 | 141,414 | 2,835,669 | 404,372 |

A balance of \$87,926 of key management compensation, of the amounts noted above, is included in accounts payable and accrued liabilities as at September 30, 2020 (December 31, 2019 - \$130,604).

19. Financial instruments

As part of its operations, the Company carries a number of financial instruments. It is management's opinion that the Company is not exposed to significant interest, currency or credit risks arising from these financial instruments except as otherwise disclosed. The Company's overall risk management program focuses on the unpredictability of the financial market and seeks to minimize potential adverse effects on the Company's financial performance. The Company does not use derivative financial instruments to hedge these risks.

Foreign currency risk

The Company enters into transactions denominated in US dollars for which the related revenues, expenses, accounts receivable and accounts payable and accrued liabilities balances are subject to exchange rate fluctuations.

As at September 30, 2020 the following items are denominated in US dollars:

| | September 30, 2020 CDN | December 31, 2019 CDN |
|--|------------------------------|-----------------------------|
| | \$ | \$ |
| Cash | 1,100,386 | 74,749 |
| Accounts receivable | 4,902,728 | 28,704 |
| Accounts payable and accrued liabilities | (152,844) | (403,273) |
| Total | 5,850,270 | (299,820) |

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

19. Financial instruments (continued)

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.

Sensitivity analysis

At September 30, 2020, if the US Dollar changes by 10% against the Canadian dollar with all other variables held constant, the impact on pre-tax gain or loss for the year ended September 30, 2020 would have been \$585,000 (December 31, 2019 – \$29,000).

Credit risk

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The maximum credit risk to which the Company is exposed as at September 30, 2020 represents the carrying amount of cash, accounts receivable and deposits.

Credit concentration

During the three and the nine months ended September 30, 2020, two customers accounted for 54%, 35% and 56%, 26% respectively of revenues from operations.

| | Three months ended September 30, 2020 | | Nine months ended September 30, 2020 | |
|--------------|--|--------------------------------|---|--------------------------------|
| | Revenues | % of total revenues | Revenues | % of total revenues |
| | \$ | % | \$ | % |
| Customer 1 | 4,367,795 | 54% | 6,162,131 | 56% |
| Customer 2 | 2,840,760 | 35% | 2,904,782 | 26% |
| Total | 7,208,555 | 89% | 9,066,913 | 82% |

One customer accounted for 94% (December 31, 2019 – three customers for 93%) of trade accounts receivable with amounts owing to the Company of \$4,726,967 (December 31, 2019 - \$96,874), representing the Company's major credit risk exposure. Credit concentration is determined based on customers representing 10% or more of total revenues and/or total accounts receivable. The Company believes that there is no unusual exposure associated with the collection of these receivables. The Company manages its credit risk by performing credit assessments of its customers and provides allowances for potentially uncollectible accounts receivable. The Company does not generally require collateral or other security from customers on accounts receivable.

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

19. Financial instruments (continued)

Fair value of financial instruments

Financial instruments are comprised of cash, accounts receivable, investments, deposits, accounts payable and accrued liabilities, term loans, long-term debt and convertible debentures. There are three levels of fair value that reflect the significance of inputs used in determining fair values of financial instruments:

Level 1 —quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 —inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices).

Level 3 —inputs for the asset or liability that are not based on observable market data.

Investments in HPQ shares are valued at quoted market prices and are classified as Level 1.

Investments in HPQ warrants are valued using the Black-Scholes pricing model and are classified as Level 3.

Investments in BGF shares are valued based on a valuation technique that estimates a business' value based on a recent round of financing and are classified as Level 1.

The fair values of cash, accounts receivable, accounts payable and accrued liabilities, and term loans approximate their carrying amounts due to their short-term maturities.

Interest rate risk

Interest rate risk is the risk that the value of a financial instrument might be adversely affected by a change in interest rates. Changes in market interest rates may have an effect on the cash flows associated with some financial assets and liabilities, known as cash flow risk, and on the fair value of other financial assets or liabilities, known as price risk, and on the fair value of investments or liabilities, known as price risks. The Company is exposed to a risk of fair value on the term loans and convertible debentures as those financial instruments bear interest at fixed rates.

Price risk

Price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market price (other than those arising from foreign currency risk and interest risk), whether those changes are caused by factors specific to the individual financial instrument or its issuers or factors affecting all similar financial instruments traded in the market. The most significant exposure to the price risk for the Company arises from its investments in shares of public companies quoted on the TSXV Exchange and the share purchase warrants. If the share prices of the investment in equity of quoted companies had increased or decreased by 15% as at September 30, 2020, with all other variables held constant, the Company's investments would have increased or decreased respectively, by approximately \$2,015,000 (December 31, 2019 - \$241,000).

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

19. Financial instruments (continued)

Where the fair value of financial assets and financial liabilities recorded in the statement of financial position cannot be derived from active markets, they are determined using valuation techniques including Black-Scholes pricing model. Some inputs to this model are taken from observable markets, but a degree of judgment is required in establishing the fair values. The judgments include considerations of inputs such as interest free risk and volatility. Should any of the inputs to these models or changes in assumptions about these factors occur, this could affect the reported fair value of financial instruments. If the interest free risk and the volatility used in the calculation of the fair value of the investment in share purchase warrants increased or decreased by 15% as at September 30, 2020, with all other variables held constant, the Company's investments would have increased or decreased respectively, by approximately \$450,000 (December 31, 2019 - \$Nil).

Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivery of cash or another financial asset. The Company's ability to continue as a going concern is dependent on management's ability to raise required funding through future equity and / or debt issuances and to generate positive cash flows from operations (see note 1 (b)). The Company manages its liquidity risk by forecasting cash flows from operations and anticipating any investing and financing activities. Management and the Board of Directors are actively involved in the review, planning and approval of significant expenditures and commitments. As at September 30, 2020, the accounts payable and accrued liabilities of \$3,821,505 are payable within 6 months.

20. Contingent liabilities

The Company is currently a party to various legal proceedings and a tax authorities' review. If management believes that a loss arising from these matters is probable and can reasonably be estimated, that amount of the loss is recorded. As additional information becomes available, any potential liability related to these matters is assessed and the estimates are revised, if necessary. Based on currently available information, management believes that the ultimate outcome of these matters, individually and in aggregate, will not have a material adverse effect on the Company's financial position or overall trends in results of operations.

21. Capital management

The Company's objectives in managing capital are:

- a) To ensure sufficient liquidity to support its current operations and execute its business plan; and
- b) To provide adequate return to the shareholders

The Company's primary objectives when managing capital is to ensure the entity continues as a going concern as well as to maintain optimal returns to shareholders and benefits for other stakeholders.

The Company currently funds these requirements from cash flows from operations and with financing arrangements with third parties and shareholders. The Company is not subject to any externally imposed capital requirements.

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

21. Capital management (continued)

The management of capital includes common shares, warrants reserve, contributed surplus and equity portion of convertible debentures for a total amount of \$65,485,090 (December 31, 2019 - \$54,154,733) and debt of \$Nil, (December 31, 2019 - \$3,679,323). The Company monitors its working capital in order to meet its financial obligations. As at September 30, 2019, the Company's working capital deficiency was \$4,712,539, (December 31, 2019 – deficiency of \$10,492,101).

There were no changes in the Company's approach during the nine months ended September 30, 2019.

22. Segment information

The Company operates in one segment, based on financial information that is available and evaluated by the Company's Board of Directors.

The Company's head office is located in Montreal, Quebec. The operation of the Company is located in one geographic area: Canada. The following is a summary of the Company's geographic information:

| | Three months ended | | Nine months ended | |
|---|--------------------|------------------|-------------------|------------------|
| | September 30, | | September 30, | |
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Revenue from external customers and end users | | | | |
| Africa | 38,229 | - | 38,229 | - |
| Canada | 3,101,905 | 280,592 | 3,910,884 | 580,353 |
| China | 112,526 | 6,880 | 134,585 | 96,011 |
| Europe | 5,161 | 863,940 | 6,500 | 1,376,424 |
| India | - | - | - | 3,243 |
| Israel | - | - | 4,007 | 523 |
| Mexico | 71,677 | - | 105,352 | 122,890 |
| Oceania | - | 22,756 | - | 25,076 |
| Saudi Arabia | 4,367,795 | - | 6,162,131 | - |
| Singapore | - | 835,142 | - | 835,142 |
| South America | 9,428 | - | 121,513 | - |
| United States | 442,706 | 88,127 | 513,588 | 707,987 |
| | <u>8,149,427</u> | <u>2,097,437</u> | <u>10,996,789</u> | <u>3,747,649</u> |

Notes to the Condensed Interim Consolidated Financial Statements

For the periods ended September 30, 2020 and 2019
(unaudited)

22. Segment information (continued)

The following is a summary of the Company's revenue by product line:

| | Three months ended September 30, | | Nine months ended September 30, | |
|--|-------------------------------------|------------------|------------------------------------|------------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Sales of goods under long-term contracts | 5,960,844 | 2,019,791 | 8,135,671 | 3,549,989 |
| Sales of goods in point of time | 2,164,000 | 58,933 | 2,794,297 | 161,621 |
| Other revenues | 24,583 | 18,713 | 66,821 | 36,039 |
| | 8,149,427 | 2,097,437 | 10,996,789 | 3,747,649 |

23. Subsequent events

On October 26, 2020 the Company granted stock options to acquire 200,000 and 50,000 common shares of the Company to two Directors. The stock options have an exercise price of \$4.00 per common share and are exercisable over a period of five (5) years. The options are granted in accordance with the Company's stock option plan.

On November 9 and 12, 2020, an employee of the Company exercised a total of 20,000 stock options at a price of \$0.58.

On November 10, 2020 the Company issued 3,354,550 units at a price of \$3.60 per unit for gross proceeds of \$12,076,380. Each unit consists of one common share of the Company and one-half of one common share purchase warrant. Each common share purchase warrant entitles the holder thereof to purchase one common share at an exercise price of \$4.50 until November 10, 2022. In connection with the bought-deal short form prospectus offering, the Company paid finder fees of \$688,915 and issued 191,414 finder's compensation warrants to the agents.

On November 12, 2020 the acting Chief Financial Officer and Director of the Company, Mr. Michael Blank exercised 200,000 stock options at \$0.51 each for a total amount of \$102,000.

On November 18, 2020, the Company received final approval from the Toronto Stock Exchange (the "TSX") to graduate from the TSX Venture Exchange (the "TSXV") and list its common shares on the TSX.

On November 18, 2020 the Company exercised 1,500,000 HPQ warrants for a total amount of \$202,500. Each warrant entitled the holder thereof to acquire one common share at a price of \$0.135.

On November 20, 2020, the Company commenced trading its common shares on the Toronto Stock Exchange (the "TSX") under the symbol PYR.



PYROGENESIS CANADA INC.**MANAGEMENT'S DISCUSSION AND ANALYSIS**

This management's discussion and analysis ("MD&A") is intended to assist readers in understanding the business environment, strategies, performance and risk factors of PyroGenesis Canada Inc. ("PyroGenesis", or the "Company"). The MD&A provides the reader with a view and analysis, from the perspective of management, of the Company's financial results for the three and the nine months ended September 30, 2020. The MD&A has been prepared in accordance with National Instrument 51-102, Continuous Disclosure Requirements, and should be read in conjunction with the audited financial statements and related notes thereto of the Company for the year ended December 31, 2019.

The condensed interim consolidated financial statements and MD&A have been reviewed by PyroGenesis' Audit Committee and were approved by its Board of Directors on November 25, 2020. The Board of Directors is responsible for ensuring that the Company fulfills its responsibilities for financial reporting and is ultimately responsible for reviewing and approving the MD&A. The Board of Directors carries out this responsibility principally through its Audit Committee. The Audit Committee is appointed by the Board of Directors and is comprised of independent and financially literate directors. The Audit Committee reports its findings to the Board of Directors for its consideration when it approves the MD&A and financial statements for issuance to shareholders.

The following information includes the accounts of Drosrite International Inc. and takes into account all material events that took place up until November 25, 2020, the date on which the Company's Board of Directors approved this MD&A. Unless otherwise indicated, all amounts are presented in Canadian dollars. The Company's functional and reporting currency is the Canadian dollar.

Additional information regarding PyroGenesis is available on SEDAR (www.sedar.com), OTC Markets (www.otcmarkets.com) and on the Company's website at www.pyrogenesis.com.

FORWARD-LOOKING STATEMENTS

This MD&A contains forward-looking statements and forward-looking information (collectively, "forward-looking statements") within the meaning of applicable securities legislation. All statements other than statements of historical fact contained in this MD&A are forward-looking statements, including, without limitation, the Company's: statements regarding its products and services; the execution of its growth strategy; relations with suppliers and customers; future financial position; business strategy; potential acquisitions; potential business partnering; litigation; and plans and objectives. In certain cases, forward-looking statements can be identified by the use of words such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved" and similar words or the negative thereof. These forward-looking statements are based on management's current expectations and are subject to a number of risks, uncertainties, and assumptions, including market and economic conditions, business prospects or opportunities, future plans and strategies, projections and anticipated events and trends that affect the Company and its industry. Although management of the Company believes that the expectations reflected in such forward-looking statements are reasonable and are based on reasonable assumptions and estimates as of the date hereof, there can be no assurance that these assumptions or estimates are accurate or that any of these expectations will prove accurate.



Actual results and developments are likely to differ, and may differ materially, from those anticipated by the Company and expressed or implied by the forward-looking statements contained in this MD&A. Such statements are based on a number of assumptions and risks which may prove to be incorrect. Important assumptions relating to the forward-looking statements contained in this MD&A include, among other things, assumptions concerning:

- the Company's business strategies, strategic objectives and growth strategy;
- the Company's expected production volumes, rates and costs;
- the Company's current and future capital resources and the need for additional financing;
- the Company's ability to increase sales from new and existing customers, and the results of the successful completion of the Company's current projects;
- management's expectation that the Company will achieve growth and profitability;
- the Company's overall financial performance;
- the Company continuing to maintain sufficient and effective production and research and development;
- there being no significant reduction in the availability of qualified and cost-effective human resources;
- there will be adequate liquidity available to the Company to carry out its operations;
- the Company's ability to obtain and retain key personnel; and
- the success of intellectual property applications.

By their nature, forward-looking statements require assumptions and are subject to inherent risks and uncertainties including those discussed herein. There is significant risk that predictions and other forward-looking statements will not prove to be accurate. Readers are cautioned to not place undue reliance on forward-looking statements made herein because a number of factors could cause actual future results, conditions, actions or events to differ materially from the targets, expectations, estimates or intentions expressed in the forward-looking statements.



The future outcomes that relate to forward-looking statements may be influenced by many factors, including, but not limited to, the strength of the Canadian, US Middle Eastern, European, and Asian economies; operational, funding, and liquidity risks; unforeseen engineering and environmental problems; delays or inability to obtain required financing and/or anticipated contracts; risks associated with licenses, permits and regulatory approvals; supply interruptions or labour disputes; foreign exchange fluctuations and collection risk; competition from other suppliers, or alternative, less capital intensive, energy solutions; and risk factors described elsewhere in this document under the heading “Risk Factors”. We caution that the foregoing list of factors is not exhaustive, and that, when relying on forward-looking statements to make decisions with respect to the Company, investors and others should carefully consider these factors, as well as other uncertainties and potential events, and the inherent uncertainty of forward-looking statements.

Although the forward-looking statements contained in this MD&A are based upon what management currently believes to be reasonable assumptions, the Company cannot assure investors that actual results, performance or achievements will be consistent with these forward-looking statements and additional risks and uncertainties discussed in the Company’s materials filed with the Canadian securities regulatory authorities from time to time, available under the Company’s profile on SEDAR at www.sedar.com. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. Forward-looking statements are provided as of the date of this MD&A, and the Company assumes no obligation to update or revise such forward-looking statements to reflect new events or circumstances except as required under applicable securities laws.

The forward-looking statements contained in this MD&A are expressly qualified in their entirety by this cautionary statement and are made as of the date of this MD&A or such other date specified herein.

OVERVIEW

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company’s core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis’ operations are ISO 9001:2015 and AS9100D certified. The Company is publicly traded on the TSX Exchange under the Symbol “PYR” on the OTCQB in the USA under the symbol “PYRNF” and on the Frankfurt Stock Exchange (FSX) under the symbol “8PY”.



SELECTED FINANCIAL INFORMATION

| | Three months ended Sept 30, | | % Change | Nine months ended Sept 30, | | % Change |
|--|-----------------------------|--------------|------------|----------------------------|----------------|------------|
| | 2020 | 2019 | 2020vs2019 | 2020 | 2019 | 2020vs2019 |
| Revenues | \$ 8,149,427 | \$ 2,097,437 | 289% | \$ 10,996,789 | \$ 3,747,649 | 193% |
| Cost of sales and services | 2,616,901 | 1,150,347 | 127% | 3,930,257 | 2,538,538 | 55% |
| Gross margin | 5,532,526 | 947,090 | 484% | 7,066,532 | 1,209,111 | 484% |
| Expenses | | | | | | |
| Selling, general and administrative (not including share-based expenses) | 2,294,394 | 1,485,803 | 54% | 5,141,456 | 4,349,616 | 18% |
| Research and development | 131,955 | 236,535 | -44% | 151,176 | 544,954 | -72% |
| Net finance costs | (16,370) | 246,352 | -107% | 493,295 | 773,268 | -36% |
| Total expenses (not including share-based expenses) | 2,409,979 | 1,968,690 | 22% | 5,785,927 | 5,667,839 | 2% |
| Net income from operations (not including share-based expenses) | 3,122,547 | (1,021,600) | 406% | 1,280,605 | (4,458,729) | 129% |
| Share-based expense | (3,017,408) | (14,149) | 21,226% | (3,111,913) | (76,218) | 3,983% |
| Net income from operations | 105,139 | (1,035,749) | 110% | (1,831,308) | (4,534,947) | 60% |
| Changes in fair market value of strategic investments | 15,220,857 | 70,717 | 21,424% | 20,628,298 | 437,600 | 4,614% |
| Comprehensive income | \$ 15,325,996 | \$ (965,032) | 1,688% | \$ 18,796,990 | \$ (4,097,346) | 559% |

Modified EBITDA (loss) is not a performance measure defined under IFRS and it is not considered an alternative to Income (Loss) from operations or Comprehensive Earnings (Loss) in the context of measuring a Company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of their results and related trends, and as such increases transparency and clarity. Modified EBITDA (loss) is an important measure of operating performance because it allows management, investors and others to evaluate and compare the Company's core operating results, including our return on capital and operating efficiencies, from period to period, by removing the impact of its capital structure (interest expense to service outstanding debt), asset base (depreciation and amortization), tax consequences, and other non-operating items not requiring cash outlays including share-based compensation and change in fair value of investment. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation.



Extract from Statement of Financial Position at:

| | September 30, 2020 | Dec 31, 2019 |
|-----------------------------|-----------------------|-----------------------|
| Current assets | 8,698,383 | 1,324,554 |
| Non-current assets | 31,039,994 | 8,254,675 |
| Total assets | \$ 39,738,377 | \$ 9,579,229 |
| Current liabilities | 13,410,922 | 11,816,655 |
| Non-current liabilities | 2,821,052 | 3,845,497 |
| Total liabilities | \$ 16,231,974 | \$ 15,662,152 |
| Shareholders' equity | \$ 23,506,403 | \$ (6,082,923) |

RESULTS OF OPERATIONS

Revenue

PyroGenesis recorded revenue of \$8,149,427 in the third quarter of 2020 ("Q3, 2020"), representing an increase of 289% compared with \$2,097,437 recorded in the third quarter of 2019 ("Q3, 2019"). Revenue for the nine months of fiscal 2020 was \$10,996,789 an increase of 193% over revenue of \$3,747,649 during the same period in 2019.

Revenues recorded during the nine months ended September 30, 2020 were generated primarily from:

- (i) DROSRITE™ related sales of \$6,384,563 (2019 - \$Nil),
- (ii) PUREVAP™ related sales of \$2,883,819 (2019 - \$328,733),
- (iii) torch related sales of \$897,822 (2019 - \$1,932,353),
- (iv) the development and support related to systems supplied to the U.S. Military of \$478,132 (2019 - \$500,946).



Cost of Sales and Services and Gross Margin

| | Three months ended Sept 30, | | | Nine months ended Sept 30, | | |
|--|-----------------------------|---------------------|------------------------|----------------------------|---------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Employee compensation | \$ 530,880 | \$ 434,624 | 22% | \$ 907,744 | \$ 1,277,859 | -29% |
| Subcontracting | 480,602 | 79,579 | 504% | 870,078 | 168,467 | 298% |
| Direct materials | 1,423,762 | 516,552 | 176% | 2,013,403 | 876,390 | 130% |
| Manufacturing overhead & other | 195,681 | 214,767 | -9% | 348,145 | 350,786 | -1% |
| Foreign exchange loss | 2,670 | (50,037) | -105% | 33,325 | (34,252) | -197% |
| Investment tax credits | (23,456) | (50,405) | -53% | (62,844) | (115,536) | -46% |
| Cost of Sales and Services before Amortization of Intangible Assets | \$ 2,610,119 | \$ 1,145,080 | 128% | \$ 3,909,849 | 2,523,714 | 56% |
| Amortization of intangible assets | 6,782 | 5,267 | 29% | 20,408 | 14,824 | 38% |
| Total Cost of Sales and Services | \$ 2,616,901 | \$ 1,150,347 | 127% | \$ 3,930,257 | \$ 2,538,538 | 56% |
| Gross Margin | | | | | | |
| | Three months ended Sept 30, | | | Nine months ended Sept 30, | | |
| | 2020 | 2019 | | 2020 | 2019 | |
| Revenues | \$ 8,149,427 | \$ 2,097,437 | | \$ 10,996,789 | \$ 3,747,649 | |
| Cost of Sales and Services | 2,616,901 | 1,150,347 | | 3,930,257 | 2,538,538 | |
| Gross Margin | \$ 5,532,526 | \$ 947,090 | | \$ 7,066,532 | \$ 1,209,111 | |
| Gross Margin % | 67.9% | 45.2% | | 64.3% | 32.3% | |

Cost of sales and services before amortization of intangible assets was \$2,610,119 in Q3 2020, representing an increase of 128% compared with \$1,145,080 in Q3 2019, primarily due to an increase in employee compensation \$530,860 (Q3, 2019 - \$434,624), subcontracting \$480,602 (Q3, 2019 - \$79,579) and direct material \$1,423,762 (Q3, 2019 - \$516,552).

In Q3 2020, manufacturing overhead & other and foreign exchange increased to \$198,351 (Q3, 2019 - \$164,730). The gross margin for Q3 2020 was \$5,532,526 or 67.9% of revenue compared to a gross margin of \$947,090 or 45.2% of revenue for Q3 2019. As a result of the type of contracts being executed (the nature of project activity), as well as the composition of the cost of sales and services, the mix between labour, materials and subcontracts may be significantly different.

Investment tax credits recorded against cost of sales are related to projects that qualify for tax credits from the provincial government of Quebec. Qualifying tax credits decreased to \$23,456 in Q3 2020, compared with \$50,405 in Q3 2019. This represents a decrease of 53% year-over-year. In total, for the nine months, the Company earned refundable investment tax credits of \$62,844 against cost of sales in Q3 2020. The Company continues to make investments in research and development projects involving strategic partners and government bodies.

The amortization of intangible assets of \$6,782 in Q3 2020 and \$5,267 for Q3 2019 relates to patents and deferred development costs. Of note, these expenses are non-cash items and will be amortized over the duration of their expected lives.



Selling, General and Administrative Expenses

| | Three months ended Sept 30, | | | Nine months ended Sept 30, | | |
|---|-----------------------------|---------------------|------------------------|----------------------------|---------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Employee compensation | \$ 1,330,132 | \$ 756,141 | 76% | \$ 3,316,935 | \$ 2,380,927 | 39% |
| Professional fees | 624,375 | 393,810 | 59% | 1,024,519 | 852,830 | 20% |
| Office and general | 93,215 | 48,917 | 91% | 249,733 | 176,358 | 42% |
| Travel | 7,230 | 78,507 | -91% | 75,626 | 302,346 | -75% |
| Depreciation on property and equipment | 19,125 | 44,958 | -57% | 39,238 | 145,801 | -73% |
| Depreciation rou assets | 128,971 | 111,492 | 16% | 306,541 | 326,830 | -6% |
| Investment tax credits | (7,500) | (7,500) | 0% | (47,105) | (22,413) | 110% |
| Government grants | - | (16,585) | -100% | (46,728) | (49,063) | -5% |
| Other expenses | 98,846 | 76,063 | 30% | 222,699 | 236,000 | -6% |
| Sub-total not including share-based expenses | \$ 2,294,394 | \$ 1,485,803 | 54% | \$ 5,141,456 | \$ 4,349,616 | 18% |
| Share-based expenses | 3,017,408 | 14,149 | 21,225% | 3,111,913 | 76,218 | 3,983% |
| Total selling, general and administrative | \$ 5,311,802 | \$ 1,499,952 | 254% | \$ 8,253,369 | \$ 4,425,834 | 86% |

Included within Selling, General and Administrative expenses (“SG&A”) are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for Q3, 2020 were significantly impacted by a non-cash item, namely, share-based expenses as a result of the Company issuance of stock options to directors and employees which had an attributed expense value of \$3,017,408 for Q3, 2020. SG&A (net of share-based expenses) were 28% of revenues in Q3 2020 (70%, of revenues in Q3 2019).

SG&A excluding the costs associated with share-based expenses (a non-cash item in which options vest over a four-year period), was \$2,294,394 representing an increase of 54% compared with \$1,485,803 reported for Q3, 2019. On a year-to-date basis, SG&A expenses before share-based expenses were \$5,141,456 compared with \$4,349,616 in the same period in 2019.

The increase in SG&A expenses in Q3, 2020 over the same period in 2019 is mainly attributable to the net effect of:

- an increase of 76% in employee compensation, primarily due to an increase in commissions,
- an increase of 59% for professional fees, primarily due to an increase in legal fees related to the uplisting to the TSX, accounting fees and patent expenses,
- an increase of 91% in office and general expenses, is primarily due to an increase in computer, internet, security and safety expenses,
- travel costs decreased by 91%, due to decrease in travel abroad,
- depreciation on property and equipment decreased by 57%, primarily due to lower amounts of property and equipment being depreciated,
- depreciation on right of use assets increased by 16% due to higher amounts of right of use assets being depreciated,
- investment tax credits did not increase or decrease resulting in an unchanged variance,
- government grants decreased by 100% due to lower level of activities supported by such grants and,



- other expenses increased by 30%, primarily due to higher insurance expenses.

Separately, share based expenses increased by \$3,017,408, or in Q3, 2020, over the same period in 2019 primarily as a result of stock options granted on July 16, 2020. This was directly impacted by the vesting structure of the stock option plan with 50% of the options vesting on the grant date requiring an immediate recognition of that cost.

For comparison purposes, had the vesting structure allocated 25% instead of 50% of the July 16, 2020 stock options granted on the grant date the share-based expenses would have resulted in an approximate amount of \$2,500,000 a significant decrease of \$517,408. Similarly had the vesting structure allocated 10% instead of 50% of the July 16, 2020 stock options granted on the grant date the share-based expenses would have resulted in an approximate amount of \$1,150,000 a significant reduction of \$1,867,408 in SG&A expenses. A comparative chart is provided below;

Share-based expenses with comparative structures

| | Structure | Expense |
|--------------|------------------|----------------|
| Actual | 50% | \$ 3,017,408 |
| Hypothetical | 25% | \$ 2,500,000 |
| Hypothetical | 10% | \$ 1,150,000 |

Depreciation on Property and Equipment

| | Three months ended Sept 30, 2020 | | % Change 2019 2020vs2019 | Nine months ended Sept 30, 2020 | | % Change 2019 2020vs2019 |
|--|-------------------------------------|-----------|-----------------------------|------------------------------------|------------|-----------------------------|
| Depreciation on property and equipment | \$ 19,125 | \$ 44,958 | -57% | \$ 39,238 | \$ 145,801 | -73% |

The depreciation on property and equipment decreased to \$19,125 and \$39,238 in Q3, 2020 for the first three months and nine months of fiscal 2020, compared with \$44,958 and \$145,801 in the same periods in 2019. The 57% and 73% decreases are due to an increase in the number of years used in the straight-line method of calculating the property and equipment depreciation.



Research and Development (“R&D”) Costs

| | Three months ended Sept 30, | | | Nine months ended Sept 30, | | |
|---|-----------------------------|-------------------|------------------------|----------------------------|-------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Employee compensation | \$ 142,362 | \$ 201,128 | -29% | \$ 422,179 | \$ 662,820 | -36% |
| Investment tax credits | (13,985) | (40,798) | -66% | (47,212) | (108,252) | -56% |
| Subcontracting | 13,075 | 4,665 | 180% | 25,391 | 16,285 | 56% |
| Materials and equipment | 79,328 | 96,441 | -18% | 111,905 | 163,193 | -31% |
| Other expenses | 2,724 | 7,411 | -63% | 5,167 | 15,433 | -67% |
| Sub-total before government grants | \$ 223,504 | \$ 268,847 | -17% | \$ 517,430 | \$ 749,479 | -31% |
| Government grants | (91,549) | (32,312) | 183% | (366,254) | (204,525) | 79% |
| Total net R&D costs | \$ 131,955 | \$ 236,535 | -44% | \$ 151,176 | \$ 544,954 | -72% |

The Company incurred \$131,955 of net R&D costs in Q3, 2020, compared with \$236,535 in Q3, 2019, representing a decrease of 44%. During the first nine months of fiscal 2020, net spending on internal R&D was \$151,176 as compared to \$544,954 in 2019, primarily due to an increase in government grants received of \$366,254 in the nine months ending September 30, 2020 compared to \$204,525 during the same period in 2019.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and Experimental Development (“SR&ED”) tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see “Cost of Sales” above).

Net Finance Costs

| | Three months ended Sept 30, | | | Nine months ended Sept 30, | | |
|--|-----------------------------|-------------------|------------------------|----------------------------|-------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Interest on convertible debentures | \$ 27,090 | \$ - | 100% | \$ 171,042 | \$ - | 100% |
| Interest accretion of convertible debentures | 15,066 | 146,237 | -90% | 182,700 | 486,952 | -62% |
| Interest on term loans | 11,165 | 8,924 | 25% | 52,883 | 22,040 | 140% |
| Interest on lease liabilities | 39,161 | 71,255 | -45% | 165,085 | 216,726 | 100% |
| Interest accretion on term loans | (922) | 28,640 | -103% | 17,937 | 47,271 | -62% |
| Other interest expenses | 29,848 | (8,704) | -443% | 41,426 | 279 | 14,748% |
| | \$ 121,408 | \$ 246,352 | -51% | \$ 631,073 | \$ 773,268 | -18% |
| Capitalised finance costs on borrowing costs | (137,778) | - | -100% | (137,778) | - | -100% |
| Net finance costs | \$ (16,370) | \$ 246,352 | -107% | \$ 493,295 | \$ 773,268 | -36% |

Finance costs for Q3, 2020 totaled (\$16,370) as compared with \$246,352 for Q3, 2019, representing a decrease of 107%. The decrease in finance costs in Q3, 2020 is primarily attributable to the decrease in interest accretion on convertible liability instruments, and the decrease associated with the capitalized finance costs on borrowing costs as well as the retirement of debt. Of note, there is a Nil balance of convertible liability instruments at the end of Q3,2020.



Strategic Investments

| | Three months ended Sept 30, | | | Nine months ended Sept 30, | | |
|--|-----------------------------|-----------|------------------------|----------------------------|------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Changes to the fair value of strategic investments | \$ 15,220,857 | \$ 70,717 | 21,424% | \$ 20,628,298 | \$ 437,600 | 4,614% |

The adjustment to the fair market value of strategic investments in Q3 2020 resulted in a gain of \$15,220,857 compared to a gain in the amount of \$70,717 in Q3 2019, representing an increase of \$15,150,140. The increase is primarily attributable to the increased market share value of common shares and warrants owned by the Company of HPQ Silicon Resources Inc.

Net comprehensive income (loss)

| | Three months ended Sept 30, | | | Nine months ended Sept 30, | | |
|--------------------------|-----------------------------|--------------|------------------------|----------------------------|----------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Net comprehensive income | \$ 15,325,996 | \$ (965,032) | 1,688% | \$ 18,796,990 | \$ (4,097,346) | 559% |

The net comprehensive income for Q3 2020, of \$15,325,996 compared to a loss of \$965,032 in Q3 2019, represents an increase of \$16,291,028. The difference of \$16,291,028 in the comprehensive income in Q3 2020 is primarily attributable to the factors described above (net), which are summarized as follows:

- (i) an increase in product and service-related revenue of \$6,051,990 in Q3 2020,
- (ii) an increase in product cost of sales and services totaling \$1,466,554, primarily due to an increase in subcontracting and direct materials
- (iii) an increase of SG&A expenses of \$3,811,850 in Q3, 2020 is primarily due to an increase in share-based payments, and employee compensation,
- (iv) a decrease in R&D expenses of \$104,580 primarily due to a decrease in employee compensation, and an increase in government grants,
- (v) a decrease in net finance costs of \$262,722 in Q3, 2020, primarily due to capitalized finance costs on borrowing costs and a decrease in accretion costs of convertible liability instruments,
- (vi) an increase of \$15,150,140 in the fair market value of strategic investments.



EBITDA, Adjusted EBITDA and Modified EBITDA

| | Three months ended Sept 30, | | | Nine months ended Sept 30, | | |
|--|-----------------------------|---------------------|------------------------|----------------------------|-----------------------|------------------------|
| | 2020 | 2019 | % Change 2020vs2019 | 2020 | 2019 | % Change 2020vs2019 |
| Comprehensive income | \$ 15,325,996 | \$ (965,032) | 1,688% | \$ 18,796,990 | \$ (4,097,346) | 559% |
| Depreciation on property and equipment | 19,125 | 44,958 | -57% | 39,238 | 145,801 | -73% |
| Depreciation rou assets | 128,971 | 111,492 | 16% | 306,541 | 326,830 | -6% |
| Amortization of intangible assets | 6,782 | 5,267 | 29% | 20,408 | 14,825 | 38% |
| Financing charges | (16,370) | 246,352 | -107% | 493,295 | \$ 773,268 | -36% |
| EBITDA (loss) | \$ 15,464,504 | \$ (556,963) | 2,877% | \$ 19,656,472 | \$ (2,836,622) | 793% |
| Other non-cash items: | | | | | | |
| Share-based payments | 3,017,408 | 14,149 | 21,225% | 3,111,913 | 76,218 | 3,983% |
| Adjusted EBITDA (loss) | \$ 18,481,912 | \$ (542,814) | 3,505% | \$ 22,768,385 | (2,760,404) | 925% |
| Change in fair value of investments | 15,220,857 | 70,717 | 21,424% | 20,628,298 | 437,600 | 4,614% |
| Modified EBITDA (loss) | \$ 3,261,055 | \$ (613,531) | 632% | \$ 2,140,087 | \$ (3,198,004) | 167% |

EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation and Amortization, Adjusted EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation, Amortization and other non-cash items including share-based payment costs, and Modified EBITDA is defined as Earnings (from operations) before Net Financing Charges, Taxes, Depreciation, Amortization and other non-cash items including share-based payment costs and change in fair value of investments.

EBITDA, Adjusted EBITDA and Modified EBITDA are not performance measures defined under IFRS and they are not considered an alternative to income or loss from operations, or to comprehensive earnings or loss, in the context of measuring a company's performance. Management believes that providing certain non-GAAP performance measures, in addition to IFRS measures, provides users of the Company's financial statements with an enhanced understanding of its results and related trends and increases transparency and clarity. Management believes that EBITDA, Adjusted EBITDA and Modified EBITDA are important measures of operating performance because it allows management, investors and others to evaluate and compare the Company's operating results, including its return on capital and operating efficiencies, from period-to-period by removing the impact of the Company's capital structure (interest expense to service outstanding debt), asset base (depreciation and amortization), tax consequences, and other non-operating items not requiring cash outlays including the adjustment to the fair value of investments and share-based compensation. Securities regulations require that companies caution readers that earnings and other measures adjusted to a basis other than IFRS do not have standardized meanings and are unlikely to be comparable to similar measures used by other companies. Accordingly, they should not be considered in isolation.

EBITDA in Q3, 2020 was \$15,464,504 compared with an EBITDA loss of \$556,963 for Q3, 2019, representing an increase of 2,877% year-over-year. The \$16,021,467 increase in EBITDA in Q3 2020, compared with Q3 2019, is due to the increase in comprehensive income of \$16,291,028, a decrease in depreciation on property and equipment of \$25,833, an increase in depreciation of right of use assets of \$17,479, an increase in amortization of intangible assets of \$1,515 and a decrease in finance charges of \$262,722.



Adjusted EBITDA in Q3, 2020 was \$18,481,912 compared with an Adjusted EBITDA loss of \$542,814 for Q3, 2019, representing an increase of 3,505%. The increase of \$19,024,726 in the Adjusted EBITDA in Q3, 2020 is attributable to an increase in EBITDA of \$16,021,467 and an increase of \$3,003,259 in share-based payments.

Modified EBITDA in Q3, 2020 was \$3,261,055 compared with a Modified EBITDA loss of \$613,531 for Q3, 2019, representing an increase of 632%. The increase in the Modified EBITDA in Q3, 2020 is attributable to the increase in the Adjusted EBITDA of \$19,024,726 offset by the increase in the change of fair value of investments of \$15,150,140.

SUMMARY OF QUARTERLY RESULTS

| | 2020 | | | 2019 | | | 2018 | |
|-----------------------------|-------------|--------------|-------------|--------------|--------------|-------------|------------|-------------|
| | Q3 | Q2 | Q1 | Q4 | Q3 | Q2 | Q1 | Q4 |
| Revenues | \$8,149,427 | \$ 2,128,454 | \$ 718,908 | \$ 1,066,329 | \$ 2,097,437 | \$ 913,789 | \$ 736,443 | \$ 450,436 |
| Gross margin | 5,532,526 | 1,266,592 | 267,414 | 88,982 | 947,090 | 185,349 | 76,671 | (345,158) |
| Gross margin % | 67.9% | 59.5% | 37.2% | 8.3% | 45.2% | 20.3% | 10.4% | -76.6% |
| Comprehensive income (loss) | 15,325,996 | 5,228,020 | (1,757,027) | (5,073,771) | (965,031) | (2,253,390) | (878,925) | (2,523,283) |
| Earnings (loss) per share | | | | | | | | |
| Basic | 0.10 | 0.04 | (0.01) | (0.04) | (0.01) | (0.02) | (0.01) | (0.02) |
| Diluted | 0.09 | 0.04 | (0.01) | (0.04) | (0.01) | (0.02) | (0.01) | (0.02) |

The majority of PyroGenesis' revenue is recognised using the percentage of completion basis and is dependent on the timing of project initiation and execution, including project engineering, manufacturing, and testing.

LIQUIDITY AND CAPITAL RESOURCES

As at September 30, 2020, the accounts payable and accrued liabilities of \$3,821,505 are payable within 6 months.

OFF-BALANCE SHEET ARRANGEMENTS

The Company had no off-balance sheet arrangements as at September 30, 2020.



SUMMARY OF CASH FLOWS

| | Three months ended Sept 30, | | Nine months ended Sept 30, | |
|---|-----------------------------|--------------|----------------------------|----------------|
| | 2020 | 2019 | 2020 | 2019 |
| Cash provided by (used in) operating activities | \$ 2,389,896 | \$ (848,937) | \$ 1,637,418 | \$ (2,800,989) |
| Cash provided by (used in) investing activities | (1,440,476) | (447) | (1,624,307) | (485,718) |
| Cash provided by (used in) financing activities | (421,678) | (167,724) | 2,047,977 | 2,917,793 |
| Increase (decrease) in cash | 527,742 | (1,017,108) | 2,061,088 | (368,914) |
| Cash - end of period | 2,095,519 | 276,067 | 2,095,519 | 276,067 |

For the three months ended Q3, 2020, cash flow provided by operating activities was \$2,389,896 compared to cash used of \$848,937 for the same period in the prior year. On a year to date basis, cash flow provided by operating activities was \$1,637,418 compared to cash used of \$2,800,989 for the same period in the prior year.

The cash during Q3, 2020 consists of the comprehensive earnings of \$15,325,998 (comprehensive loss Q3, 2019 - \$965,032) plus adjustment for non-cash items totalling \$11,927,162 (Q3, 2019 - \$351,503) less a net change in non-cash operating working capital items of \$1,008,940 (Q3, 2019 - \$235,406).

The net change in non-cash operating working capital items in Q3, 2020 was driven by:

- a) an increase in inventories of \$9,245 compared to \$Nil in Q3, 2019;
- b) an increase in accounts receivable of \$4,798,293 in Q3, 2020, compared to a decrease of \$87,911 in Q3, 2019;
- c) an increase in costs and profits in excess of billings on uncompleted contracts of \$61,925 in Q3, 2020, compared to a decrease of \$438,169 in Q3, 2019;
- d) a decrease in investment tax credits receivable of \$308,697 in Q3, 2020, compared to an increase of \$98,703 in Q3, 2019;
- e) a decrease in deposits of \$140,521 in Q3, 2020, compared to an increase of \$215,880 in Q3, 2019;
- f) an increase in prepaid expenses of \$62,823 in Q3, 2020, compared to an increase of \$9,530 in Q3, 2019;
- g) a decrease in accounts payable and accrued liabilities of \$176,227 in Q3, 2020, compared to an increase of \$615,237 in Q3, 2019;
- h) an increase in billings in excess of costs and profits on uncompleted contracts of \$3,789,057 in Q3, 2020, compared with a decrease of \$608,031 in Q3, 2019.

Investing activities resulted in a use of cash of \$1,440,479 in Q3, 2020, compared to \$447 in Q3, 2019 resulting from the purchase of strategic investments, property and equipment and additions to deferred development costs offset by proceeds on disposal of strategic investments.

Financing activities in Q3, 2020 and the first nine months of fiscal 2020 resulted in a net use of funds of \$421,678 and in a net source of funds of \$2,047,977 respectively, compared with a net use of funds of \$167,724 and a net source of funds of \$2,917,793 for the same periods in 2019. In 2020, the Company repaid loans of \$1,230,200, made payment of lease liabilities of \$1,300,792, purchased shares for cancellation for a net of \$964,391, received net proceeds of \$903,000 from convertible loan and \$5,006,457 from the issuances of common shares and purchase warrants and paid interest in the amount of \$366,097. In 2019, the source of funds resulted from the issuance of common shares upon exercise of warrants, units and stock options, convertible debentures for net proceeds of \$3,448,077 raised for general working capital purposes, received \$329,200 from loans, repaid an amount of \$408,102 in loans and capital lease obligations and paid \$451,382 of interest.



For Q3, 2020 and the first nine months of fiscal 2020, the net cash position of the Company increased by \$527,742 and \$2,061,888, compared to a decrease of \$1,017,108 and \$368,914 for the same periods in the prior year.

CAPITAL STOCK INFORMATION

The authorized share capital of the Company consists of an unlimited number of common shares (the “Common Shares”). As at November 25, 2020, PyroGenesis had 157,910,592 common shares, 9,387,158 warrants, 191,414 compensation options, 9,050,000 outstanding options issued, and 6,922,500 exercisable options issued.

As previously announced, the Company bought back for cancellation 1,285,000 of its own common shares in the market for \$964,391 at an average price of \$0.75 per share.

GOING CONCERN

The Company presumes it will be able to realize its assets and discharge its liabilities in the normal course of business for the foreseeable future. The Company’s management has reviewed the Company’s projected cash flow and backlog and is of the opinion that the Company will generate sufficient positive cash flows and profits from operations and strategic investments to meet current and future cash requirements. Management expects that the investments currently being made in accelerating projects under development for various clients, together with executing on the \$36.4MM backlog at November 25, 2020, (720% of 2019 revenues).

The December 31, 2019 financial statements have been prepared using International Financial Reporting Standards (“IFRS”) applicable to a going concern, which contemplates the realization of assets and settlement of liabilities in the normal course of business as they become due. If the going concern assumption were not appropriate for these financial statements then adjustments would be necessary to the carrying value of assets and liabilities, the reported expenses and the statements of financial position classifications used. The impact on the financial statements could be material.



RELATED PARTY TRANSACTIONS

During the three and nine months ended September 30, 2020, the Company concluded the following transactions with related parties:

An amount including rent and property taxes of \$68,687 and \$205,420 were paid to a trust whose beneficiary is the controlling shareholder and CEO of the Company (\$66,740 and \$199,842 were respectively charged in 2019). A balance representing past due rent payments to the trust of \$58,050 (December 31, 2019 - \$Nil) is included in accounts payable at September 30, 2020.

On July 28, 2020, the Company renegotiated an existing lease with a trust whose beneficiary is the controlling shareholder and CEO of the Company and exercised its option to extend the terms and payments of this same lease with a trust whose beneficiary is the controlling shareholder and CEO of the Company. The lease liability was recalculated using an annual borrowing interest rate of 4%. As a result, the lease liability and the right-of-use assets increased by \$366,566. In return the trust agreed to convert the 2020 convertible loan approximately one year before it's due date. (maturity date September 18, 2021).

As at September 30, 2020, an amount of \$58,050 (December 31, 2019 - \$Nil), of interest payable and an accretion amount of \$Nil (December 31, 2019 - \$Nil), were accrued on the 2020 convertible loan of \$903,000 from a trust whose beneficiary is the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

An amount of \$1,427,698 was paid as a prepayment for rent and related property taxes and insurances to a trust whose beneficiary is the controlling shareholder and CEO of the Company (December 31, 2019 – \$Nil), of this amount \$1,178,529 is included in lease liability payments.

A balance due to the controlling shareholder and CEO of the Company amounted to \$21,221 (December 31, 2019 - \$214,470) for expense report, salary and vacation payables and is included in accounts payable and accrued liabilities as at September 30, 2020.

An amount of (\$922) and \$17,937 of interest accretion were accrued on the loan of \$295,000 from the controlling shareholder and CEO of the Company.



As at September 30, 2020, an amount of \$58,050 (December 31, 2019 - \$Nil), of interest payable and an accretion amount of \$Nil (December 31, 2019 - \$Nil), were accrued on the 2020 convertible loan of \$903,000 from a trust whose beneficiary is the controlling shareholder and CEO of the Company and are included in accounts payable and accrued liabilities.

Total compensation of key management and board members for the three and nine months ended September 30, 2020 consists of the following:

| | Three months ended September 30, | | Nine months ended September 30, | |
|---|---|-------------|--|-------------|
| | 2020 | 2019 | 2020 | 2019 |
| | \$ | \$ | \$ | \$ |
| Salaries –officers | 323,796 | 136,000 | 704,114 | 388,000 |
| Pension contributions | 8,195 | 2,040 | 14,061 | 6,120 |
| Fees – Board of Directors | 40,000 | - | 84,000 | - |
| Share – based compensation – officers | 1,098,610 | - | 1,163,909 | - |
| Share – based compensation - Board of Directors | 362,215 | - | 381,008 | - |
| Other benefits – officers | 250,724 | 3,374 | 488,577 | 10,252 |
| Total compensation | 2,083,540 | 141,414 | 2,835,669 | 404,372 |

A balance of \$87,926 of the amounts noted above, is included in accounts payable and accrued liabilities as at September 30, 2020 (December 31, 2019 - \$130,604).

SUBSEQUENT EVENTS

On October 26, 2020 the Company granted stock options to acquire 200,000 and 50,000 common shares of the Company to two Directors. The stock options have an exercise price of \$4.00 per common share and are exercisable over a period of five (5) years. The options are granted in accordance with the Company's stock option plan.

On November 9 and 12, 2020, an employee of the Company exercised a total of 20,000 stock options at a price of \$0.58.

On November 10, 2020 the Company issued 3,354,550 units at a price of \$3.60 per unit for gross proceeds of \$12,076,380. Each unit consists of one common share of the Company and one-half of one common share purchase warrant. Each common share purchase warrant entitles the holder thereof to purchase one common share at an exercise price of \$4.50 until November 10, 2022. In connection with the bought-deal short form prospectus offering, the Company paid finder fees of \$688,915 and issued 191,414 finder's compensation warrants to the agents.



On November 12, 2020 the acting Chief Financial Officer and Director of the Company, Mr. Michael Blank exercised 200,000 stock options at \$0.51 each for a total amount of \$102,000.

On November 18, 2020, the Company received final approval from the Toronto Stock Exchange (the “TSX”) to graduate from the TSX Venture Exchange (the “TSXV”) and list its common shares on the TSX.

On November 18, 2020 the Company exercised 1,500,000 HPQ warrants for a total amount of \$202,500. Each warrant entitled the holder thereof to acquire one common share at a price of \$0.135.

On November 20, 2020, the Company commenced trading its common shares on the Toronto Stock Exchange (the “TSX”) under the symbol PYR.

CRITICAL ACCOUNTING ESTIMATES, NEW AND FUTURE ACCOUNTING POLICIES AND FINANCIAL INSTRUMENTS

For a discussion of critical accounting estimates, new and future accounting policies and financial instruments, please refer to notes 3, 4 and 24 of the annual 2019 Consolidated Financial Statements. A number of the Company’s accounting policies and disclosures require the measurement of fair values, both for financial and non-financial assets and liabilities. The Company’s finance team is responsible for overseeing all significant fair value measurements, including level 3 measurements, reporting directly to the (Acting) Chief Financial Officer. The finance team regularly reviews significant unobservable inputs and valuation adjustments. Significant valuation issues are reported to the Company’s audit committee.

RISK FACTORS

The Company has identified below certain significant risks relating to the business of the Company and the industry in which it operates. The following information is only a summary of certain risk factors and is qualified in its entirety by reference to, and must be read in conjunction with, the detailed information appearing elsewhere in this MD&A. These risks and uncertainties are not the only ones facing the Company. Additional risks and uncertainties not currently known to the Company, or that the Company currently considers immaterial, may also impair the operations of the Company. If any such risks materialize into actual events or circumstances, the Company’s assets, liabilities, financial condition, results of operations (including future results of operations), business and business prospects, are likely to be materially and adversely affected. There is no assurance that risk management steps taken will avoid future loss due to the uncertainties described below or other unforeseen risks. An investment in the Common Shares or other securities of the Company is highly speculative and involves a high degree of risk. Before making any investment decision, prospective investors should carefully consider all the information contained in this document including, in particular, the risk factors described below.



Risks Related to the Company's Business and Industry

Operating Losses and Negative Operating Cash Flow

The Company has not yet generated substantial revenue from its products and services. The Company had net losses and negative operating cash flow for the financial years ended December 31, 2019 and December 31, 2018, offset by the net operating income of \$18,796,990 for the nine months ended September 30, 2020, resulting in an accumulated deficit of \$41,978,687 as at September 30, 2020. To the extent that the Company has net losses and negative operating cash flow in future periods, it may need to allocate a portion of its cash reserves to fund such negative cash flow. The Company may also be required to raise additional funds through the issuance of equity or debt securities. There can be no assurance that the Company will be able to generate a positive cash flow from its operations, that additional capital or other types of financing will be available when needed or that these financings will be on terms favourable to the Company.

The Company's ability to continue as a going concern is dependent upon its ability in the future to grow its revenue, achieve profitable operations, successfully developing and introducing new products and, in the meantime, to obtain the necessary financing to meet its obligations and repay its liabilities when they become due. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so in the future. External financing, predominantly by the issuance of equity and debt, might be sought to finance the operations of the Company; however, there can be no certainty that such funds will be available at terms acceptable to the Company, or at all. If the Company is unable to obtain sufficient additional financing, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations.

Actual Financial Position and Results of Operations May Differ Materially from the Expectations of the Company's Management

The Company's actual financial position and results of operations may differ materially from management's expectations. The Company has experienced some changes in its operating plans and certain delays in the timing of its plans. As a result, the Company's revenue, net income and cash flow may differ materially from the Company's projected revenue, net income and cash flow. The process for estimating the Company's revenue, net income and cash flow requires the use of judgment in determining the appropriate assumptions and estimates. These estimates and assumptions may be revised as additional information becomes available and as additional analyses are performed. In addition, the assumptions used in planning may not prove to be accurate, and other factors may affect the Company's financial condition or results of operations.



Revenue Risks

PyroGenesis may experience delays in achieving revenues, particularly with plasma gasification projects which have a long sales cycle. Revenues may be delayed or negatively impacted by issues encountered by the Company or its clients including:

- (i) unforeseen engineering and/or environmental problems;
- (ii) delays or inability to obtain required financing, licenses, permits and/or regulatory approvals;
- (iii) supply interruptions and/or labour disputes;
- (iv) foreign exchange fluctuations and/or collection risk; and
- (v) competition from other suppliers and/or alternative energy solutions that are less capital intensive.

There is no assurance that the business will perform as expected or that returns from the business will support the expenditures needed to develop it.

Concentration Risk

To date, a small number of customers have accounted for a majority of PyroGenesis' revenues. As its business expands, the Company expects that revenue distribution will be over a larger number of different customers. For the year ended December 31, 2019, sales of PyroGenesis to its five principal customers accounted for approximately 77% of its total revenue. For the year ended December 31, 2018, sales to three principal customers accounted for approximately 82% of PyroGenesis' total revenue. The loss of, or a reduction in, purchase orders or anticipated purchase orders from PyroGenesis' principal customers could have a material adverse effect on its business, financial condition and results of operations. Additionally, if one of PyroGenesis' customers is unable to meet its commitments to PyroGenesis, the Company's business, financial condition and results of operations could be adversely affected.

Technology Development and Manufacturing Capability Risks

PyroGenesis recently expanded into new areas of business and, as a result, many of the Company's products are at various stages of the development cycle. The Company may be unable to commercialise such products, or it may be unable to manufacture such products in a commercially viable manner. Whilst management is confident in both its technology and in its team of experienced engineers, scientists and technicians, it cannot know with certainty, which of its products will be commercialised, when such products will be commercialised, or whether such products will be able to be manufactured and distributed profitably.



Product Revenues/History of Losses

PyroGenesis has incurred losses in the majority of years since its inception. In the past the Company's operations have not generated sufficient earnings and cash flows to date to result in consistent profitability or positive cash flow. For the three, and nine months ending September 30, 2020 the Company has net comprehensive income of \$15,325,996 and \$18,796,990 respectively.

Additional financing and dilution

PyroGenesis may require additional financing. There can be no assurance that additional financing will be available to the Company when needed, or on terms acceptable to the Company. PyroGenesis' inability to raise financing to support ongoing operations or to fund capital expenditures could limit the Company's growth and may have a material adverse effect upon the Company.

The Company does not exclude raising additional funds by equity financing. In addition, at November 25, 2020, 191,414 compensation options, 9,050,000 stock options are currently issued and outstanding, together with 9,387,158 warrants. The exercise of stock options and/or warrants, as well as any new equity financings, represents dilution factors for present and future shareholders.

Reliance on Third Party Suppliers, Service Providers, Distributors and Manufacturers

The Company's direct and indirect suppliers, service providers, distributors and manufacturers may elect, at any time, to breach or otherwise cease to participate in supply, service, distribution or manufacturing agreements, or other relationships, on which the Company's operations rely. Loss of its suppliers, service providers, distributors and manufacturers could have a material adverse effect on the Company's business and operational results. Further, any disruption in the manufacturing process done by third party manufacturers could have a material adverse effect on the business, financial condition and results of operations of the Company. The Company cannot ensure that alternative production capacity would be available in the event of a disruption, or if it would be available, it could be obtained on favorable terms.

Manufacturing Facility

The vast majority of the Company's products are manufactured in its manufacturing facility located in Montreal, Quebec. Accordingly, the Company is highly dependent on the uninterrupted and efficient operation of its manufacturing facility. If for any reason the Company is required to discontinue production at its facility, it could result in significant delays in production of the Company's products and interruption of the Company's sales as it seeks to resume production. The Company may be unable to resume production on a timely basis. If operations at the facility were to be disrupted as a result of equipment failures, natural disasters, fires, accidents, work stoppages, power outages or other reasons, the Company's business, financial condition and/or results of operations could be materially adversely affected.



Sales Cycle and Fixed Price Contracts

PyroGenesis sales cycle is long and the signing of new contracts is subject to delay, over which the Company has little control. The Company also enters into sales contracts with fixed pricing, which may be impacted by changes over the period of implementation. There is no assurance that delays or problems in fulfilling contracts with clients will not adversely affect the Company's activities, operating results or financial position.

Reliance on Technology

PyroGenesis will depend upon continuous improvements in technology to meet client demands in respect of performance and cost, and to explore additional business opportunities. There can be no assurance that the Company will be successful in its efforts in this regard or that it will have the resources available to meet this demand. Whilst management anticipates that the research and development will allow the Company to explore additional business opportunities, there is no guarantee that such business opportunities will be presented or realized. The commercial advantage of the Company will depend to a significant extent on the intellectual property and proprietary technology of PyroGenesis and the ability of the Company to prevent others from copying such proprietary technologies. PyroGenesis currently relies on intellectual property rights and other contractual or proprietary rights, including (without limitation) copyright, trade secrets, confidential procedures, contractual provisions, licenses and patents, to protect its proprietary technology. PyroGenesis may have to engage in litigation in order to protect its patents or other intellectual property rights, or to determine the validity or scope of the proprietary rights of others. This type of litigation can be expensive and time consuming, regardless of whether or not the Company is successful. PyroGenesis may seek patents or other similar protections in respect of particular technology; however, there can be no assurance that any future patent applications will actually result in issued patents, or that, even if patents are issued, they will be of sufficient scope or strength to provide meaningful protection or any commercial advantage to the Company. Moreover, the process of seeking patent protection can itself be long and expensive. In the meantime, competitors may develop technologies that are similar or superior to PyroGenesis' technology or design around the patents owned by the Company, thereby adversely affecting the Company's competitive advantage in one or more of its areas of business. Despite the efforts of the Company, its intellectual property rights may be invalidated, circumvented, challenged, infringed or required to be licensed to others. It cannot be assured that any steps the Company may take to protect its intellectual property rights and other rights to such proprietary technologies that are central to the Company's operations will prevent misappropriation or infringement of its technology.



Changes to Contracts

PyroGenesis is dependent upon its ability to establish and develop new relationships and to build on existing relationships with current clients. The Company cannot provide assurance that it will be successful in maintaining or advancing its relationships with current clients or procure additional clients. In addition, PyroGenesis cannot provide assurance that its customers and the end users of its products will continue to provide the Company with business, or that existing customers and end users will not seek to renegotiate or terminate existing contracts providing for the sale of the Company's products and technology based on circumstances on which the Company is not currently aware. Any termination or amendment of a contract under which the Company derives an important portion of its revenues, including the Drosrite International Exclusive Agreement and the Dross Processing Service Agreement, and any adverse change in the relationship of the Company with its customers and end users, will have an adverse effect on the Company's business, financial condition and results of operations.

Sales to governments and governmental entities are subject to specific additional risks, such as delays in funding, termination of contracts or sub-contracts at the convenience of the government, termination, reduction or modification of contracts or sub-contracts in the event of changes in the government's policies or as a result of budgetary constraints and increased or unexpected costs resulting in losses or reduced profits under fixed price contracts.

Foreign Exchange Exposure

PyroGenesis' products and services are increasingly being sold in markets outside of Canada, whilst most of its operating expenses and capital expenditures are denominated in Canadian dollars. As a result, the Company is exposed to fluctuations in the foreign exchange rates between Canadian dollar and the currency in which a particular sale is transacted, which may result in foreign exchange losses that could affect earnings. Foreign sales are predominantly denominated in U.S. dollars. The Company has not to date sought to hedge the risks associated with fluctuations in foreign exchange rates.

Competition

The industry is competitive and PyroGenesis competes with a substantial number of companies which have greater technical and financial resources. There can be no assurance that such competitors will not substantially increase the resources devoted to the development and marketing of products and services that compete with those of the Company or that new or existing competitors will not enter the various markets in which PyroGenesis is active. There can be no assurance that competitors will not develop new and unknown technologies with which the Company may have difficulty competing. Furthermore, failure to remain cost competitive may result in PyroGenesis losing business to its competitors.

The plasma technology of PyroGenesis competes against other plasma and conventional technologies. Without limitation, the demand for the plasma technology of PyroGenesis, particularly in waste destruction and waste-to-energy systems, can be impacted by the commodity prices of the energy source used for the process and the price at which waste is accepted by landfills and traditional waste processing plants. While the Company believes that demand for sustainable waste management practices that have lower environmental impacts than traditional solutions such as landfill or incineration is increasing, the high flows of electricity necessary to operate the waste destruction and waste-to-energy systems of PyroGenesis have an impact on the operational costs of the Company's systems, and traditional solutions may constitute lower-cost solutions, particularly if commodity prices (including of oil and natural gas) remain low or experience a decline.



Management and Key Personnel

PyroGenesis depends on the skills and experience of its management team and other key employees. The Company relies heavily on its ability to attract and retain highly skilled personnel in a competitive environment. PyroGenesis may be unable to recruit, retain, and motivate highly skilled employees in order to assist the Company's business, especially activities that are essential to the success of the Company. Failure to recruit and retain highly-skilled employees may adversely affect PyroGenesis' business, financial condition and results of operations.

Implementation of a strategic plan

PyroGenesis' commercial strategy aims to leverage its products, consumables, and services whilst focusing on the resolution of problems within niche markets within the industries served by the Company. There can be no assurances as to the success of the Company's strategic plan, which should be considered under the risks perspective and difficulties frequently encountered by a developing business.

Adverse Decisions of Sovereign Governments

PyroGenesis conducts an increasing portion of its business internationally. There is no assurance that any sovereign government, including Canada's, will not establish laws or regulations that will not be detrimental to the Company's interests or that, as a foreign corporation, it will continue to have access to the regulatory agencies in other countries. Governments have, from time to time, established foreign exchange controls, which could have a material adverse effect on the Company's business, financial condition and results of operations.

Risks Related to International Operations

A substantial portion of the Company's sales are made to customers and end users outside Canada. The Company conducts its international operations directly or through distributors or other agents or intermediaries, including Drosrite International. The Company plans to continue to expand its international sales and marketing efforts. International operations are subject to a number of inherent risks, and the Company's future results could be adversely affected by a number of factors, including:



- unfavorable political or economic environments; requirements or preferences for domestic products or solutions, which could reduce demand for the Company's products;
- differing existing or future regulatory and certification requirements;
- unexpected legal or regulatory changes;
- greater difficulty in collecting accounts receivable and longer collection periods;
- difficulties in enforcing contracts; an inability to effectively protect intellectual property;
- tariffs and trade barriers, export regulations and other regulatory and contractual limitations on the Company's ability to sell its products; and
- potentially adverse tax consequences, including multiple and possibly overlapping tax structures.

Fluctuations in currency exchange rates could materially adversely affect sales denominated in currencies other than the Canadian dollar and cause a reduction in revenues derived from sales in a particular country. Financial instability in foreign markets could also affect the sale of the Company's products in international jurisdictions. In addition, the Company may be denied access to its end customers as a result of a closing of the borders of the countries in which its products are sold due to economic, legislative, political and military conditions in such countries.

There can be no assurance that such factors will not materially adversely affect the operations, growth prospects and sales of the Company and, consequently, its results of operations. In addition, revenues the Company earns in other jurisdictions may be subject to taxation by more than one jurisdiction, which could materially adversely affect the Company's earnings. Each of these factors could have an adverse effect on the Company's business, financial condition and results of operations.

Governmental Regulation

PyroGenesis is subject to a variety of federal, provincial, state, local and international laws and regulations relating namely to the environment, health and safety, export controls, currency exchange, labour and employment and taxation. These laws and regulations are complex, change frequently and have tended to become more stringent over time. Failure to comply with these laws and regulations may result in a variety of administrative, civil and criminal enforcement measures, including assessment of monetary penalties, imposition of remedial requirements and issuance of injunctions as to future compliance. The Company may be subject to compliance audits by regulatory authorities in the various countries in which it operates.

Government-funded Defense and Security Programs

Like most companies that supply products and services to governments, government agencies routinely audit and investigate government contractors. These agencies may review the Company's performance under its contracts, business processes, cost structure, and compliance with applicable laws, regulations and standards. The Company's incurred costs for each year are subject to audit by government agencies, which can result in payment demands related to costs they believe should be disallowed. The Company works with governments to assess the merits of claims and where appropriate reserve for amounts disputed. The Company could be required to provide repayments to governments and may have a negative effect on its results of operations. Contrary to cost-reimbursable contracts, some costs may not be reimbursed or allowed under fixed-price contracts, which may have a negative effect on the Company's results of operations if it experiences costs overruns.



Environmental Liability

PyroGenesis is subject to various environmental laws and regulations enacted in the jurisdictions in which it operates, which govern the manufacturing, processing, importation, transportation, handling and disposal of certain materials used in the Company's operations. Management believes that it has adequate procedures in place to address compliance with current environmental laws and regulations. Furthermore, management monitors the Company's practices concerning the handling of environmentally hazardous materials. However, there can be no assurance that the Company's procedures will prevent environmental damage occurring from spills of materials handled by the Company or that such damage has not already occurred. On occasion, substantial liabilities to third parties may be incurred. The Company may have the benefit of insurance maintained by it or the operator, however, the Company may become liable for damages against which it cannot adequately insure or against which it may elect not to insure because of high costs or other reasons. The Company's clients are subject to similar environmental laws and regulations, as well as limits on emissions to the air and discharges into surface and sub-surface waters. While regulatory developments that may follow in subsequent years could have the effect of reducing industry activity, the Company cannot predict the nature of the restrictions that may be imposed. The Company may be required to increase operating expenses or capital expenditures in order to comply with any new restrictions or regulations.

Product Liability and Other Lawsuits

PyroGenesis is subject to a variety of potential product liabilities claims and other lawsuits related with its operations, including liabilities and expenses associated with product defects. The Company maintains product liability and other insurance coverage that management believes is generally in accordance with the market practice in its industry, but there can be no assurance that the Company will always be adequately insured against all such potential liabilities.

A malfunction or the inadequate design of the Company's products could result in product liability or other tort claims. Accidents involving the Company's products could lead to personal injury or physical damage. Any liability for damages resulting from malfunctions could be substantial and could materially adversely affect the Company's business and results of operations. In addition, a well-publicized actual or perceived problem could adversely affect the market's perception of the Company's products. This could result in a decline in demand for the Company's products, which would materially adversely affect the Company's financial condition and results of operations.

The sale and use of products and processes developed by the Company may entail potential liability and possible warranty claims. The Company may be subject to personal injury claims for injuries resulting from use of its products. Although the Company maintains product liability insurance, there can be no assurance that such insurance will continue to be available on commercially reasonable terms or that the risks covered or coverage amounts will be sufficient to cover all claims.

Information systems disruptions

The Company relies on various information technology systems to manage its operations. Over the last several years, the Company has implemented, and it continues to implement, modifications and upgrades to such systems, including changes to legacy systems, replacing legacy systems with successor systems with new functionality, and acquiring new systems with new functionality. These types of activities subject the Company to inherent costs and risks associated with replacing and changing these systems, including impairment of the Company's ability to fulfill customer orders, potential disruption of its internal control structure, substantial capital expenditures, additional administration and operating expenses, retention of sufficiently skilled personnel to implement and operate the new systems, demands on management time and other risks and costs of delays or difficulties in transitioning to or integrating new systems into the Company's current systems. These implementations, modifications, and upgrades may not result in productivity improvements at a level that outweighs the costs of implementation, or at all. In addition, the difficulties with implementing new technology systems may cause disruptions in the Company's business operations and have a material adverse effect on its business, financial condition, or results of operations.



Security Breaches

As part of its day-to-day business, the Company stores its data and certain data about its customers in its global information technology system. Unauthorized access to the Company's data, including any regarding its customers, could expose the Company to a risk of loss of this information, loss of business, litigation and possible liability. These security measures may be breached by intentional misconduct by computer hackers, as a result of third-party action, employee error, malfeasance or otherwise. Additionally, third parties may attempt to fraudulently induce employees or customers into disclosing sensitive information such as usernames, passwords or other information in order to gain access to the data of the Company's customers or the Company's data, including the Company's intellectual property and other confidential business information, or the Company's information technology systems. Because the techniques used to obtain unauthorized access, or to sabotage systems, change frequently and generally are not recognized until launched against a target, the Company may be unable to anticipate these techniques or to implement adequate preventative measures. Any security breach could result in a loss of confidence by the Company's customers, damage its reputation, disrupt its business, lead to legal liability and negatively impact its future sales.

Public Health Crises

Public health crises, including local, regional, national or international outbreak of a contagious disease, could have an adverse effect on local economies, the global economy, and the markets in which the Company operates and markets its products, and may adversely impact the price and demand for the Company's products and the ability of the Company to operate and market its products. Any such alterations or modifications could cause substantial interruption to the Company's business, any of which could have a material adverse effect on the Company's operations or financial results, and could include temporary closures of one or more of the Company's or its partner's offices or facilities; temporary or long-term labor shortages; temporary or long-term adverse impacts on the Company's supply chain and distribution channels; the potential of increased network vulnerability and risk of data loss resulting from increased use of remote access and removal of data from the Company's facilities.

Subsequent to December 31, 2019, the global emergence of coronavirus (COVID-19) occurred. The global outbreak of COVID-19 has resulted in governments worldwide enacting emergency measures to protect against the spread of the virus. These measures, which include, among other things, limitations on travel, self-imposed quarantine periods and social distancing measures, have caused material disruption to businesses globally resulting in an economic slowdown. Global equity markets have experienced significant volatility and weakness. Governments and central banks have reacted with significant monetary and fiscal interventions designed to stabilize economic conditions. The duration and impact of the COVID-19 outbreak is unknown at this time, as is the efficacy of any government and/or central bank interventions. It is not possible to reliably estimate the length and severity of these developments and the impact on the financial results and condition of the Company in future periods.

As of the date of this MD&A, the Company has successfully continued operations under COVID-19 protocols. COVID-19 has not resulted in any material delays in the development or testing of the Company's products or any other material development projects. The Company is not currently experiencing any delays or interruptions in service or product delivery. At the outset of the COVID-19 pandemic, certain of the Company's operations were negatively impacted, but have since normalized. The Company has not experienced any material disruption in its supply chain, and the pandemic has not materially impacted the Company's business or delivery of services or products.

The Company's production schedule has continued throughout COVID-19 on a modified employee schedule, with certain non-production employees working remotely. The Company has been able to operate largely unaffected by the COVID-19 pandemic. Notwithstanding the foregoing, if the Company or its vendors and suppliers are unable to continue operations or keep up with increasing demands as a result of COVID-19, customers may experience delays or interruptions in service or the delivery of products, which may be detrimental to the Company's reputation, business, results of operations and financial position. The Company cautions that it is impossible to fully anticipate or quantify the effect and ultimate impact of the COVID-19 pandemic as the situation is rapidly evolving. The extent to which COVID-19 impacts the Company's results will depend on future developments, which are highly uncertain and cannot be predicted, including new information that may emerge concerning the severity of COVID-19 and the actions taken by governments to contain it or treat its impact, including shelter in place directives, which, if extended, may impact the economies in which the Company now operates, or may in the future operate, key markets into which the Company sells products and delivers services, and markets through which the Company's key suppliers source their products.



Litigation

The Company may from time to time become party to litigation in the ordinary course of business which could adversely affect its business. Should any litigation in which the Company becomes involved be determined against the Company, such a decision could adversely affect the Company's ability to continue operating and the market price for the Common Shares and could use significant resources. Even if the Company is involved in litigation and wins, litigation can redirect significant Company resources. Litigation may also create a negative perception of the Company's brand.

Trade Secrets May Be Difficult to Protect

The Company's success depends upon the skills, knowledge and experience of its scientific and technical personnel, consultants and advisors, as well as contractors. Because the Company operates in a highly competitive industry, it relies in part on trade secrets to protect its proprietary products and processes. However, trade secrets are difficult to protect. The Company generally enters into confidentiality or non-disclosure agreements with its corporate partners, employees, consultants, outside scientific collaborators, developers and other advisors. These agreements generally require that the receiving party keep confidential, and not disclose to third parties, confidential information developed by the receiving party or made known to the receiving party by the Company during the course of the receiving party's relationship with the Company. These agreements also generally provide that inventions conceived by the receiving party in the course of rendering services to the Company will be its exclusive property, and the Company enters into assignment agreements to perfect its rights.

These confidentiality, inventions and assignment agreements, where in place, may be breached and may not effectively assign intellectual property rights to the Company. The Company's trade secrets also could be independently discovered by competitors, in which case the Company would not be able to prevent the use of such trade secrets by its competitors. The enforcement of a claim alleging that a party illegally obtained and was using the Company's trade secrets could be difficult, expensive and time consuming and the outcome could be unpredictable. The failure to obtain or maintain meaningful trade secret protection could adversely affect the Company's competitive position.

Risks Related to Acquiring Companies

The Company may acquire other companies in the future and there are risks inherent in any such acquisition. Specifically, there could be unknown or undisclosed risks or liabilities of such companies for which the Company is not sufficiently indemnified. Any such unknown or undisclosed risks or liabilities could materially and adversely affect the Company's financial performance and results of operations. The Company could encounter additional transaction and integration related costs or other factors such as the failure to realize all of the benefits from such acquisitions. All of these factors could cause dilution to the Company's earnings per share or decrease or delay the anticipated accretive effect of the acquisition and cause a decrease in the market price of the Company's securities. The Company may not be able to successfully integrate and combine the operations, personnel and technology infrastructure of any such acquired company with its existing operations. If integration is not managed successfully by the Company's management, the Company may experience interruptions in its business activities, deterioration in its employee and customer relationships, increased costs of integration and harm to its reputation, all of which could have a material adverse effect on the Company's business, financial condition and results of operations. The Company may experience difficulties in combining corporate cultures, maintaining employee morale and retaining key employees. The integration of any such acquired companies may also impose substantial demands on the management. There is no assurance that these acquisitions will be successfully integrated in a timely manner.

Global Economic Uncertainty

Demand for the Company's products and services are influenced by general economic and consumer trends beyond the Company's control. There can be no assurance that the Company's business and corresponding financial performance will not be adversely affected by general economic or consumer trends. In particular, global economic conditions are still tight, and if such conditions continue, recur or worsen, there can be no assurance that they will not have a material adverse effect on the Company's business, financial condition and results of operations.



Furthermore, such economic conditions have produced downward pressure on stock prices and on the availability of credit for financial institutions and corporations. If these levels of market disruption and volatility continue, the Company might experience reductions in business activity, increased funding costs and funding pressures, as applicable, a decrease in the market price of the Common Shares, a decrease in asset values, additional write-downs and impairment charges and lower profitability.

Inability to Renew Leases

The Company may be unable to renew or maintain its leases (commercial or real property) on commercially acceptable terms or at all. An inability to renew its leases, or a renewal of its leases with a rental rate higher than the prevailing rate under the applicable lease prior to expiration, may have an adverse impact on the Company's operations, including disruption of its operations or an increase in its cost of operations. In addition, in the event of non-renewal of any of the Company's leases, the Company may be unable to locate suitable replacement properties for its facilities or it may experience delays in relocation that could lead to a disruption in its operations. Any disruption in the Company's operations could have an adverse effect on its financial condition and results of operations.

Financial Reporting and Other Public Issuer Requirements

The Company is subject to reporting and other obligations under applicable Canadian Securities Laws and rules of any stock exchange on which the Common Shares are then-listed. These reporting and other obligations will place significant demands on the management, administrative, operational and accounting resources. If the Company is unable to accomplish any such necessary objectives in a timely and effective manner, the Company's ability to comply with its financial reporting obligations and other rules applicable to reporting issuers could be impaired. Moreover, any failure to maintain effective internal controls could cause the Company to fail to satisfy its reporting obligations or result in material misstatements in its financial statements. If the Company cannot provide reliable financial reports or prevent fraud, its reputation and operating results could be materially adversely affected which could also cause investors to lose confidence in the Company's reported financial information, which could in turn result in a reduction in the trading price of the Common Shares.

The Company is a "venture issuer" as defined in NI 52-109. In contrast to the certificate required for non-venture issuers under NI 52-109, the certificates filed by the Company's officers are not required to include representations relating to the establishment and maintenance of disclosure controls and procedures ("DC&P") and ICFR, as defined in NI 52-109. In particular, the certifying officers are not be required to make any representations relating to the establishment and maintenance of (i) controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the Company in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and (ii) a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS.

Inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost-effective basis DC&P and ICFR may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.

Influence of the Significant Shareholders

To the Company's knowledge, no shareholder beneficially owns, or controls or directs, directly or indirectly, more than 10% of the voting rights attached to the Company's outstanding voting securities, except for Mr. Peter Pascali, President and Chief Executive Officer of the Company, who holds or controls, directly or indirectly, 77,038,722 Common Shares, representing in aggregate 49.93% of the total voting rights attached to the outstanding Common Shares, and options and warrants to acquire an additional 12,198,276 Common Shares (increasing the total number of Common Shares held or controlled, directly or indirectly, by him to 89,236,998 Common Shares, or 53.60% of the Common Shares, on a fully diluted basis). In addition, from time to time, the Company may have other shareholders who have the ability to exercise significant influence over matters submitted to the shareholders of the Company for approval, whether subject to approval by a majority of the shareholders of the Company or subject to a class vote or special resolution.



Limited Control Over the Company's Operations

Holders of the Common Shares have limited control over changes in the Company's policies and operations, which increases the uncertainty and risks of an investment in the Company. The Board determines major policies, including policies regarding financing, growth, debt capitalization and any future dividends to shareholders of the Company. Generally, the Board may amend or revise these and other policies without a vote of the holders of the Common Shares. The Board's broad discretion in setting policies and the limited ability of holders of the Common Shares to exert control over those policies increases the uncertainty and risks of an investment in the Company.

Change in Tax Laws

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to the Company. These enactments and events could require the Company to pay additional tax amounts on a prospective or retroactive basis, thereby substantially increasing the amount of taxes the Company is liable to pay in the relevant tax jurisdictions. Accordingly, these events could decrease the capital that the Company has available to operate its business. Any or all of these events could harm the business and financial performance of the Company.

Forward-Looking Information

The forward-looking information included in this MD&A relating to, among other things, the Company's future results, performance, achievements, prospects, targets, intentions or opportunities or the markets in which it operates and the other statements listed is based on opinions, assumptions and estimates made by the Company's management in light of its experience and perception of historical trends, current conditions and expected future developments, as well as other factors that the Company believes are appropriate and reasonable in the circumstances. However, there can be no assurance that such estimates and assumptions will prove to be correct. The Company's actual results in the future may vary significantly from the historical and estimated results and those variations may be material. The Company makes no representation that its actual results in the future will be the same, in whole or in part, as those included in this MD&A.

Credit Facilities

The Company's credit facilities and financing agreements mature on various dates. There can be no assurance that such credit facilities or financing agreements will be renewed or refinanced, or if renewed or refinanced, that the renewal or refinancing will occur on equally favourable terms to the Company. The Company's ability to continue operating may be adversely affected if the Company is not able to renew its credit facilities or arrange refinancing, or if such renewal or refinancing, as the case may be, occurs on terms materially less favorable to the Company than at present. The Company's current credit facilities and financing agreements impose covenants and obligations on the Company. There is a risk that such loans may go into default if there is a breach in complying with such covenants and obligations, which could result in the lenders realizing on their security and causing our shareholders to lose some or all of their investment.

Risks Related to the Company's Securities

Potential Volatility of Common Share Price

The market price of the Common Shares could be subject to significant fluctuations. Some of the factors that may cause the market price of the Common Shares to fluctuate include:

- (i) the public's reaction to the Company's press releases, announcements and filings with regulatory authorities and those of its competitors;



- (ii) fluctuations in broader stock market prices and volumes;
- (iii) changes in market valuations of similar companies;
- (iv) investor perception of the Company, its prospects or the industry in general;
- (v) additions or departures of key personnel;
- (vi) commencement of or involvement in litigation;
- (vii) announcements by the Company or its competitors of strategic alliances, significant contracts, new technologies, acquisitions, commercial relationships, joint ventures or capital commitments;
- (viii) variations in the Company's quarterly results of operations or cash flows or those of other comparable companies;
- (ix) revenues and operating results failing to meet the expectations of securities analysts or investors in particular quarter;
- (x) changes in the Company's pricing policies or the pricing policies of its competitors;
- (xi) future issuances and sales of Common Shares;
- (xii) sales of Common Shares by insiders of the Company;
- (xiii) third party disclosure of significant short positions;
- (xiv) demand for and trading volume of Common Shares;
- (xv) changes in securities analysts' recommendations and their estimates of the Company's financial performance;
- (xvi) short-term fluctuation in stock price caused by changes in general conditions in the domestic and worldwide economies or financial markets;
and
- (xvii) the other risk factors described under this heading of the MD&A.

The realization of any of these risks and other factors beyond the Company's control could cause the market price of the Common Shares to decline significantly.

In addition, broad market and industry factors may harm the market price of the Common Shares. Hence, the price of the Common Shares could fluctuate based upon factors that have little or nothing to do with the Company, and these fluctuations could materially reduce the price of the Common Shares regardless of the Company's operating performance. In the past, following a significant decline in the market price of a company's securities, there have been instances of securities class action litigation having been instituted against that company. If the Company were involved in any similar litigation, it could incur substantial costs, management's attention and resources could be diverted and it could harm the Company's business, operating results and financial condition.



Market Liquidity

The market price for the Common Shares could be subject to wide fluctuations. Factors such as the announcement of significant contracts, technological innovations, new commercial products, patents, a change in regulations, quarterly financial results, future sales of Common Shares by the Company or current shareholders, and many other factors could have considerable repercussions on the price of the Common Shares. In addition, the financial markets may experience significant price and value fluctuations that affect the market prices of equity securities of companies that sometimes are unrelated to the operating performance of these companies. Broad market fluctuations, as well as economic conditions generally may adversely affect the market price of the Common Shares.

Dividends to Shareholders

The Company does not anticipate paying cash dividends on the Common Shares in the foreseeable future. The Company currently intends to retain all future earnings to fund the development and growth of its business. Any payment of future dividends will be at the discretion of the directors and will depend on, among other things, the Company's earnings, financial condition, capital requirements, level of indebtedness, statutory and contractual restrictions applying to the payment of dividends, and other considerations that the directors deems relevant.

Impact of Future Sales by Existing Shareholders

If the Company's shareholders sell substantial amounts of the Common Shares in the public market, the market price of the Common Shares could decrease. The perception among investors that these sales will occur could also produce this effect. All currently outstanding Common Shares other than those subject to lock-up agreements executed by certain existing shareholders will, subject to applicable securities laws, generally be immediately available for resale in the public markets.

Subject to compliance with applicable securities laws, the Company's officers, directors and their affiliates may sell some or all of their Common Shares in the future. No prediction can be made as to the effect, if any, such future sales of Common Shares will have on the market price of the Common Shares prevailing from time to time. However, the future sale of a substantial number of Common Shares by the Company's officers, directors and their affiliates, or the perception that such sales could occur, could materially adversely affect prevailing market prices for the Common Shares.

Additional Common Shares issuable upon the exercise of stock options may also be available for sale in the public market, which may also cause the market price of the Common Shares to fall. Accordingly, if substantial amounts of Common Shares are sold in the public market, the market price could fall.

Working Capital and Future Issuances

The Company may issue additional Common Shares in the future which may dilute a shareholder's holdings in the Company. The Articles permit the issuance of an unlimited number of Common Shares, and shareholders of the Company will have no pre-emptive rights in connection with any further issuances. The directors of the Company have the discretion to determine the provisions attaching to the Common Shares and the price and the terms of issue of further Common Shares.

Additional equity financing may be dilutive to holders of Common Shares. Debt financing may involve restrictions on the Company's financing and operating activities. Debt financing may be convertible into other securities of the Company which may result in immediate or resulting dilution. In either case, additional financing may not be available to the Company on acceptable terms or at all. If the Company is unable to raise additional funds as needed, the scope of its operations or growth may be reduced and, as a result, the Company may be unable to fulfil its long-term goals. In this case, investors may lose all or part of their investment. Any default under such debt instruments could have a material adverse effect on the Company, its business or the results of operations.



Securities or Industry Analysts

The trading market for Common Shares could be influenced by the research and reports that industry and/or securities analysts may publish about the Company, its business, the market or competitors. If any of the analysts who may cover the Company's business change their recommendation regarding the Common Shares adversely, or provide more favourable relative recommendations about its competitors, the share price would likely decline. If any analyst who may cover the Company's business were to cease coverage or fail to regularly publish reports on the Company, it could lose visibility in the financial markets, which in turn could cause the share price or trading volume to decline.

OUTLOOK

The third quarter continues to reflect the results of the strategic long term focusing/positioning which has been taking place over the past several years.

To date during 2020, PyroGenesis has with respect to:

(i) Business Segments:

- a) received significant payments under the \$20MM+ contract with Drosrite International, thereby validating announcements made during 2019;
- b) established a relationship with a US based tunneling company for plasma torches;
- c) signed a contract for approx. \$3MM with HPQ Nano Silicon Powders Inc, a wholly owned subsidiary of HPQ Silicon Resources Inc, to exploit the benefits of the novel PUREVAP™ Nano Silicon Reactor (NSiR) to make nano Silicon powder for the battery market,
- d) established a relationship with an OEM in North America with the intent to eventually supply powders for their 3D printing needs. This augments our relationship with Aubert & Duval, while at the same time de-risking our dependence on them;
- e) closed the long-awaited order of \$11.5MM for the US Navy. This contract was for two plasma waste destruction systems, one for each ship in the US Navy's two-ship build;
- f) established itself in the iron ore pelletization industry as a supplier of plasma torches geared to replacing existing fossil fuel burners and thereby reducing greenhouse gas (GHG) emissions. Interest is also gaining traction in other industries with GHG emissions reduction targets, and

(ii) Financials:

- a) retired a \$3MM convertible debenture in full, and repaid all other term loans;
- b) benefited from early conversion of warrants maturing in 2021 and beyond of approx. \$4MM;
- c) bought back approximately 1.3 million shares under a Normal Course Issuer Bid at an average price of approximately 0.75;



- d) increased the Company's investment in HPQ, which has subsequently experienced a significant increase in market capitalization;
- e) posted profitable operations in Q3 2020 (even after a onetime non-cash charge of approx. \$3MM for share based compensation);
- f) posted positive cash flow from operations; for three and nine months 2020 of \$2.4 MM and \$1.6MM respectively versus (\$0.849 MM) and (\$2.8MM) over the same periods in 2019;
- g) booked backlog of signed contracts of approx. \$36.4MM as of November 25th, 2020;
- h) closed a \$12MM bought deal (oversubscribed by >100%);
- i) graduated to the most senior exchange in Canada, the Toronto Stock Exchange (TSX).

At the time of this writing, the Company is well positioned with a clean balance sheet, over \$17MM in cash on hand, and a healthy backlog of approx. \$36.4MM.

One of the most significant developments in 2020 is the emergence of the Company as a credible provider of GHG reducing technologies to the iron ore pelletization industry with its patented plasma torch process geared to replacing fossil fuel burners. The Company is not only well positioned to address this opportunity with iron ore pelletizers, but to also leveraging off of this first mover advantage in other industries which are also under pressure to reduce GHG emissions and are similarly using fossil fuel burners (such as the cement, aluminum and glass industries).

The Company is already repositioning its offerings to address the world-wide need for solution to reduce GHG emissions, and expects a significant increase in interest in its offerings as a result. The Company is selectively considering strategic alliances with technologies/technology providers which could accelerate this strategic focus with a goal to become a world leader in GHG emissions reduction.

The Company has, as of November 25th, 2020, approximately \$6MM of in-the-money warrants and options expiring in 2020 and 2021. The Company also has over \$50MM in tax loss carryforwards (roughly evenly distributed between federal and provincial obligations) which is not reflected as an asset on the balance sheet.

Additional information regarding the Company can be found on SEDAR at www.sedar.com, OTC Markets (www.otcm Markets.com), and on the Company's website at www.pyrogenesis.com

**FORM 52-109FV2
CERTIFICATION OF INTERIM FILINGS
VENTURE ISSUER BASIC CERTIFICATE**

I, P. Peter Pascali, President and CEO of PyroGenesis Canada Inc., certify the following:

1. **Review:** I have reviewed the interim financial statements and interim MD&A (together, the “interim filings”) of PyroGenesis Canada Inc. (the “issuer”) for the interim period ended September 30, 2020.
2. **No misrepresentations:** Based on my knowledge, having exercised reasonable diligence, the interim filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, with respect to the period covered by the interim filings.
3. **Fair presentation:** Based on my knowledge, having exercised reasonable diligence, the interim financial statements together with the other financial information included in the interim filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date of and for the periods presented in the interim filings.

Date: **November 25th, 2020**

/s/ P. Peter Pascali

P. Peter Pascali

President and Chief Executive Officer

NOTE TO READER

In contrast to the certificate required for non-venture issuers under National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings (NI 52-109), this Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures (DC&P) and internal control over financial reporting (ICFR), as defined in NI 52-109. In particular, the certifying officers filing this certificate are not making any representations relating to the establishment and maintenance of

- i. controls and other procedures designed to provide reasonable assurance that information required to be disclosed by the issuer in its annual filings, interim filings or other reports filed or submitted under securities legislation is recorded, processed, summarized and reported within the time periods specified in securities legislation; and
- ii. a process to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer's GAAP.

The issuer's certifying officers are responsible for ensuring that processes are in place to provide them with sufficient knowledge to support the representations they are making in this certificate. Investors should be aware that inherent limitations on the ability of certifying officers of a venture issuer to design and implement on a cost effective basis DC&P and ICFR as defined in NI 52-109 may result in additional risks to the quality, reliability, transparency and timeliness of interim and annual filings and other reports provided under securities legislation.

FORM 52-109FV2
CERTIFICATION OF INTERIM FILINGS
VENTURE ISSUER BASIC CERTIFICATE

I, Michael Blank, Chief Financial Officer of PyroGenesis Canada Inc., certify the following:

1. **Review:** I have reviewed the interim financial statements and interim MD&A (together, the “interim filings”) of PyroGenesis Canada Inc. (the “issuer”) for the interim period ended September 30, 2020.
2. **No misrepresentations:** Based on my knowledge, having exercised reasonable diligence, the interim filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, with respect to the period covered by the interim filings.
3. **Fair presentation:** Based on my knowledge, having exercised reasonable diligence, the interim financial statements together with the other financial information included in the interim filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date of and for the periods presented in the interim filings.

Date: **November 25th, 2020**

/s/ Michael Blank

Michael Blank

Chief Financial Officer

NOTE TO READER

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**PyroGenesis Receives Solar Impulse Efficient Solution Label;
Further Solidifying its Position as an Emerging Leader
in GHG Emissions Reduction**

MONTREAL, Quebec (GlobeNewswire – December 8th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), (the "Company", the "Corporation" or "PyroGenesis") a Company that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that it has been awarded the "Solar Impulse Efficient Solution" Label (the "Label") from the Swiss-based Solar Impulse Foundation (the "Foundation") for PyroGenesis' proprietary APT high-powered ("APT-HP") plasma torch for replacing fossil fuel burners. The Foundation's purpose is to identify existing solutions that are both clean, profitable, and having a positive impact on quality of life.

PyroGenesis' proprietary APT-HP plasma torch presents an environmentally friendly alternative to fossil fuel burners for use in industrial applications which significantly reduce greenhouse gas emissions. PyroGenesis' APT-HP can be easily retrofitted into existing installations (such as iron ore furnaces where PyroGenesis has the patent).

To receive this Label, PyroGenesis' plasma torches went through a rigorous assessment by a group of independent experts who judged PyroGenesis' proprietary plasma torches against five (5) criteria covering three main topics; Feasibility, Environmental and Profitability. All labelled solutions are part of the #1000solutions portfolio that are to be presented to decision-makers in business and government by Mr. Bertrand Piccard, Chairman of the Solar Impulse Foundation based in Lausanne, Switzerland. The underlying purpose of the Foundation is to encourage the worldwide adoption of more ambitious environmental targets, and thereby fast-tracking the implementation of these solutions on a large scale.

"We are proud to receive this recognition from the Solar Impulse Foundation, which demonstrates PyroGenesis' emerging leadership role in the reduction of greenhouse gas emissions, specifically as a provider of clean high-powered plasma torches used as a replacement of fossil fuel burners in industrial applications," said Mr. P. Peter Pascali, CEO and Chair of PyroGenesis. "Having a technological solution labeled by the Foundation not only further validates the value of our high-powered plasma torches as a credible, innovative, profitable and ecological solution, but also provides the Company greater credibility and visibility in the marketplace."



PyroGenesis' APT-HP plasma torch

About the “Solar Impulse Efficient Solution” Label

One of the first labels to uniquely identify positive impact technologies which provide solutions to not only protect the environment, but which are also financially viable. The “Solar Impulse Efficient Solution” Label is awarded to companies following a rigorous assessment performed by external independent experts. In collaboration with renowned institutions, solutions applying for the label must go through a validation process based on verified standards. The “Solar Impulse Efficient Solution” Label identifies and serves as an award for clean and profitable environmental solutions.

About Solar Impulse Foundation.

The Solar Impulse Foundation aims at selecting 1,000 unique solutions that protect the environment in a profitable way, and award them the Solar Impulse Efficient Solution Label. This label seeks to bridge the gap between ecology and economy, bringing together protection of the environment, and financial viability, while underscoring and emphasizing economical viable solutions to environmental problems, and opportunities for clean economic growth. By selecting 1,000 unique Efficient Solutions, the Solar Impulse Foundation seeks to demonstrate that environmental solutions exist, can create jobs, and generate profit while, at the same time, reducing polluting emissions and preserving natural resources.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company’s core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis’ operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcm Markets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the Toronto Stock Exchange, its Regulation Services Provider (as that term is defined in the policies of the Toronto Stock Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



**PyroGenesis' Board Approves Plan to File
Application to NASDAQ for Q1 2021 Listing**

MONTREAL, Quebec (GlobeNewswire – December 8th, 2020) - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), (the "Company", the "Corporation" or "PyroGenesis") a Company that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that at the Company's Board of Directors' (the "Board") meeting on December 7th, 2020, it was formally approved to move forward with the strategic decision to file an application to list its common shares ("Shares") on the NASDAQ Stock Exchange ("NASDAQ") over the next several days. NASDAQ is the second largest exchange by market capitalization worldwide, and is home to many of the world's best technology companies.

The Company has engaged Nelson Mullins Riley & Scarborough LLP as its US legal counsel to process the NASDAQ listing, and the Company's external Canadian legal counsel will provide the required oversight during this process.

"We are pleased to announce today another significant step towards ultimately enhancing shareholder value," said Mr. P. Peter Pascali, CEO and Chair of PyroGenesis. "The United States has the largest capital market in the world and, as such, a NASDAQ listing has always been on our radar as one of the many strategies to execute as part of our long-term vision for the Company. On the back of our recent achievements, and our successful uplisting to the Toronto Stock Exchange ("TSX"), the Board decided that the timing was right to proceed with this application. After discussions with our US legal counsel, and a representative of NASDAQ, it was confirmed that the Company meets the standard requirements for a listing. However, there still remains a rigorous application procedure which the Company must pass before a final listing is granted. The listing, barring any delays or objections, is expected before the end of Q1 2021."

There will not be a concurrent financing associated with this listing nor will there be a reverse stock split.

"A NASDAQ listing is a natural next step for the Company," said Ms. Rodayna Kafal, VP IR/Comms and Strategic BD. "We believe a NASDAQ listing should, amongst other things, (i) provide additional opportunities to attract institutional and retail investors, thus allowing the Company to further broaden its investor base, and (ii) increase the visibility and credibility of the Company worldwide thereby attracting additional sales, partnerships, and M&A opportunities."

In advance of an anticipated listing on NASDAQ, PyroGenesis will, over the next several days, formally file an application to list on NASDAQ. Shortly thereafter, the Company will file a 40-F registration statement with the United States Securities and Exchange Commission (SEC). The listing of the Company's Shares on NASDAQ remains subject to the approval of the exchange, and the satisfaction of all applicable listing and regulatory requirements. The Company will continue to maintain the listing of its Shares on the TSX and, subsequent to a successful listing, would trade on both exchanges under the ticker symbol "PYR".

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

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RELATED LINK: <http://www.pyrogenesis.com/>



*Source: PyroGenesis Canada Inc.
December 16, 2020 08:35 ET*

PyroGenesis Signs Additional \$1.1MM Contract with US Tunneling Company

MONTREAL, Dec. 16, 2020 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), (the "Company", the "Corporation" or "PyroGenesis") a Company that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that, further to its press releases dated April 1st and 21st, 2020, it has signed an additional contract (the "Contract") with a US based tunneling client (the "Client") for approx. \$1.1MM. The total value of all contracts, including the one announced today, entered into with the Client is in excess of \$3.6MM. The Company has received \$1.3MM to date under these contracts. The Client's name will remain confidential for competitive reasons.

Based on these contracts, PyroGenesis will be designing, manufacturing, testing and supplying the Client with a plasma torch tailored specifically for tunneling (the "TT1 Torch"). The TT1 Torch is expected to be delivered in the second half of 2021, at which time it will then be tested. The Client is committed to purchase exclusively from PyroGenesis, and the Company is committed to exclusively supply the Client with plasma torches and auxiliary equipment for tunneling applications.

PyroGenesis' high-powered plasma torch will be used to replace traditional tunneling methods. An important benefit in using plasma-based tools versus traditional methods is its potential to drill through all geologies with greater flexibility in size diameter, while at the same time being more economical, efficient and environmentally friendly.

"This is the second announcement PyroGenesis has made in as many months which highlight advances in our plasma torch offerings," said Mr. P Peter Pascali, CEO and Chair of PyroGenesis. "As you can see, not only are our torch offerings steadily moving forward, but are doing so in totally independent applications. This bodes well for the future and once again, underscores both the interest in, and versatility of, our torch offerings which at the same time are being recognized as effective environmental solutions."

About PyroGenesis Canada Inc

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD

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RELATED LINK: <http://www.pyrogenesis.com/>



*Source: PyroGenesis Canada Inc.
December 22, 2020 08:35 ET*

PyroGenesis Files Listing Application with NASDAQ

MONTREAL, Dec. 22, 2020 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), (the "Company", the "Corporation" or "PyroGenesis") a Company that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that, further to its Press Release dated December 8th, 2020, the Company has submitted a formal application to list its common shares ("Shares") on the NASDAQ Stock Exchange ("NASDAQ"). NASDAQ is the second largest exchange by market capitalization worldwide and is home to many of the world's best technology companies.

In connection with its application to list on NASDAQ, PyroGenesis will, in due course, file a Form 40-F Registration Statement with the United States Securities and Exchange Commission (SEC). The listing of the Company's Shares on NASDAQ remains subject to the approval of NASDAQ and the satisfaction of all applicable listing and regulatory requirements. Based on its typical review process, and according to NASDAQ's website, the process usually takes 6 to 8 weeks. Therefore, it is expected that the Company's Shares will be listed before the end of Q1 2021.

"We believe the Company is entering a heightened growth phase and the timing could not be better for uplisting our Shares to NASDAQ," said Mr. P. Peter Pascali, CEO & Chair of PyroGenesis. "We expect that the move to NASDAQ will increase awareness of PyroGenesis, and its offerings, both within the financial community and amongst potential clients. We believe this listing will also enhance trading liquidity by broadening our appeal to a larger shareholder base, in the US and internationally, as we execute our business plan and drive long-term shareholder value. We are very much looking forward to elevating the Company's profile with this listing."

As previously disclosed, there will not be a concurrent financing associated with this listing nor will there be a reverse stock split.

The Company will continue to maintain the listing of its Shares on the Toronto Stock Exchange ("TSX"), and would trade on both exchanges under the ticker symbol "PYR."

The Company has engaged Nelson Mullins Riley & Scarborough LLP as its US legal counsel to process the NASDAQ listing.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



*Source: PyroGenesis Canada Inc.
January 06, 2021 12:51 ET*

PyroGenesis' CEO to Present at SNN Network Canada Virtual Event on January 7

MONTREAL, Jan. 06, 2021 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that Mr. P. Peter Pascali, CEO of PyroGenesis, is scheduled to present at the SNN Network Canada Virtual Event on Thursday, January 7, 2021 at 10:30 AM Eastern Time.

To access the live presentation, please use the following information:

SNN Network Canada Virtual Event 2021

Date: Thursday, January 7, 2021

Time: 10:30 AM Eastern Time (7:30 AM Pacific Time)

Webcast: <https://www.webcaster4.com/Webcast/Page/2059/39297>

If you would like to book 1x1 investor meetings with Mr. Pascali, and/or to watch the Company's presentation, please make sure you are registered for the virtual event here: <https://canada.snn.network/signup>.

1x1 meetings will be scheduled and conducted via a private, secure, video conference through the conference event platform provided.

For investors unable to attend the live presentation, all company presentations/webcasts will be available on the conference event platform at this link: <https://canada.snn.network/agenda>

The SNN Network Canada Virtual Event website is available here: <https://canada.snn.network/>

About SNN.Network

SNN.Network is your multimedia financial news platform for discovery, transparency and due diligence. This is your one-stop hub to find new investment ideas, check in on watchlist, gather the most up-to-date information on the Small-, Micro-, Nano-Cap market with the goal to help you towards achieving your wealth generation goals. Follow the companies YOU want to know more about; read and watch content from YOUR favorite finance and investing influencers; create YOUR own watchlist and screen for ideas YOU'RE interested in; find out about investor conferences YOU want to attend - all here on SNN.Network.

If you would like to attend the SNN Network Virtual Investor Conference, please register here: <https://conference.snn.network/signup>

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmartets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the Toronto Stock Exchange, its Regulation Services Provider (as that term is defined in the policies of the Toronto Stock Exchange) nor the OTCQB accepts responsibility for the adequacy or accuracy of this press release.

SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



*Source: PyroGenesis Canada Inc.
January 11, 2021 14:36 ET*

PyroGenesis' CEO to Present at the Sidoti Winter 2021 Virtual Conference on January 14

MONTREAL, Jan. 11, 2021 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that Mr. P. Peter Pascali, CEO and Chair of PyroGenesis, is scheduled to present at the Sidoti Winter 2021 Virtual Conference on Thursday, January 14, 2021 at 2:30 PM Eastern Time.

To access the live presentation, please use the following information:

Sidoti Winter 2021 Virtual Conference

Date: Thursday, January 14, 2021

Time: 2:30 PM Eastern Time (11:30 AM Pacific Time)

Webcast: https://sidoti.zoom.us/webinar/register/WN_qCf2QWYEQwC79n6-di9USg

If you would like to book 1x1 investor meetings with Mr. Pascali, and/or to watch the Company's presentation, please make sure you are registered for the virtual event [here: https://www.meetmax.com/sched/event_68483/investor_reg_new.html?attendee_role_id=SIDOTI_INVESTOR](https://www.meetmax.com/sched/event_68483/investor_reg_new.html?attendee_role_id=SIDOTI_INVESTOR).

1x1 meetings will be scheduled on January 13th and 14th and conducted via a private, secure, video conference through the conference event platform provided.

For investors unable to attend the live presentation, all company presentations/webcasts will be available for a period of 90 days after the event on the conference event platform.

About Sidoti & Company LLC

For over two decades, Sidoti has been a premier provider of independent securities research focused specifically on small- and micro-cap companies and the institutions that invest their securities, with most of their coverage in the \$50 million - \$3 billion market cap range. Their approach affords companies and institutional clients a combination of high-quality research, a small- and micro-cap focused nationwide sales effort, broad access to corporate management teams, and extensive trading support. They serve 500+ institutional clients in the U.S., Canada and the U.K., including many leading managers of portfolios with \$200 million to \$2 billion of AUM. Sidoti promotes meaningful interaction between issuers and investors in the small- and micro-cap space through their conferences www.sidoticonference.com and the hundreds of non-deal roadshows they host each year.

About PyroGenesis Canada Inc.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD
Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

www.pyrogenesis.com



*Source: PyroGenesis Canada Inc.
January 11, 2021 17:19 ET*

AMENDED PRESS RELEASE: PyroGenesis' CEO to Present at the Sidoti Winter 2021 Virtual Conference on January 13

MONTREAL, Jan. 11, 2021 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, announces that, further to its press release disseminated earlier today, the Company has been advised by Sidoti & Company LLC's marketing team that Mr. P. Peter Pascali, CEO and Chair of PyroGenesis, is scheduled to present at the Sidoti Winter 2021 Virtual Conference on Wednesday, January 13th, 2021 at 2:30 PM Eastern Time instead of on Thursday, January 14th, 2021.

To access the live presentation, please use the following information:

Sidoti Winter 2021 Virtual Conference

Date: Wednesday, January 13th, 2021

Time: 2:30 PM Eastern Time (11:30 AM Pacific Time)

Webcast: https://sidoti.zoom.us/webinar/register/WN_qCf2QWYEQwC79n6-di9USg

If you would like to book 1x1 investor meetings with Mr. Pascali, and/or to watch the Company's presentation, please make sure you are registered for the virtual event here: https://www.meetmax.com/sched/event_68483/investor_reg_new.html?attendee_role_id=SIDOTI_INVESTOR.

1x1 meetings will be scheduled on January 13th and 14th and conducted via a private, secure, video conference through the conference event platform provided.

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working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD
Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



*Source: PyroGenesis Canada Inc.
January 11, 2021 17:45 ET*

PyroGenesis Announces Guidance for Q4 2020

MONTREAL, Jan. 11, 2021 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to provide guidance for the fourth quarter, and full year, both ending December 31st, 2020.

Based on preliminary financial information, and subject to year-end closing adjustments, PyroGenesis expects revenue for the fourth quarter 2020 to be between \$3 - \$5 million, resulting in total revenues for the fiscal year ending 2020 of approximately \$14 - \$16 million, as compared to \$1.07 million (Q4 2019) and \$4.8 million (FY 2019), respectively.

The Company also expects earnings per share ("EPS") for the fourth quarter to be in the range of \$0.10 - \$0.12, and for the fiscal year ending 2020 of between \$0.22 - \$0.24 , as compared to a loss of \$0.04 (Q4 2019) and a loss of \$0.07 (FY 2020), respectively.

The Q4 2020 guidance and actual 2019 results noted above are summarized in the following table below:

| | Actual 2019 | Guidance 2020 |
|------------------|-------------|---------------|
| Revenue | | |
| Q4 | \$1.07 MM | \$ 14-16 MM |
| YE | \$4.8 MM | \$ 22-24 MM |
| EPS Basic | | |
| Q4 | (\$0.04) | \$0.10-\$0.12 |
| YE | (\$0.07) | \$0.22-\$0.24 |

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and products. The Company provides its engineering and manufacturing expertise and its turnkey process equipment packages to customers in the defense, metallurgical, mining, advanced materials (including 3D printing), and environmental industries. With a team of experienced engineers, scientists and technicians working out of its Montreal office and its 3,800 m² manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The Company's core competencies allow PyroGenesis to provide innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified. For more information, please visit www.pyrogenesis.com.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD
Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



*Source: PyroGenesis Canada Inc.
January 11, 2021 19:17 ET*

CORRECTION - PyroGenesis Announces Guidance for Q4 2020

MONTREAL, Jan. 11, 2021 (GLOBE NEWSWIRE) -- In a release issued under the same headline on Monday, January 11th by PyroGenesis Canada Inc. (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), please note that the numerical values in the table under Guidance 2020, Revenue, Q4 and YE have been corrected to \$3-5 MM and \$14-16 MM respectively. The corrected release follows:

PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to provide guidance for the fourth quarter, and full year, both ending December 31st, 2020.

Based on preliminary financial information, and subject to year-end closing adjustments, PyroGenesis expects revenue for the fourth quarter 2020 to be between \$3 - \$5 million, resulting in total revenues for the fiscal year ending 2020 of approximately \$14 - \$16 million, as compared to \$1.07 million (Q4 2019) and \$4.8 million (FY 2019), respectively.

The Company also expects earnings per share ("EPS") for the fourth quarter to be in the range of \$0.10 - \$0.12, and for the fiscal year ending 2020 of between \$0.22 - \$0.24 , as compared to a loss of \$0.04 (Q4 2019) and a loss of \$0.07 (FY2019), respectively.

The Q4 2020 guidance and actual 2019 results noted above are summarized in the following table below:

| | Actual 2019 | Guidance 2020 |
|------------------|--------------------|----------------------|
| Revenue | | |
| Q4 | \$1.07 MM | \$3-5 MM |
| YE | \$4.8 MM | \$14-16 MM |
| EPS Basic | | |
| Q4 | (\$0.04) | \$0.10-\$0.12 |
| YE | (\$0.07) | \$0.22-\$0.24 |

About PyroGenesis Canada Inc.

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

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Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>



*Source: PyroGenesis Canada Inc.
January 12, 2021 08:35 ET*

PyroGenesis Announces the Implementation of a NCIB

MONTREAL, Jan. 12, 2021 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://www.pyrogenesis.com>) (TSX: PYR) (OTCQB: PYRNF) (FRA: 8PY), a high-tech company, (the "Company", the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, is pleased to announce today that it intends to implement a normal course issuer bid ("NCIB") through the facilities of the Toronto Stock Exchange ("TSX") or alternative trading systems.

Pursuant to the NCIB, PyroGenesis may purchase, from time to time, over a period of 12 months starting January 14th, 2021 and ending January 13th, 2022, up to 5,000,000 common shares (approx. 3.14% of its common shares issued and outstanding as of January 4th, 2021). As of January 4th, 2021, there were 159,145,992 common shares of PyroGenesis issued and outstanding. On any given day, during the NCIB, PyroGenesis may only purchase up to 83,342 common shares, which is equivalent to 25% of the Average Daily Trading Volume of 333,370 calculated based on the trading volumes on the TSX from November 20th, 2020 (being the first day PyroGenesis was listed on the TSX) to December 31st, 2020.

Purchases under the NCIB may commence as of January 14th, 2021 and will end on the earlier of: (i) January 13th, 2022; or (ii) the date on which the Company has purchased the maximum number of common shares to be acquired under the NCIB. All purchases made by the Company will be through Pollitt & Co. Inc. acting on behalf of the Company. The purchases will be made in accordance with the rules of the TSX, through the facilities of the TSX or through alternative trading systems. The actual number of common shares which will be purchased, and the timing of such purchases, will be determined by the Company, and the price which the Company will pay for the common shares will be the market price at the time of the purchase. The common shares purchased under the NCIB will be cancelled.

The Company's Board of Directors believes that the market price of the Company's common shares may from time to time not reflect the underlying value of the Company, specifically its growth opportunities, and that the proposed purchasing of its common shares is in the best interests of the Company and represents an appropriate use of corporate funds. It is expected that any purchases made by the Company could also enhance value and liquidity for its shareholders. Of note, this NCIB is further to a previous NCIB that the Company had implemented while trading under the TSXV. Under the previous NCIB, which started on November 1st, 2019 and ended on October 31st, 2020, 6,750,000 common shares were approved for purchase, of which 1,285,000 common shares were purchased. The weighted average price paid per common share purchased was 0.75\$.

About PyroGenesis Canada Inc

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SOURCE PyroGenesis Canada Inc.

For further information please contact:

Rodayna Kafal, Vice President, IR/Comms. and Strategic BD

Phone: (514) 937-0002, E-mail: ir@pyrogenesis.com

RELATED LINK: <http://www.pyrogenesis.com/>

PyroGenesis Canada Inc.

December 31, 2019 and 2018

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Management's responsibility

Independent Auditors' Report Financial Statements

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Management's Responsibility

Management is responsible for the preparation and presentation of the accompanying financial statements, including responsibility for significant accounting judgments and estimates in accordance with International Financial Reporting Standards. This responsibility includes selecting appropriate accounting principles and methods, and making decisions affecting the measurement of transactions in which objective judgment is required.

The Board of Directors and Audit Committee are composed primarily of Directors who are neither management nor employees of the Company. The Board of Directors is responsible for overseeing management in the performance of its financial reporting responsibilities, and for approving the financial information included in the annual report. The Board fulfils these responsibilities by reviewing the financial information prepared by management and discussing relevant matters with management and the external auditor. The Audit Committee has the responsibility of meeting with management and the external auditors to discuss the internal controls over the financial reporting process, auditing matters and financial reporting issues. The Audit Committee is also responsible for recommending the appointment of the Company's external auditor.

KPMG LLP, an independent firm of Chartered Professional Accountants, is appointed by the shareholders to audit the financial statements and report directly to them; their report follows. The external auditor has full and free access to, and meets periodically and separately with, both the Audit Committee and management to discuss their audit findings.

June 15, 2020

[Signed by P. Peter Pascali]

P. Peter Pascali, Chief Executive Officer

[Signed by Michael Blank]

Michael Blank, Interim Chief Financial Officer



KPMG LLP
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Canada

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Internet www.kpmg.ca

INDEPENDENT AUDITORS' REPORT

To the Shareholders of PyroGenesis Canada Inc.

Opinion

We have audited the financial statements of PyroGenesis Canada Inc. (the "Entity"), which comprise:

- the statements of financial position as at December 31, 2019 and December 31, 2018
- the statements of comprehensive loss for the years then ended
- the statements of changes in shareholders' (deficiency) equity for the years then ended
- the statements of cash flows for the years then ended
- and notes to the financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Entity as at December 31, 2019 and December 31, 2018, and its financial performance and its cash flows for the years then ended in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "**Auditors' Responsibilities for the Audit of the Financial Statements**" section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Material Uncertainty Related to Going Concern

We draw attention to Note 1(b) in the financial statements, which indicates that the Entity has incurred operating losses and negative cash flows from operations, has an accumulated deficit, and that its operations are dependent on obtaining additional financing.

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As stated in Note 1(b) in the financial statements, these events or conditions, along with other matters as set forth in Note 1(b) in the financial statements, indicate that a material uncertainty exists that casts substantial doubt on the Entity's ability to continue as a going concern.

Our opinion is not modified in respect of this matter.

Emphasis of Matter - Prospective Change in Accounting Policy

We draw attention to Note 3(a) to the financial statements, which indicates that the Entity has changed its accounting policy for leases as of January 1, 2019, due to the adoption of IFRS 16 - *Leases* using a modified retrospective approach.

Our opinion is not modified in respect of this matter.

Other Information

Management is responsible for the other information. Other information consists of the information included in Management's Discussion and Analysis filed with the relevant Canadian Securities Commissions.

Our opinion on the financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit and remain alert for indications that the other information appears to be materially misstated.

We obtained the information included in Management's Discussion and Analysis filed with the relevant Canadian Securities Commissions as at the date of this auditors' report. If, based on the work we have performed on this other information, we conclude that there is a material misstatement of this other information, we are required to report that fact in the auditors' report.

We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.



Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
 - Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
 - Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that casts substantial doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
 - Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
 - Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.
-



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- Provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

KPMG LLP

The engagement partner on the audit resulting in this auditors' report is Nathalie Labelle.

Montréal, Canada

June 15, 2020

*CPA auditor, CA, public accountancy permit No. A119245

Statements of Financial Position

| | December 31, 2019 | December 31, 2018 |
|--|----------------------|----------------------|
| | \$ | \$ |
| Assets | | |
| <i>Current assets</i> | | |
| Cash | 34,431 | 644,981 |
| Accounts receivable [note 7] | 210,540 | 631,152 |
| Costs and profits in excess of billings on uncompleted contracts [note 8] | 122,980 | 307,832 |
| Investment tax credits receivable [note 16] | 709,395 | 633,348 |
| Deposits | 150,322 | 584,646 |
| Prepaid expenses | 96,886 | 66,321 |
| Total current assets | 1,324,554 | 2,868,280 |
| <i>Non-current assets</i> | | |
| Inventories [note 9] | 10,068 | 382,832 |
| Deposits and investments [note 10] | 1,787,459 | 1,745,607 |
| Property and equipment [note 11] | 1,977,481 | 3,202,882 |
| Right-of-use assets [note 12] | 3,742,769 | - |
| Intangible assets [note 13] | 736,898 | 559,874 |
| Total assets | 9,579,229 | 8,759,475 |
| Liabilities | | |
| <i>Current liabilities</i> | | |
| Accounts payable and accrued liabilities [note 14] | 4,913,155 | 2,357,607 |
| Billings in excess of costs and profits on uncompleted contracts [note 15] | 3,084,657 | 4,352,410 |
| Term loans [note 16] | 496,000 | 247,200 |
| Current portion of long-term debt [note 17] | 284,956 | 12,491 |
| Current portion of lease liabilities [note 12] | 139,529 | - |
| Convertible debentures [note 18] | 2,898,358 | - |
| Total current liabilities | 11,816,655 | 6,969,708 |
| <i>Non-current liabilities</i> | | |
| Long-term debt [note 17] | - | 268,576 |
| Lease liabilities [note 12] | 3,845,497 | - |
| Convertible debentures [note 18] | - | 2,527,241 |
| Total liabilities | 15,662,152 | 9,765,525 |
| Shareholders' deficiency [note 19] | | |
| Common shares and warrants | 47,073,243 | 42,863,456 |
| Contributed surplus | 6,679,730 | 6,795,274 |
| Equity portion of convertible debentures [note 18] | 401,760 | 401,760 |
| Deficit | (60,237,656) | (51,066,540) |
| Total shareholders' deficiency | (6,082,923) | (1,006,050) |
| Total liabilities and shareholders' deficiency | 9,579,229 | 8,759,475 |

Going concern disclosure, related party transactions, contingent liabilities, subsequent events [notes 1(b), 23, 25, and 29]. The accompanying notes form an integral part of the financial statements.

Approved on behalf of the Board:

[Signed by P. Peter Pascali]. P. Peter Pascali

[Signed by Michael Blank]. Michael Blank

PyroGenesis Canada Inc.**Statements of Comprehensive Loss**

Years ended December 31,

| | 2019 | 2018 |
|--|---------------------------|---------------------------|
| | \$ | \$ |
| Revenues [note 6] | 4,813,978 | 5,030,116 |
| Cost of sales and services [note 21] | <u>3,515,886</u> | <u>3,920,819</u> |
| | 1,298,092 | 1,109,297 |
| Expenses | | |
| Selling, general and administrative [note 21] | 6,188,898 | 6,537,777 |
| Research and development | 851,512 | 892,045 |
| Net finance costs [note 22] | 1,061,267 | 1,525,275 |
| Impairment of plasma atomization system [note 11] | 1,981,410 | - |
| Write-off of inventories [note 9] | 386,121 | - |
| | <u>10,469,208</u> | <u>8,955,097</u> |
| Net loss and comprehensive loss | <u>(9,171,116)</u> | <u>(7,845,800)</u> |
| Basic and diluted loss per share | (0.07) | (0.06) |
| Weighted average number of common shares - basic and diluted | <u>137,382,323</u> | <u>122,986,656</u> |

The accompanying notes form an integral part of the financial statements.

Statements of Changes in Shareholders' (Deficiency) Equity

| | Number of Class A common shares | Class A common shares and warrants | Contributed Surplus | Equity portion of convertible debentures | Deficit | Total |
|--|------------------------------------|--|------------------------|--|---------------------|--------------------|
| | | \$ | \$ | \$ | \$ | \$ |
| Balance - December 31, 2018 | 133,501,051 | 42,863,456 | 6,795,274 | 401,760 | (51,066,540) | (1,006,050) |
| Private placements [note 19] | 6,418,400 | 3,722,472 | - | - | - | 3,722,472 |
| Share issue expenses [note 19] | - | (106,395) | - | - | - | (106,395) |
| Shares issued upon exercise of stock options [note 19] | 1,384,000 | 593,710 | (287,350) | - | - | 306,360 |
| Share-based payments | - | - | 171,806 | - | - | 171,806 |
| Net loss and comprehensive loss | - | - | - | - | (9,171,116) | (9,171,116) |
| Balance - December 31, 2019 | 141,303,451 | 47,073,243 | 6,679,730 | 401,760 | (60,237,656) | (6,082,923) |
| Balance - December 31, 2017 | 112,698,081 | 30,336,865 | 6,147,638 | 572,582 | (43,200,708) | (6,143,623) |
| Adoption of new accounting policy | - | - | - | - | (20,032) | (20,032) |
| Adjusted balance, January 1, 2018 | 112,698,081 | 30,336,865 | 6,147,638 | 572,582 | (43,220,740) | (6,163,655) |
| Private placements | 10,805,423 | 6,654,917 | - | - | - | 6,654,917 |
| Share issue expenses [note 19] | - | (290,804) | - | - | - | (290,804) |
| Shares issued in settlement of long- term debt | 5,285,714 | 3,327,571 | - | - | - | 3,327,571 |
| Shares issued in settlement of accounts payable | 1,112,000 | 644,960 | - | - | - | 644,960 |
| Shares issued in settlement of convertible debentures | 1,258,333 | 755,000 | - | - | - | 755,000 |
| Shares issued upon exercise of warrants | 1,797,500 | 629,125 | - | - | - | 629,125 |
| Shares issued upon exercise of stock options | 544,000 | 233,240 | (93,920) | - | - | 139,320 |
| Share-based payments | - | - | 673,249 | - | - | 673,249 |
| Equity of convertible debentures reimbursed | - | 572,582 | - | (572,582) | - | - |
| Issuance of convertible debentures | - | - | - | 401,760 | - | 401,760 |
| Below market element of short term and promissory notes | - | - | 68,307 | - | - | 68,307 |
| Net loss and comprehensive loss | - | - | - | - | (7,845,800) | (7,845,800) |
| Balance - December 31, 2018 | 133,501,051 | 42,863,456 | 6,795,274 | 401,760 | (51,066,540) | (1,006,050) |

The accompanying notes form an integral part of the financial statements.

PyroGenesis Canada Inc.

Statements of Cash Flows

For the years ended December 31, 2019 and 2018

Years ended December 31,

| | 2019 | 2018 |
|--|------------------|----------------|
| | \$ | \$ |
| Cash flows provided by (used in) | | |
| Operating activities | | |
| Net loss | (9,171,116) | (7,845,800) |
| Adjustments for: | | |
| Share-based payments | 171,807 | 673,249 |
| Depreciation on property and equipment [note 11] | 168,835 | 212,621 |
| Depreciation of right-of-use assets [note 12] | 359,783 | - |
| Amortization of intangibles assets [note 13] | 20,133 | 60,326 |
| Finance costs | 1,237,502 | 708,391 |
| Change in fair value of investments | (176,237) | 919,463 |
| Dividend in kind | - | (102,579) |
| <i>Impairment of property and equipment included in cost of sales and services [note 12]</i> | 1,981,410 | - |
| Write-off of inventory | 386,121 | - |
| Other | - | (20,032) |
| | (5,021,762) | (5,394,361) |
| Net change in non-cash operating working capital items [note 20] | 1,849,567 | 2,439,731 |
| | (3,172,195) | (2,954,630) |
| Investing activities | | |
| Additions to inventories | (13,357) | (259,097) |
| Purchase of property and equipment [note 11] | (822,953) | (1,138,541) |
| Additions to intangible assets [note 13] | (165,673) | (316,345) |
| Purchase of investments [note 10] | - | (1,950,000) |
| Disposal of investments [note 10] | 261,000 | - |
| Variation of deposits | (126,615) | - |
| | (867,598) | (3,663,983) |
| Financing activities | | |
| Interest paid | (572,860) | (323,358) |
| Repayment of term loans [note 16] | - | (2,450,000) |
| Repayment of SR&ED and term loans [note 16] | (247,200) | (290,200) |
| Repayment of lease liabilities [note 12] | (131,321) | - |
| Repayment of capital lease obligations [note 17] | - | (12,550) |
| Repayment of convertible debentures [note 18] | - | (3,245,000) |
| Proceeds from issuance of shares upon exercise of warrants [note 19] | - | 629,125 |
| Proceeds from issuance of shares upon exercise of stock options [note 19] | 306,360 | 139,320 |
| Proceeds from issuance of other term loans, net of financing costs [note 16] | 458,187 | 3,145,000 |
| Proceeds from issuance of shares [note 19] | 3,722,472 | 6,654,917 |
| Share issue costs [note 19] | (106,395) | (290,804) |
| Net proceeds from issuance of convertible debentures [note 18] | - | 2,684,298 |
| | 3,429,243 | 6,640,748 |
| Net (decrease) increase in cash | (610,550) | 22,135 |
| Cash - beginning of year | 644,981 | 622,846 |
| Cash - end of year | 34,431 | 644,981 |

PyroGenesis Canada Inc.

Statements of Cash Flows

For the years ended December 31, 2019 and 2018

Supplemental cash flow disclosure

Non-cash transactions:

| | | |
|--|------------------|-----------|
| Purchase of property and equipment under finance lease obligations | - | 25,542 |
| Purchase of intangible assets included in accounts payable | 31,484 | - |
| Purchase of property and equipment included in accounts payable | 166,638 | 7,485 |
| Interest included in accounts payables | 259,447 | - |
| Cost reduction of property and equipment included in investment tax credits receivable | 80,146 | - |
| Issuance of common shares in settlement of convertible debentures | - | 755,000 |
| Issuance of common shares in settlement of accounts payable | - | 244,960 |
| Issuance of common shares in settlement of (IP debt) included in loans | - | 111,928 |
| Issuance of common shares in settlement of (IP debt) included in accounts payable | - | 3,215,643 |
| Issuance of common shares in settlement of short-term loans | - | 400,000 |
| Below market element of promissory notes | - | 58,607 |
| Interest accretion on short-term loans to contributed surplus | - | 9,700 |
| Other equity reclassified in contributed surplus | - | 120,865 |
| Equity component of convertible debenture | - | 401,760 |
| Equity component of convertible debenture reimbursed in contributed surplus | - | 572,582 |
| Non-derivative financial liability component of convertible loans | 12,800 | - |
| Initial recognition of lease liabilities and right-of-use assets [note 12]: | | |
| Right-of-use assets | 4,102,552 | - |
| Lease liabilities | 4,116,347 | - |
| Accounts payable and deferred leases reclassified in right-of-use assets | 11,333 | - |
| Computer equipment reclassified in right-of-use assets | 29,266 | - |
| Capital lease obligations reclassified in lease liabilities | 31,728 | - |

The accompanying notes form an integral part of the financial statements

1. Nature of operations and going concern disclosure

(a) Nature of operations

PyroGenesis Canada Inc. (the “Company”), incorporated under the laws of the *Canada Business Corporations Act*, was formed on July 11, 2011. The Company owns patents of advanced waste treatment systems technology and designs, develops, manufactures and commercialises advanced plasma processes and systems. The Company is domiciled at 1744 William Street, Suite 200, Montreal, Quebec. The Company is publicly traded on the TSX Venture Exchange under the Symbol “PYR” on the OTCQB in the USA under the symbol “PYRNF” and on the Frankfurt Stock Exchange (FSX) under the symbol “8PY”.

(b) Going concern

These financial statements have been prepared on the going concern basis, which presumes that the Company will be able to realize its assets and discharge its liabilities in the normal course of business for the foreseeable future.

The Company is subject to a number of risks and uncertainty associated with the successful development of its products and with the financing requirements of its operations. The achievement of profitable operations is dependent upon future events, including successful development and introduction of new products to its family of products and obtaining adequate financing.

The Company has incurred, in the last several years, operating losses and negative cash flow from operations, resulting in an accumulated deficit of \$60,237,656 as at December 31, 2019. Furthermore, as at December 31, 2019, the Company’s current liabilities and expected level of expenses for the next twelve months exceed cash on hand of \$34,431. The Company currently has no committed sources of financing available. The Company has relied upon external financings to fund its operations in the past, primarily through the issuance of equity, debt, and convertible debentures, as well as from investment tax credits.

The Company’s business plan is dependent upon the successful completion and the receipt of payments from contracts completed and to be completed within the next twelve months, the attainment of profitable operations, and upon raising additional funds to finance operations within and beyond the next twelve months. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company’s control, and as such there is no assurance that it will be able to do so in the future. If the Company is unable to obtain sufficient additional financing, it may have to curtail operations and development activities, any of which could harm the business, financial condition and results of operations.

These conditions indicate the existence of a material uncertainty that casts substantial doubt about the Company’s ability to continue operating as a going concern and realize its assets and settle its liabilities and commitments in the normal course of business.

The financial statements have been prepared on a going concern basis and do not include any adjustments to the amounts and classifications of the assets and liabilities that might be necessary should the Company be unable to achieve its plan and continue in business. If the going concern assumption were not appropriate for these financial statements then adjustments would be necessary to the carrying value of assets and liabilities, the reported expenses and the statements of financial position classifications used. Such adjustments could be material.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

2. Basis of preparation

(a) Statement of compliance

These financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRS”) as issued by the International Accounting Standards Board (“IASB”). These financial statements were approved and authorized for issuance by the Board of Directors on June 15, 2020.

(b) Functional and presentation currency

These financial statements are presented in Canadian dollars, which is the Company’s functional currency.

(c) Basis of measurement

These financial statements have been prepared on the historical cost basis except for the investments which are accounted for at fair value.

3. Changes in significant accounting policies

On January 1, 2019, the Company adopted the following new or amended IFRS standards and Interpretations of IFRS (“Interpretations”):

a) IFRS 16 - Leases

In January 2016, the IASB released IFRS 16, Leases, which replaced the previous leases standard, IAS 17, *Leases*, and related interpretations. IFRS 16 sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract, the customer (lessee) and the supplier (lessor). IFRS 16 eliminates the classification of leases as either operating leases or finance leases, introduces a single lessee accounting model and requires a lessee to recognize assets and liabilities for all leases with a term of more than 12 months, unless the underlying asset is of low value.

The Company has adopted IFRS 16 using the modified retrospective method of adoption, with the effect of initially applying this standard recognized at the date of initial application, i.e. January 1, 2019. Accordingly, the cumulative effect of initially applying IFRS 16, if any, has been recognized as an adjustment to the opening balance of retained earnings as at January 1, 2019 and the comparative information presented for 2018 has not been restated, i.e. it is presented, as previously reported, under IAS 17 and related interpretations.

3. Changes in significant accounting policies (continued)

i. Transition options and practical expedients

The Company has elected to apply the following transition options and practical expedients available under IFRS 16:

- Lease definition: to grandfather the assessment of which transactions are leases on the date of initial application. Accordingly, the Company applied IFRS 16 only to contracts that were previously identified as leases under IAS 17, *Leases*, and IFRIC 4, *Determining whether an Arrangement contains a Lease*, and applied the definition of leases under IFRS 16 only to contracts entered on or after the date of initial application;
- Impairment and onerous leases: to rely on the Company's previous assessment of whether leases are onerous in accordance with IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*, immediately before the date of initial application as an alternative to performing an impairment review;
- Initial direct costs: to exclude initial direct costs from the measurement of the right-of-use asset at the date of initial application;
- Use of hindsight: to use hindsight, for example, in determining the lease term of contracts that contain options to extend or terminate the lease on the date of initial application;

In addition, the Company elected not to apply the new lease accounting model to a lease ending within 12 months of the date of initial application.

ii. Impact of adopting IFRS 16

The most significant impact of adopting IFRS 16 related to the accounting for the Company's operating leases, as the nature of expenses recognized to most of the Company's leases changed IFRS 16 replaced the straight-line operating lease expense recognized under the prior standard with a depreciation charge for right-of-use assets and interest expense on lease liabilities.

Under IAS 17, the Company classified each of its leases at the inception date as either a finance lease or an operating lease, based on the extent to which risks and rewards of ownership were transferred to the Company. Lease payments related to the Company's operating leases were recognized as rent expense in the income statements on a straight-line basis over the lease term and presented as part of cash flows from operating activities in the statements of cash flows. Any deferred rent was recognized under Accounts payable and accrued liabilities in the statements of financial position.

Upon adoption of IFRS 16, the Company recognized lease liabilities and right-of-use assets for leases that were classified as operating leases under IAS 17. Lease liabilities were measured at the present value of the remaining lease payments, discounted at the Company's incremental borrowing rate as at January 1, 2019. Right-of-use assets were measured at an amount equal to the lease liability, adjusted by the amount of any accrued lease payments.

The carrying amount of the lease assets and lease liabilities that were classified as finance leases and measured applying IAS 17 immediately before the date of initial application were reclassified to the right-of-use assets and the lease liabilities at the date of initial application.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

3. Changes in significant accounting policies (continued)

iii. Reconciliation of operating lease commitments to lease liabilities recognized

When measuring lease liabilities, the Company discounted lease payments using its incremental borrowing rate as at January 1, 2019. The weighted average incremental borrowing rate applied as at January 1, 2019 was 6.60%.

The lease liabilities as at January 1, 2019 can be reconciled to the operating lease commitments as at December 31, 2018 as follows:

| | \$ |
|---|------------------|
| Operating lease commitments as at December 31, 2018 | 1,694,410 |
| Lease payments due in periods covered by extension options that are included in the lease term and not previously included in the operating lease commitments | 1,067,012 |
| Purchase options reasonably certain to be exercised that are included in the lease term and not previously included in the operating lease commitments | 2,750,000 |
| Recognition exemption for leases with less than 12 months of lease term at transition | (7,869) |
| Variable operating expenses included in the operating lease commitment as at January 1, 2019 not included in the calculation of the lease liabilities under IFRS 16 | (424,440) |
| Additional lease liabilities as a result of the initial application of IFRS 16 as at January 1, 2019 | 5,079,113 |
| Accretion using the incremental borrowing interest rate as at January 1, 2019 | (994,494) |
| | <u>4,084,619</u> |
| Discounted using the incremental borrowing rate as at January 1, 2019 | 4,084,619 |
| Obligation under finance leases reclassified as lease liabilities as at January 1, 2019 | 31,728 |
| | <u>4,116,347</u> |
| Lease liabilities as at January 1, 2019 | <u>4,116,347</u> |

The Company has recognised \$4,102,552 of right-of-use assets and \$4,116,347 of lease liabilities upon transition to IFRS 16. The difference of \$11,333 represents deferred rent included in accounts payable reclassified against the right-of-use assets at the date of transition. The net book value of the computer equipment under finance lease in the amount of \$29,266 and the related liabilities of \$31,728 were reclassified in the right-of-use assets and the lease liabilities respectively.

b) Annual Improvements to IFRS Standards 2015–2017 Cycle

In December 2017, the IASB published Annual Improvements to IFRS Standards 2015–2017 Cycle, which includes amendments to the following:

- Income tax consequences under IAS 12, *Income Taxes*, of payments on financial instruments classified as equity.
- Borrowing costs eligible for capitalization under IAS 23, *Borrowing Costs*.

The Company adopted these amendments in its financial statements beginning on January 1, 2019. The adoption of these amendments did not have a material impact on the Company's financial statements.

4. Significant accounting policies

Except for the changes in significant accounting policies described above in Note 3, the accounting policies set out below have been applied consistently in the preparation of the financial statements of all years presented and have been applied consistently by the Company. Certain comparative information in the statements of financial position and statements of changes in shareholders' (deficiency) equity have been reclassified to conform with the financial statement presentation adopted in the current year.

(a) Revenue recognition

Revenue from contracts is recognized for each performance obligation either over a period of time or at a point in time, depending on which method reflects the transfer of control of the goods and services underlying the particular performance obligation.

i) Long-term contracts

Long-term contracts involve made-to-order customized equipment and machines and are generally priced on a fixed fee basis. Under these contracts, the equipment or machines are made to a customer's specifications and if a contract is terminated by the customer, the Company is entitled to the greater of the amounts invoiced at the termination date and the reimbursement of the costs incurred to date of termination, including a reasonable margin.

Revenue relating to long-term contracts is recognised over time based on the measure of progress determined by the Company's efforts or inputs towards satisfying the performance obligation relative to the total expected inputs. The degree of completion is assessed based on the proportion of total costs and/or hours incurred to date, compared to total costs and/or hours anticipated to provide the service under the entire contract, excluding the effects of inputs that do not depict performance, e.g. uninstalled materials. For long-term contracts with uninstalled materials, the Company adjusts the transaction price and recognises revenue on uninstalled materials to the extent of those costs incurred, i.e. at a zero percent profit margin, when certain conditions are met.

Estimates are required to determine anticipated costs and/or hours on long-term contracts. A provision is made for the entire amount of expected loss, if any, in the period in which they are first determinable.

Contract modifications are changes in scope and/or price that are approved by the parties to the contract. Approval may be written, oral or implied by customary business practices, and are legally enforceable. The Company accounts for modifications as a separate contract if the modifications add distinct goods or services that are priced commensurate with stand-alone selling prices or if the remaining goods or services are distinct from those already transferred, otherwise modifications are accounted for as part of the original contract.

Costs and profits in excess of billings on uncompleted contracts and trade receivables are both rights to consideration in exchange for goods or services that the Company has transferred to a customer, however the classification depends on whether such right is only conditional on the passage of time (trade receivables) or if it is also conditional on something else (costs and profits in excess of billings on uncompleted contracts), such as the satisfaction of further performance obligations under the contract. Billing in excess of costs and profits on uncompleted contracts is the cumulative amount received and contractually receivable by the Company that exceeds the right to consideration resulting from the Company's performance under a given contract.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

ii) Sales of goods

Revenue related to sales of goods, which may include powders and spare parts are measured based on the consideration specified in contracts with customers. The Company recognizes revenue at a point in time when it transfers control of the goods to the buyer. This is generally at the time the customer obtains legal title to the product and when it is physically transferred to the custody transfer point agreed with the customer.

(b) Foreign currency translation

Foreign currency balances are translated at year-end exchange rates for monetary items and at historical rates for non-monetary items. Revenues and expenses are translated using average exchange rates prevailing at the time of the transaction. Translation gains or losses are included in the determination of comprehensive loss.

(c) Inventories

Inventories are composed of raw materials and finished goods. Inventories are valued at the lower of cost and net realizable value. The cost of inventories is based on the first-in, first-out principle. Cost comprises all costs of purchases and costs directly related to the conversion of raw materials to finished goods. Net realizable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and selling costs. Inventory held for sale pending receipt of export permits is classified as non-current assets.

(d) Deferred taxes

i) Current tax

Current tax assets and liabilities for the current and prior years are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted by the statements of financial position date.

ii) Deferred tax

Deferred tax is provided using the liability method, providing for temporary differences between the tax bases of assets and liabilities and their carrying amounts in the financial statements. The temporary difference is not provided for if it arises from the initial recognition of goodwill or the initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss. The amount of deferred tax provided is based on the expected manner of realization or settlement of the carrying amount of assets and liabilities, using tax rates enacted or substantively enacted at the financial position reporting date and whose implementation is expected over the period in which the deferred tax is realized or recovered. A deferred tax asset is recognized only to the extent that it is probable that future taxable profits will be available against which the asset can be used.

Deferred tax assets and liabilities are presented as non-current. Assets and liabilities are offset where the entity has a legally enforceable right to offset current tax assets and liabilities or deferred tax assets and liabilities, and the respective assets and liabilities relate to income taxes levied by the same taxation authority on the same taxable entity or different taxable entities which intend to settle the liabilities and assets on a net basis.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

(e) Loss per share

The Company presents basic loss per share data for its common shares. Basic loss per share is computed by dividing net loss by the weighted average number of common shares outstanding during the year. Diluted loss per share is computed similarly to basic earnings per share, except that the weighted average number of shares outstanding is increased to include shares from the assumed exercise of stock options and share purchase warrants, if dilutive. The number of additional shares is calculated by assuming that outstanding share options and warrants were exercised and that the proceeds from such exercises were used to acquire common shares at the average market price during the year. For the years ended December 31, 2019 and 2018, potential shares from all outstanding stock options, share purchase warrants and convertible debentures have been excluded from the calculation of diluted loss per share as their inclusion is considered anti-dilutive in periods when a loss is incurred.

(f) Property and equipment

Property and equipment are measured at cost less accumulated depreciation and accumulated impairment losses if applicable. Cost includes expenditures that are directly attributable to the acquisition of the asset and bringing the asset into operation. Borrowing costs capitalized to asset under development represents the interest expense calculated under the effective interest method and does not include any fair value adjustments of investments designated at fair value through profit and loss. Investment tax credits related to the purchase or development of property and equipment are recorded in reduction of the cost. When major parts of an item of property and equipment have different useful lives, they are accounted for separately. Property and equipment are depreciated from the acquisition date over their respective useful life. Depreciation of an asset under construction begins when it is available for use, i.e. when it is in the location and condition necessary for it to be capable of operating in the manner intended by the Company.

Depreciation is calculated using the following methods and rates:

| | |
|---------------------------|---|
| Computer equipment | Straight line over 2 years |
| Machinery and equipment | Straight line over 5 years |
| Automobile | Straight line over 3 years |
| Leasehold improvements | The lesser of the term of the lease or the useful life (20 years) |
| Plasma Atomization System | Straight line over 20 years |

Impairment – non-financial assets

The carrying amounts of the Company's non-financial assets are assessed at each reporting date to determine whether there is an indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated.

Impairment losses recognized in prior periods are assessed at each reporting date as to whether there are any indications that the previously recognized losses may no longer exist or may be decreased. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognized for the asset in prior years.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

Depreciation methods, useful lives and residual values are reviewed at each financial year-end and adjusted prospectively if appropriate.

(g) Leases

The Company did not restate prior year comparative information under the modified retrospective approach upon the implementation of IFRS 16. Therefore, the comparative information continues to be reported under applicable accounting policies under International Accounting Standard (“IAS”) 17, “Leases” (“IAS 17”) and related interpretations.

For prior years, payments made under operating leases were recognized in net earnings on a straight-line basis over the term of the lease. Minimum lease payments made under finance leases were apportioned between the finance expense and the reduction of the outstanding liability. The finance expense was allocated to each year during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability.

Under IFRS 16, at inception, the Company assesses whether a contract is, or contains, a lease based on whether the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

The Company recognizes a right-of-use asset and a lease liability at the commencement date of the lease, i.e. the date the underlying asset is available for use.

Right-of-use assets

Right-of-use assets are measured at cost, less any accumulated depreciation and accumulated impairment losses, and adjusted for any remeasurement of lease liabilities. Cost of right-of-use assets is comprised of:

- the initial measurement amount of the lease liabilities recognized.
- any lease payments made at or before the commencement date, less any lease incentives received;
- any initial direct costs incurred; and
- an estimate of costs to dismantle and remove the underlying asset, restore the site on which it is located or restore the underlying asset to the condition required by the terms and conditions of the lease contract.

Right-of-use assets are depreciated over the shorter period of lease term and useful life of the underlying asset. If a lease transfers ownership of the underlying asset or the cost of the right-of-use asset reflects that the Company expects to exercise a purchase option, the related right-of-use asset is depreciated over the useful life of the underlying asset based on periods detailed above. The depreciation starts at the commencement date of the lease. Right-of-use assets are assessed for impairment whenever there is an indication that the right-of-use assets may be impaired.

4. Significant accounting policies (continued)

Lease liabilities

Lease liabilities are initially measured at the present value of the lease payments that are not paid at the commencement date over the lease term. The present value of the lease payments is determined using the lessee's incremental borrowing rate at the commencement date if the interest rate implicit in the lease is not readily determinable. The incremental borrowing rate is a function of the lessee's incremental borrowing rate, the nature of the underlying asset, the location of the asset, the length of the lease and the currency of the lease contract. Generally, the Company uses the lessee's incremental borrowing rate for the present value. At the commencement date, lease payments generally include fixed payments, less any lease incentives receivable, variable lease payments that depend on an index (e.g. based on inflation index) or a specified rate, and payments of penalties for terminating the lease, if the lease term reflects the lessee exercising the option to terminate the lease. Lease payments also include amounts expected to be paid under residual value guarantees and the exercise price of a purchase option if the Company is reasonably certain to exercise that option.

Variable lease payments that do not depend on an index or a specified rate are not included in the measurement of lease liabilities but instead are recognized as expenses in the period in which the event or condition that triggers the payment occurs.

After the commencement date, the carrying amount of lease liabilities is increased to reflect the accretion of interest and reduced to reflect lease payments made. In addition, the carrying amount of lease liabilities is remeasured when there is a change in future lease payments arising from a change in an index or specified rate, if there is a modification to the lease terms and conditions, a change in the estimate of the amount expected to be payable under residual value guarantee, or if the Company changes its assessment of whether it will exercise a termination, extension or purchase option. The remeasurement amount of the lease liabilities is recognized as an adjustment to the right-of-use asset, or in the profit and loss statement when the carrying amount of the right-of-use asset is reduced to zero.

Classification and presentation of lease-related expenses

Depreciation charge for right-of-use assets, expenses related to variable lease payments not included in the measurement of lease liabilities and loss (gain) related to lease modifications are allocated in the Company's profit and loss statement based on their function within the Company, while interest expense on lease liabilities is presented within finance costs.

Cash flow classification

Lease payments related to the principal portion of the lease liabilities are classified as cash flows from financing activities while lease payments related to the interest portion of the lease liabilities are classified as interest paid within cash flows from financing activities. Lease incentives received are classified as cash flows from investing activities. Variable lease payments not included in the measurement of lease liabilities are classified as cash flows from operating activities.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

(h) Government assistance and investment tax credits

Investment tax credits are comprised of scientific research and experimental development tax credits. Government assistance and investment tax credits are recognized when there is reasonable assurance of their recovery and recorded as a reduction of the related expense or cost of the asset acquired, as applicable. Investment tax credits are subject to the customary approvals by the pertinent tax authorities. Adjustments required, if any, are reflected in the year when such assessments are received.

(i) Intangible assets

Acquired intangible assets are measured at cost on initial recognition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and any accumulated impairment losses.

Intangible assets with finite lives are amortized over the useful life of the asset and assessed for impairment whenever there is an indication of impairment. Amortization expense on the intangible assets with finite lives is recognized in the statements of comprehensive loss.

Research costs are charged to comprehensive loss in the year they are incurred, net of related investment tax credits. Development costs are charged to comprehensive loss in the year they are incurred net of related investment tax credits unless they meet specific criteria related to technical, market and financial feasibility in order to be recognized as intangible assets which include:

- the technical feasibility of completing the intangible asset so that it will be available for use or sale;
- the Company has the intention to complete and the ability to use or sell the asset;
- the asset will generate future economic benefits;
- the Company has the resources to complete the asset; and
- ability to measure reliably the expenditure during development.

Costs to establish patents for internally developed technology are considered development costs and are charged to comprehensive loss in the year they are incurred unless they meet specific criteria related to technical, market and financial feasibility. Patent costs include legal and other advisor fees to obtain patents, and patent application fees.

Amortization of the development costs is calculated on a straight-line basis over the remaining useful life of the related patent and begins when development is complete. During the period of development, the asset is tested annually for impairment.

The recoverable amount of an asset or cash-generating unit (CGU) is the greater of its value in use and its fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. Assets that cannot be tested individually are grouped into the smallest independent group of assets that generate cash inflows from continuing use. For the purposes of testing non-financial assets for impairment, management has identified one CGU.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

An impairment loss is recognized if the carrying amount of an asset or its CGU exceeds its recoverable amount. Impairment losses are recognized in the statement of comprehensive loss. Impairment losses recognized in respect of the CGU are allocated first to reduce the carrying amount of goodwill allocated to the units, and then to reduce the carrying amounts on a pro-rata basis of the other assets in the unit.

Amortization is calculated on a straight-line basis:

| | <u>Useful life</u> |
|--------------------------------------|----------------------|
| Licenses | 5 to 10 years |
| Patents and Development costs | 1 to 21 years |

(j) Employee benefits

Share-based payments

The Company applies a fair value-based method of accounting to all share-based payments. Employee and director stock options are measured at their fair value of each tranche on the grant date and recognized in its respective vesting period. Non-employee stock options are measured when the services are rendered by the consultant at the fair value of the services received, if the fair value can be measured reliably. In the case the fair value of the services cannot be measured reliably, the services are measured indirectly using the fair value of the equity instruments granted. If there are unidentifiable services, then they are measured at grant date. The cost of stock options is presented as share-based payment expense. On the exercise of stock options, share capital is credited for the consideration received and for the fair value amounts previously credited to contributed surplus. The Company uses the Black-Scholes option-pricing model to estimate the fair value of share-based payments.

Deferred profit-sharing plan

The Company established a yearly Deferred Profit-Sharing Plan (“DPSP”) for all eligible employees who have materially and significantly contributed to the prosperity and profits of the Company. The significance of any contribution of any employee to the prosperity and profits of the Company for purposes of eligibility in the DPSP is determined by the Board of Directors of the Company upon such relevant information as the Board, in its sole discretion, may find relevant. All related persons to the Company are excluded from participating in the DPSP.

For all eligible employees, the Company is required to contribute to the DPSP out of the profits of the Company. The amount of the Company’s contribution will be such amount which, in the opinion of its Board of Directors, is warranted by the profits and overall financial position of the Company. During the year, the Company contributed

\$Nil to the DPSP. Obligations for contributions to the DPSP are recognized as an employee benefit expense in the statement of comprehensive loss in the periods during which services are rendered by employees.

Short-term employee benefits

Short-term employee benefit obligations are measured on an undiscounted basis and are expensed as the related service is provided.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

A liability is recognised for the amount expected to be paid under the short-term incentive plan if the Company has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee, and the obligation can be estimated reliably.

Extinguishing financial liabilities with equity instruments

When equity instruments issued to a creditor to extinguish all or part of a financial liability are recognized initially, the Company measures them at the fair value of the equity instruments issued, unless that fair value cannot be reliably measured. If the fair value of the equity instruments issued cannot be reliably measured, then the equity instruments shall be measured to reflect the fair value of the financial liability extinguished.

Transactions with shareholders

Transactions with shareholders where the Company is receiving a benefit from the shareholder because an independent third party would not have been transacted at the same value is split into a capital transaction and a deemed third-party transaction. Proceeds from the deemed third-party transaction measured at fair value is recognized in the profit or loss, with the remaining proceeds being recognized directly in equity as a contribution from shareholders in the contributed surplus.

Financial Instruments

Financial assets are classified at amortized cost, fair value through profit or loss ("FVTPL") or fair value through other comprehensive income ("FVOCI") based on the entity's business model for managing the financial assets and the contractual cash flow characteristics of these assets. Assessment and decision on the business model approach used is an accounting judgment.

A financial asset is measured at amortized cost if it is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows and its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding. The Company includes in this category cash and trade accounts receivable.

A financial asset is measured at fair value through profit or loss ("FVTPL") if:

- (a) Its contractual terms do not give rise to cash flows on specified dates that are solely payments of principal and interest (SPPI) on the principal amount outstanding; or
- (b) It is not held within a business model whose objective is either to collect contractual cash flows, or to both collect contractual cash flows and sell; or
- (c) At initial recognition, it is irrevocably designated as measured at FVTPL when doing so eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise from measuring assets or liabilities or recognizing the gains and losses on them on different bases.

The Company includes in this category investments in equity instruments.

Change in fair value of financial liabilities attributable to changes in the entity's own credit risk are to be presented in other comprehensive income unless they affect amounts recorded in income.

4. Significant accounting policies (continued)

All financial liabilities, other than those measured at fair value through profit or loss, are included in the financial liabilities measured at amortized cost. The Company includes in this category accounts payable and accrued liabilities, term loans, long-term debt and convertible debentures.

Recognition:

The Company recognizes a financial asset or a financial liability when it becomes a party to the contractual provisions of the instrument.

Purchases or sales of financial assets that require delivery of assets within the time frame generally established by regulation or convention in the market place (regular way trades) are recognized on the trade date, i.e. the date that the Company commits to purchase or sell the asset.

Initial measurement

Financial assets and liabilities (other than financial assets at FVTPL) are measured initially at their fair value plus any directly attributable incremental costs of acquisition or issue.

Financial assets and financial liabilities at FVTPL are recorded in the statement of financial position at fair value. All transaction costs for such instruments are recognized directly in profit or loss.

Subsequent measurement

Financial assets (other than financial assets at FVTPL) are measured at amortized cost using the effective interest method less any allowance for impairment. Gains and losses are recognized in profit or loss when the debt instruments are derecognized or impaired, as well as through the amortization process.

Financial liabilities are measured at amortized cost using the effective interest method. Gains and losses are recognized in profit or loss when the liabilities are derecognized, as well as through the amortization process.

Derecognition

A financial asset is derecognized where the rights to receive cash flows from the asset have expired, or the Company has transferred its rights to receive cash flows from the asset. The Company derecognizes a financial liability when the obligation under the liability is discharged, cancelled or expired.

Offsetting of financial instruments

Financial assets and financial liabilities are offset, and the net amount reported in the statement of financial position if, and only if, there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, or to realize the assets and settle the liabilities simultaneously.

Impairment of financial instruments

The Company applies the “expected credit loss” (“ECL”) model to financial assets measured at amortized cost. The Company’s financial assets subject to the new impairment model are cash, trade accounts receivable and deposits.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

4. Significant accounting policies (continued)

The trade accounts receivable have no financing component and have maturities of less than 12 months at amortized cost and, as such, the Company applies an approach similar to the simplified approach for expected credit losses (ECLs) to all its trade accounts receivable. Therefore, the Company does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date.

The Company's approach to ECLs reflects a probability-weighted outcome, the time value of money and reasonable and supportable information that is available without undue cost or effort at the reporting date about past events, current conditions and forecasts of future economic conditions.

The Company uses the provision matrix as a practical expedient to measure ECLs on trade receivables, based on days past due for groupings of receivables with similar loss patterns. The provision matrix is based on historical observed loss rates over the expected life of the receivables and is adjusted for forward-looking estimates.

The impairment guidance using the ELC model did not have a significant impact on the carrying amounts of the Company's trade accounts receivable as the Company has had negligible credit losses.

Write-off

The gross carrying amount of a financial asset is written off when the Company has no reasonable expectations of recovering a financial asset in its entirety or a portion thereof.

Compound Financial Instrument

Compound financial instrument issued by the Company comprises convertible debentures that can be converted into common shares at the option of the holder, and the number of shares to be issued does not vary with changes in their fair value.

The component parts of the compound instrument issued by the Company are initially classified separately as financial liabilities and equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and an equity instrument. The conversion option that will be settled by the exchange of a fixed amount of cash or another financial asset for a fixed number of the Company's own equity instruments is an equity instrument.

At the date the convertible debentures are issued, the liability component is initially recognized at the fair value of similar debt instruments which do not have an equity conversion option. The initial amount of the liability component is determined by discounting the face value of the convertible debentures using a rate of interest prevailing for similar non-convertible instruments at the date of issue for instruments of similar terms and risks. The conversion option classified as the equity component is determined by deducting the amount of the liability component from the gross proceeds. The equity component is recognized net of income tax effects within the other equity account.

Subsequently, the liability component is accounted for at amortized cost and is accreted using the effective interest method, up to the face value of the convertible debentures during the period they are outstanding. Interest expense on the convertible debentures is composed of the interest calculated on the face value of the convertible debentures and a non-cash notional interest representing the accretion of the carrying value of the convertible debentures. The equity component is not remeasured.

4. Significant accounting policies (continued)

The conversion option classified as equity remains in the other equity account until the conversion option is exercised, in which case, the balance recognized in other equity is transferred to share capital. When the conversion option remains unexercised at the maturity date of the convertible debentures, the balance recognized in other equity will be transferred to contributed surplus. No gain or loss is recognized in the consolidated income statement upon conversion or expiration of the conversion option.

Transaction costs related to the issuance of convertible debentures are allocated to the liability and equity components in proportion to the allocation of the gross proceeds. Transaction costs relating to the equity component are recognized directly in other equity. Transaction costs relating to the liability component are included in the carrying amount of the liability component and are amortized over the term of the convertible debentures using the effective interest method.

Effective Interest Method

The effective interest method is a method of calculating the amortized cost of a financial asset/financial liability and of allocating interest income/expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts/payments (including all fees and points paid or received that

form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the financial instrument, or (when appropriate) a shorter period, to the net carrying amount on initial recognition.

5. Significant accounting judgments, estimates and assumptions

The preparation of financial statements requires management to make judgments, estimates and assumptions based on currently available information that affect the reported amounts of assets, liabilities and contingent assets and liabilities at the date of the financial statements and reported amounts of revenues and expenses during the reporting period. Estimates and judgments are continuously evaluated and are based on management's experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. However, actual results could differ from those estimated. By their very nature, these estimates are subject to measurement uncertainty and the effect of any changes in estimates on the financial statements of future periods could be material.

In the process of applying the Company's accounting policies, management has made the following judgments, estimates, and assumptions which have the most significant effect on the amounts recognized in the financial statements.

(a) Going concern

Information about critical judgements in applying accounting policies that have the most significant effect on the amounts recognised in the financial statements relates to the assessment of the Company's ability to continue as a going concern [note 1 (b)].

5. Significant accounting judgments, estimates and assumptions (continued)

(b) Assessment of impairment of property and equipment and intangible assets

At each reporting date, the Company reviews the carrying amounts of its property and equipment to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. For impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or cash generating units ("CGUs"). The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell. Value in use is based on the estimated future cash flows, discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or CGU. An impairment loss is recognised if the carrying amount of an asset or CGU exceeds its recoverable amount. Impairment losses are recognised in profit or loss.

An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

(c) Revenue recognition

Revenue recognition for long-term contracts completion requires the use of estimates to determine the recorded amount of revenues, costs in excess of billings and billings in excess of costs and profits on uncompleted contracts.

The determination of anticipated costs for completing a contract is based on estimates that can be affected by a variety of factors, including the cost of materials, labour and sub-contractors, as well as potential claims from customers and subcontractors.

As risks and uncertainties are different for each project, the sources of variations between anticipated costs and actual costs incurred will also vary by project. The determination of estimates is based on the Company's business practices as well as its historical experience. Estimates are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised.

Given this estimation process, it is possible that changes in future conditions could cause a material change in the recognized amount of revenues and costs and profits in excess of billings on uncompleted contracts and accrued expenses.

Agreements that contain multiple deliverables require the use of judgment to determine whether they contain separately identifiable performance obligations and to allocate the consideration received to each performance obligation.

(d) Stock-based payments

The Company uses the fair value method of valuing compensation expense associated with the Company's stock option plan. Estimating fair value requires determining the most appropriate valuation model for a grant of equity instruments, which is dependent on the terms and conditions of the grant. This also requires determining the most appropriate inputs to the valuation model including the expected life of the option, volatility, expected forfeitures and distribution yield. The assumptions and models are discussed in note 19.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

5. Significant accounting judgments, estimates and assumptions (continued)

(e) Useful lives of property and equipment and intangible assets

The Company estimates the useful lives of property and equipment based on the period over which the assets are expected to be available for use. The estimated useful lives of property and equipment are reviewed periodically and are updated if expectations differ from previous estimates due to physical wear and tear and legal or other limits on the use of the relevant assets. In addition, the estimation of the useful lives of property and equipment are based on management's experience with similar assets. It is possible, however, that future results of operations could be materially affected by changes in the estimates brought about by changes in factors mentioned above. The amounts and timing of recorded expenses for any period would be affected by changes in these factors and circumstances. Useful lives, depreciation rates and residual values are reviewed at least annually.

(f) Assessment of investment tax credits

The investment tax credits are estimated by management based on quantitative and qualitative analysis and interpretation of various government programmes, related restrictions, limitations, definitions, and eligibility conditions. Uncertainty over the eligibility and final assessment by taxation authorities of investment tax credits is considered a significant accounting judgment. Management involves its technical staff and external specialists

in determining if the expenditures meet the requirements of the different tax credit claims. Management believes that its accruals for investment tax credit receivables are adequate for all claims based on its assessment of requirements of the tax credit claims.

(g) Intangible assets

The recognition of development costs as intangible assets requires management's judgments to determine whether the required criteria for recognition are met including management estimates of future economic benefits.

(h) Fair value of investments

Where the fair values of investments recorded in the statement of financial position cannot be derived from active markets, they are determined using valuation techniques including the Black-Scholes models. The inputs to these models are taken from observable markets where possible, but where this is not feasible, a degree of judgment is required in establishing the fair values. The judgments include considerations of inputs such as the expected volatility and the expected life. Should any of the inputs to these models or changes in assumptions about these factors occur, this could affect the reported fair value of the investments.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

5. Significant accounting judgments, estimates and assumptions (continued)

(i) Right-of-use assets and lease liabilities

In determining the carrying amount of the right-of-use asset and corresponding lease liabilities, assumptions include the non-cancellable term of the lease plus periods covered by an option to renew or purchase the leases, estimated useful lives of the related assets, and incremental borrowing rate. Renewal and purchase options are only included in the lease term if management is reasonably certain to renew. Management considers factors such as market conditions, comparable rental rates and similar property values. The Company is also required to estimate the incremental borrowing rate specific to each portfolio of leased assets with similar characteristics if the interest rate in the lease is not readily determined. Management determines the incremental borrowing rate using base rate for similar loans plus a risk premium.

6. Revenues

Revenues by product line:

The Company's revenues from long-term contracts and sales of goods are generated primarily from PUREVAP™ related sales of \$525,556 (2018 - \$1,781,009), DROSRITE™ related sales of \$560,916 (2018 - \$1,237,740), the development and support related to systems supplied to the U.S. Military of \$637,841 (2018 - \$1,451,998), torch related sales of \$2,323,351 (2018 - Nil), and other sales and services of \$766,314 (2018 - \$559,369).

The following is a summary of the Company's revenues by revenue recognition method:

| | <u>2019</u> | <u>2018</u> |
|--|-------------------------|------------------|
| | \$ | \$ |
| Sales of goods under long-term contracts | 4,585,337 | 4,867,667 |
| Sales of goods in point of time | 228,641 | 162,449 |
| | <u>4,813,978</u> | <u>5,030,116</u> |

See note 28 for sales by geographic area.

Transaction price allocated to remaining performance obligations

As at December 31, 2019, revenue expected to be recognized in the future related to performance obligations that are unsatisfied (or partially satisfied) at the reporting date is \$6,011,159(2018 - \$7,697,748). Revenue will be recognized as the Company satisfies its performance obligations under long-term contracts, which is expected to occur over the next 3 years.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

7. Accounts receivable

Details of accounts receivable were as follows:

| | December 31, 2019 | December 31, 2018 |
|---------------------------------|------------------------------|-----------------------|
| | <u>\$</u> | <u>\$</u> |
| 1 – 30 days | 71,423 | 281,984 |
| 31 – 60 days | 9,483 | 178,667 |
| 61 – 90 days | 17,753 | 86,567 |
| Greater than 90 days | 5,469 | 16,613 |
| Total trade accounts receivable | <u>104,128</u> | <u>563,831</u> |
| Sales tax receivable | <u>106,412</u> | <u>67,321</u> |
| | <u>210,540</u> | <u>631,152</u> |

There is no allowance for expected credit losses recorded as at December 31, 2019 and December 31, 2018.

8. Costs and profits in excess of billings on uncompleted contracts

As at December 31, 2019, the Company had four uncompleted contracts with total billings of \$89,256 which were less than total costs incurred and had recognized cumulative revenue of \$212,236 since those projects began. This compares with five contracts with total billings of \$1,087,339 which were less than total costs incurred and had recognized cumulative revenue of \$1,395,171 as at December 31, 2018.

Changes in costs and profits in excess of billings on uncompleted contracts during the year are explained by \$307,832 recognised at the beginning of the year being transferred to accounts receivable, and \$184,852 resulting from changes in the measure of progress.

9. Inventories

| | December 31, 2019 | December 31, 2018 |
|---------------|------------------------------|-----------------------|
| | <u>\$</u> | <u>\$</u> |
| Powders | - | 211,466 |
| Raw Materials | - | 168,904 |
| Spare Parts | <u>10,068</u> | <u>2,462</u> |
| | <u>10,068</u> | <u>382,832</u> |

The Company decided in 2019 to start building a new and improved Plasma Powder Production equipment with advanced technological improvements with regard to production output and operating costs. The powders and raw materials related to the old Plasma atomization system were no longer deemed to have any future value and were written down by \$386,121 to their net recoverable amounts of nil.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

10. Deposits and investments

| | <u>December 31,</u> <u>2019</u> | <u>December 31,</u> <u>2018</u> |
|---|------------------------------------|------------------------------------|
| | <u>\$</u> | <u>\$</u> |
| Deposits | 178,105 | 51,491 |
| Investments: | | |
| Beauce Gold Fields (“BGF”) shares – level 1 | 133,354 | 102,579 |
| HPQ Silicon Resources Inc. (“HPQ”) shares - level 1 | 1,476,000 | 1,281,000 |
| HPQ warrants – level 3 | - | 310,537 |
| | <u>1,787,459</u> | <u>1,745,607</u> |

Deposits include amounts paid to suppliers, rent and utilities.

Investment in BGF (TSXV: BGF) consists of 1,025,794 of common shares. The 1,025,794 common shares of BGF were received in December 2018 as dividend in kind from a spinoff of HPQ.

Investments in HPQ (TSXV: HPQ) comprise 18,450,000 common shares (21,350,000 - 2018) and 17,750,000 warrants (18,750,000 - 2018). 1,500,000 warrants have an exercise price of \$0.25 with an expiry date of November 21, 2020 and the remaining 16,250,000 warrants have an exercise price of \$0.17 with an expiry date of August 21, 2021.

16,250,000 common shares of HPQ and 16,250,000 warrants of HPQ were purchased in cash (\$1,950,000) in 2018. 2,500,000 common shares and 2,500,000 warrants were received in 2017 in lieu of payment of services rendered by the Company to HPQ. At the transaction dates, the non-monetary transactions were measured based on the fair value of the common shares and warrants received for a total amount of \$320,000. A gain from initial recognition of the warrants of \$24,017 in 2018 was deferred off balance sheet until realized.

| | ("BGF") shares – level 1 | | ("HPQ") shares - level 1 | | HPQ warrants – level 3 | |
|----------------------------|--------------------------|----------------|--------------------------|------------------|------------------------|----------------|
| | Quantity | \$ | Quantity | \$ | Quantity | \$ |
| Balance, December 31, 2017 | - | - | 5,100,000 | 561,000 | 3,300,000 | - |
| Additions | 1,025,794 | 102,579 | 16,250,000 | 1,300,000 | 16,250,000 | 650,000 |
| Expired warrants | - | - | - | - | (800,000) | - |
| Change in the fair value | - | - | - | (580,000) | - | (339,463) |
| Balance, December 31, 2018 | <u>1,025,794</u> | <u>102,579</u> | <u>21,350,000</u> | <u>1,281,000</u> | <u>18,750,000</u> | <u>310,537</u> |
| Disposals | - | - | (2,900,000) | (261,000) | - | - |
| Expired warrants | - | - | - | - | (1,000,000) | - |
| Change in the fair value | - | 30,775 | - | 456,000 | - | (310,537) |
| Balance, December 31, 2019 | <u>1,025,794</u> | <u>133,354</u> | <u>18,450,000</u> | <u>1,476,000</u> | <u>17,750,000</u> | <u>-</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

11. Property and equipment

| | Computer equipment | Machinery and equipment | Automobile | Leasehold improvements | Equipment under construction | Total |
|--|-----------------------|----------------------------|---------------|---------------------------|------------------------------------|--------------------|
| | \$ | \$ | \$ | \$ | \$ | \$ |
| Cost | | | | | | |
| Balance at December 31, 2017 | 491,833 | 1,621,899 | 21,912 | 83,215 | 1,879,455 | 4,098,314 |
| Additions | 58,031 | - | - | 821,297 | 288,681 | 1,168,009 |
| Balance at December 31, 2018 | 549,864 | 1,621,899 | 21,912 | 904,512 | 2,168,136 | 5,266,323 |
| Additions | 21,654 | - | - | 9,539 | 922,917 | 954,110 |
| Reclass to Equipment under construction | - | - | - | (749,045) | 749,045 | - |
| Reclass to right-of-use assets | (49,530) | - | - | - | - | (49,530) |
| Impairment | - | - | - | - | (2,168,136) | (2,168,136) |
| Balance at December 31, 2019 | 521,988 | 1,621,899 | 21,912 | 165,006 | 1,671,962 | 4,002,767 |
| Accumulated depreciation | | | | | | |
| Balance at December 31, 2017 | 447,155 | 1,308,952 | 15,523 | 79,190 | - | 1,850,820 |
| Depreciation | 32,647 | 62,590 | 1,917 | 10,046 | 105,421 | 212,621 |
| Balance at December 31, 2018 | 479,802 | 1,371,542 | 17,440 | 89,236 | 105,421 | 2,063,441 |
| Depreciation | 32,368 | 50,071 | 1,342 | 3,749 | 81,305 | 168,835 |
| Reclass to right-of-use assets | (20,264) | - | - | - | - | (20,264) |
| Impairment | - | - | - | - | (186,726) | (186,726) |
| Balance at December 31, 2019 | 491,906 | 1,421,613 | 18,782 | 92,985 | - | 2,025,286 |
| Carrying amounts | | | | | | |
| Balance at December 31, 2018 | 70,062 | 250,357 | 4,472 | 815,276 | 2,062,715 | 3,202,882 |
| Balance at December 31, 2019 | 30,082 | 200,286 | 3,130 | 72,021 | 1,671,962 | 1,977,481 |

In 2019 the Company commenced construction on a new and improved Plasma Powder Production equipment with advanced technological improvements with regard to production output and operating costs. As a result, the existing powder production, Plasma atomization system, was no longer deemed to have any future benefit and was written down by \$1,981,410, to the net recoverable amount of nil.

Equipment under construction includes the leasehold improvements of a clean room and the costs related to building the new Plasma Powder Production equipment.

12. Leases

The Company has entered into lease contracts mainly for buildings and computer equipment, which expire at various dates through the year 2027. Some leases have extension or purchase options for various terms. Some lease payments are based on changes in price indices. The lease contracts do not impose any financial covenants.

PyroGenesis Canada Inc.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

12. Leases (continued)

a) Right-of-use assets

| | <u>Land and building</u> | <u>Computer equipment</u> | <u>Total</u> |
|-------------------------------------|------------------------------|-------------------------------|------------------|
| | \$ | \$ | \$ |
| Balance at January 1, 2019 | 4,073,286 | 29,266 | 4,102,552 |
| Depreciation | (348,590) | (11,193) | (359,783) |
| Balance at December 31, 2019 | 3,724,696 | 18,073 | 3,742,769 |

b) Amount recognized in the statement of comprehensive loss

| | <u>2019</u> |
|--|----------------|
| | \$ |
| Depreciation of right-of-use assets | 359,783 |
| Interest on lease liabilities | 258,288 |
| Expense related to lease payments not included in the measurement of lease liabilities | 7,264 |

Rent expense relating to operating leases under IAS 17 was \$504,445 in 2018.

c) Maturity analysis – contractual undiscounted cash flows of lease liabilities as at December 31, 2019

| | \$ |
|------------|------------------|
| 2020 | 389,152 |
| 2021 | 394,445 |
| 2022 | 3,088,912 |
| 2023 | 218,241 |
| 2024 | 213,402 |
| Thereafter | 444,588 |
| | <u>4,748,740</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

13. Intangible assets

| | <u>Licenses</u> | <u>Patents</u> | <u>Development costs</u> | <u>Total</u> |
|-------------------------------------|--------------------|----------------|--------------------------|--------------------|
| | \$ | \$ | \$ | \$ |
| Cost | | | | |
| Balance at December 31, 2017 | 8,409,051 | 160,719 | 243,294 | 8,813,064 |
| Additions | - | 214,610 | 1,577 | 216,187 |
| Balance at December 31, 2018 | 8,409,051 | 375,329 | 244,871 | 9,029,251 |
| Additions | - | 197,157 | - | 197,157 |
| Write-off | (8,409,051) | - | - | (8,409,051) |
| Balance at December 31, 2019 | - | 572,486 | 244,871 | 817,357 |
| Accumulated amortization | | | | |
| Balance at December 31, 2017 | 8,409,051 | - | - | 8,409,051 |
| Amortization | - | 43,818 | 16,508 | 60,326 |
| Balance at December 31, 2018 | 8,409,051 | 43,818 | 16,508 | 8,469,377 |
| Amortization | - | 3,625 | 16,508 | 20,133 |
| Write-off | (8,409,051) | - | - | (8,409,051) |
| Balance at December 31, 2019 | - | 47,443 | 33,016 | 80,459 |
| Carrying amounts | | | | |
| Balance at December 31, 2018 | - | 331,511 | 228,363 | 559,874 |
| Balance at December 31, 2019 | - | 525,043 | 211,855 | 736,898 |

The Company's development costs have been incurred to develop plasma related technologies and the patents protect the design and specification of these technologies.

14. Accounts payable and accrued liabilities

| | <u>December 31, 2019</u> | <u>December 31, 2018</u> |
|---|--------------------------|--------------------------|
| | \$ | \$ |
| Accounts payable | 2,780,628 | 1,072,257 |
| Accrued liabilities | 1,866,822 | 1,080,128 |
| Accounts payable to the controlling shareholder | 214,470 | 205,222 |
| Accounts payable to a trust beneficially owned by the controlling shareholder | 51,234 | - |
| | <u>4,913,155</u> | <u>2,357,607</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

15. Billings in excess of costs and profits on uncompleted contracts

The amount to date of costs incurred and recognized profits less recognized losses for construction projects in progress amounted to \$4,612,082(2018 - \$3,517,534).

Payments to date received were \$5,746,739 and \$1,950,000 of deposits on contracts in progress (2018 - \$5,919,944 in cash and \$1,950,000 of other assets).

Changes in billings in excess of costs and profits on uncompleted contracts during the year are explained by \$1,283,144 recognised at the beginning of the year being recognised as revenue, and an increase of \$15,391 resulting from cash received excluding amounts recognised as revenue.

16. Term loans

| | Other Term Loans ¹ | 2019 SR&ED Tax Credit loan ² | 2018 SR&ED Tax Credit loan ³ | 2017 SR&ED Tax Credit loan ⁴ | 2016 SR&ED Tax Credit loan | Total |
|----------------------------|----------------------------------|---|---|---|----------------------------------|-----------|
| | \$ | \$ | \$ | \$ | \$ | \$ |
| Balance, December 31, 2017 | - | - | - | 247,200 | 290,200 | 537,400 |
| Repayment | - | - | - | - | (290,200) | (290,200) |
| Balance, December 31, 2018 | - | - | - | 247,200 | - | 247,200 |
| Additions | 115,200 | 247,500 | 214,000 | - | - | 576,700 |
| Conversion option | (12,800) | - | - | - | - | (12,800) |
| Financing costs | - | (63,558) | (54,955) | - | - | (118,513) |
| Accretion | 8,533 | 1,389 | 40,691 | - | - | 50,613 |
| Repayment | - | - | - | (247,200) | - | (247,200) |
| Balance, December 31, 2019 | 110,933 | 185,331 | 199,736 | - | - | 496,000 |

¹matured May 1, 2020 bearing interest rate of 8% per annum payable at the maturity date.

²maturing December 23, 2020 bearing interest rate of 16.68% payable at the issuance.

³matured April 3, 2020 bearing interest rate of 16.68% payable at the issuance.

⁴matured September 30, 2018 bearing interest rate of 18% (effective interest rate 23%), repaid February 2019.

On December 23, 2019, the Company entered into a SR&ED tax credit loan of \$247,500 bearing interest at a rate of 16.68% and fees totaling \$22,375 paid at the issuance of the loan. The loan was discounted using the effective interest method. The effective interest rate on the loan is 25.68%.The loan is secured by the 2019 investment tax credit receivable and is repayable on December 22, 2020.

On March 25, 2019, the Company entered into a SR&ED tax credit loan of \$214,000 bearing interest at a rate of 16.68% and fees totaling \$19,260 paid at the issuance of the loan. The loan was discounted using the effective interest method. The effective interest rate on the loan is 25.68%.The loan is secured by the 2018 investment tax credit receivable and is repayable on April 2, 2020.

The SR&ED tax credit loans are financing, in the form of loans, with respect to the Company's scientific research and experimental development tax credits ("SR&ED Tax Credits"). The principal of the loans is subject to holdback to be disbursed upon reception of notice of assessment. The principal of the loans is subject to repayment at the earlier of (a) receipt of the SR&ED Tax Credits refund or (b) the maturity date. The SR&ED Tax Credits loans agreement provides for automatic renewal of twelve months if loan is not paid at maturity. As at December 31, 2019, the amount available under the term loan financing agreement totals \$461,500 (2018 – \$247,200).

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

16. Term loans (continued)

Pursuant to each financing, the Company granted the lender a security interest and movable hypothec on all of its assets excluding its intellectual property but including a first rank claim on the refundable portion of its SR&ED Tax Credits for each of the fiscal years ended December 31, 2018, of \$274,921 and 2019 of \$434,474.

In 2019, the Company recorded investment tax credits receivable of \$434,474 (2018 - \$274,921), of which an amount of \$80,146 (2018 - \$43,292) was recorded against property and equipment, \$179,670 (\$358,427 – 2018) was recorded against cost of sales and services, \$144,658 (2018 - \$79,529) against research and development expenses and \$30,000 (2018 - \$36,827) against selling general and administrative expenses..

On May 1, 2019 the Company entered into loan agreements with unrelated individuals totaling \$115,200 bearing interest at the annual rate of 8% payable at maturity, on May 1, 2020. The other term loans are unsecured and are convertible, at 10% discount, for a variable amount of shares into any future private placement until maturity. The fair value of the debt instrument at inception was determined using the estimated cash flows discounted using a market rate of 20%. The residual amount of the non derivative liability of \$12,800 associated with the conversion feature has been recorded in accounts payable and accrued liabilities.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

17. Long-term debt

| | December 31, 2019 | December 31, 2018 |
|---|-------------------|-------------------|
| | \$ | \$ |
| Promissory notes payable to the controlling shareholder and CEO (i) | 284,956 | 249,339 |
| Obligations under finance lease | - | 31,728 |
| | 284,956 | 281,067 |
| Current portion of the long-term debt | (284,956) | 12,491 |
| Long-term debt | - | 268,576 |

| | Promissory notes payable to the controlling shareholder and CEO (i) | Obligations under finance lease | Balance of sale – payable to a company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, and under common control of the controlling shareholder and CEO | Total |
|--|---|---------------------------------|--|-----------|
| | \$ | \$ | \$ | \$ |
| Balance, December 31, 2017 | - | 18,736 | 111,928 | 130,664 |
| Addition | 295,000 | 24,008 | - | 319,008 |
| Fair value adjustment | (58,607) | - | - | (58,607) |
| Accretion | 12,946 | - | - | 12,946 |
| Issuance of shares in settlement of debt | - | - | (111,928) | (111,928) |
| Repayment | - | (11,016) | - | (11,016) |
| Balance, December 31, 2018 | 249,339 | 31,728 | - | 281,067 |
| Additions | - | - | - | - |
| Fair value adjustment | - | - | - | - |
| Accretion | 35,617 | - | - | 35,617 |
| Reclass to lease liabilities | - | (31,728) | - | (31,728) |
| Balance, December 31, 2019 | 284,956 | - | - | 284,956 |
| Current portion of long-term debt | (284,956) | - | - | (284,956) |
| Long-term debt | - | - | - | - |

- (i) The promissory notes payable to the controlling shareholder and CEO of the Company total \$295,000, are unsecured and bear interest at 6% per annum payable on March 31, 2020, the maturity date. The fair value of the promissory note liability component at inception was determined using estimated future cash flows discounted using a market interest rate of 20%. The residual amount of \$58,607 representing the below market element was recorded in the shareholders' (Deficiency) Equity in contributed surplus.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

18. Convertible debentures

2015 Convertible Debenture

On April 2, 2018, the Company redeemed \$3,245,000 of the \$4,000,000 unsecured convertible debenture issued on March 30, 2015 maturing on March 30, 2018 (the “2015 Convertible Debenture”). The remaining balance of \$755,000 was redeemed on April 19, 2018, by the issuance of 1,258,333 units to Peter Photis Pascali, the father of the controlling shareholder and CEO. The amount of \$572,582 related to the equity component of the 2015 Convertible Debenture has been reclassified from Equity portion of convertible debentures to the contributed surplus at the extinguishment date.

2018 Convertible Debenture

On April 2, 2018, the Company completed a \$3,000,000 non-brokered private placement of 9.5% secured convertible debentures (the “2018 Convertible Debenture”). The 2018 convertible debentures bear interest at the rate of 9.5% per annum, with interest payable in cash on a quarterly basis, and mature on March 29, 2020. Each Debenture is convertible into common shares of the Company at a conversion price of \$0.80 per common share. The 2018 convertible debentures may be redeemed before maturity, in whole at anytime or in part from time to time at the option of the Company. In the event the Company elects to redeem the debentures before the maturity date, the Company shall be required to pay all interest that otherwise would have accrued on the debentures up to the maturity date. The 2018 convertible debentures are secured by a hypothec on the universality of all of the property, rights and assets of the Company, present and future, movable and immovable, corporeal and incorporeal.

The 2018 Convertible Debenture is a compound financial instrument and the total proceeds of the issuance was allocated between a liability for the debenture and an equity component for the conversion feature. The fair value of the debt liability component at inception was determined using estimated future cash flows discounted using a market interest rate of 20%. The residual amount representing the value of the conversion option equity component was classified in the shareholders’ (Deficiency) Equity.

In connection with the convertible debenture, the Company paid finder fees in the amount of \$180,000 to the agent. Total transaction costs amount to \$315,702 and have been allocated between the liability and equity components. The effective interest rate of the liability component is 20.23%.

At the issuance date, the 2018 Convertible Debenture was recorded as follows:

| | |
|---|------------------|
| | \$ |
| Debt component, net of transaction cost of \$268,364 | 2,282,538 |
| Conversion option recognized in equity, net of transaction cost of \$47,338 | 401,760 |
| Net proceeds | <u>2,684,298</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

18. Convertible debentures (continued)

| | December 31, 2019 | December 31, 2018 |
|---|----------------------|----------------------|
| | \$ | \$ |
| Balance, beginning of year | 2,527,241 | 3,916,549 |
| Effective interest accretion | - | 83,451 |
| | 2,527,241 | 4,000,000 |
| Repayment of 2015 Convertible Debenture in cash | - | (3,245,000) |
| Repayment of 2015 Convertible Debenture in shares | - | (755,000) |
| | 2,527,241 | - |
| Issuance of 2018 Convertible Debenture | - | 2,282,538 |
| Effective interest accretion | 371,117 | 244,703 |
| Balance, end of year | 2,898,358 | 2,527,241 |

On March 30, 2020, the Company reached an agreement to extend the maturity date of its \$3,000,000 convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company paid \$300,000 of the outstanding amount (representing 10% of the principal amount), paid a one-time accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. The interest rate and conversion feature have not changed.

19. Shareholders' deficiency

Common shares and warrants

Authorized:

The Company is authorized to issue an unlimited number of Class A common shares without par value.

Issuance of shares

On October 23, 2019, the Company completed a non-brokered private placement and issued 300,000 units at a

price of \$0.56 per unit, for total gross proceeds of \$168,000. Each unit consists of one common share and three-quarters (0.75) of a common share purchase warrant of the Company. Each warrant entitles the holder to acquire one common share of the Company at a price of \$0.75. Each warrant expires fifteen (15) months from issuance. The Company did not pay finder's fees or issue any finders compensation warrants in connection with this private placement.

On June 19, 2019, the Company completed a non-brokered private placement and issued 1,000,000 units at a price of \$0.58 per unit, for total gross proceeds of \$580,000. Each unit consists of one common share and one common share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until June 19, 2021. In connection with the private placement, the Company paid finder's fees in the amount of \$23,200.

On May 28, 2019, the Company completed a non-brokered private placement and issued 2,024,500 units at a price of \$0.58 per unit, for total gross proceeds of \$1,174,210. Each unit consists of one common share and one common share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until May 28, 2021. In connection with the private placement, the Company paid finder's fees in the amount of \$40,600.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

On May 15, 2019, the Company completed a non-brokered private placement and issued 2,996,500 units at a price of \$0.58 per unit, for total gross proceeds of \$1,737,970. Each unit consists of one common share and one common share purchase warrant of the Company. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until May 15, 2021. In connection with the private placement, the Company paid finder's fees in the amount of \$42,595.

On January 7, 2019, the Company received an additional subscription and sold an additional aggregate amount of 97,400 units of the Company at a price of \$0.58 per unit for gross proceeds of \$56,492. An amount of \$5,800 from the initial subscriptions of the Private Placement dated December 17, 2018 was received on December 23, 2018 and deposited on January 3, 2019. As a result of the initial subscriptions and subsequent subscription, the Company issued and sold pursuant to the Private Placement dated December 17, 2018 a total of 2,244,367 units for gross proceeds of \$1,301,733. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until December 18, 2020.

During the year ended December 31, 2019, 1,384,000 (544,000 - 2018) stock options were exercised for net proceeds of \$306,360 (\$139,320 - 2018). The amounts credited to share capital from the exercise of stock options include an ascribed value from contributed surplus of \$287,350 (\$93,920 - 2018).

During the year ended December 31, 2018, the Company issued 1,797,500 common shares upon the exercise of warrants for net proceeds of \$629,125.

On December 17, 2018, the Company issued an amount of 2,146,967 units at a price of \$0.58 per unit, for gross proceeds of \$1,245,241. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until December 18, 2020.

On October 25, 2018, the Company issued 3,385,718 units to a company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, and an entity under common control of the controlling shareholder and CEO under a settlement agreement (see note 23).

On October 19, 2018, the Company issued an amount of 1,112,000 units as repayment of term loans and accounts payable to three creditors, which were measured at an amount of \$644,960, to reflect the fair value of the financial liabilities extinguished at that time. Each unit also consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.58 until February 13, 2021.

On October 19, 2018, the Company issued an amount of 388,750 units at a price of \$0.58 per unit, for gross proceeds of \$225,475. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.58 until February 13, 2021.

On September 28, 2018, the Company issued an amount of 3,448,276 units to a trust whose beneficiary is the controlling shareholder and CEO at a price of \$0.58 per unit, for gross proceeds of \$2,000,000. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.58 until January 28, 2021.

The Company also issued 1,850,000 units to an unrelated party for an aggregate amount of 3,108,333 at a price of \$0.60 per unit, for gross proceeds of \$1,110,000. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$0.85 until April 19, 2020. In connection with the private placement, the Company paid finder fees in the amount of \$89,478 and issued 74,000 finder's compensation warrants to the agents.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

On February 9, 2018 and March 7, 2018, the Company issued 1,899,999 units to a company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, and an entity under common control of the controlling shareholder and CEO under a settlement agreement (see notes 14 and 17) and 2,971,430 units to unrelated parties at a price of \$0.70 per unit, for gross proceeds of \$2,080,001. Each unit consists of one common share of the Company and one common share purchase warrant. Each warrant entitles the holder thereof to purchase one common share at a price of \$1.25 until August 9, 2019. In connection with the private placement, the Company paid finder's fees in the amount of \$127,750 and issued 88,000 finder's compensation warrants to the agents.

The fair value of the finder's compensation warrants issued was measured as follows based on the Black- Scholes option pricing model:

| Date of issuance | April 19, 2018 | Feb 9, 2018 |
|--|-------------------|----------------|
| Exercise price (\$) | 0.85 | 1.25 |
| Weighted-average issuance date market price (\$) | 0.62 | 0.70 |
| Expected life (months) | 24 | 18 |
| Expected volatility (%) | 71.9 | 71.9 |
| Semi-annual weighted-average risk-free interest rate (%) | 1.74 | 1.74 |
| Dividend yield (%) | 0 | 0 |

Stock option plan

The Company has a stock option plan authorizing the Board of Directors to grant options to directors, officers, employees and consultants to acquire common shares of the Company at a price computed by reference to the closing market price of the shares of the Company on the business day before the Company notifies the stock exchanges of the grant of the option. The number of shares which may be granted to any one person shall not exceed 5% (2% for consultants) of total share capital over a twelve-month period.

As at December 31, 2019, an amount of \$81,884 (\$127,195 – 2018) remains to be amortized until January 2021 related to the grant of stock options.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

Stock option plan (continued)

The following table sets out the activity in stock options:

| | Number of options | Weighted average exercise price \$ |
|-----------------------------|----------------------|--|
| Options, December 31, 2017 | 9,376,000 | 0.32 |
| Granted | 1,350,000 | 0.60 |
| Exercised | (544,000) | (0.26) |
| Forfeited | (260,000) | (0.25) |
| Balance – December 31, 2018 | 9,922,000 | 0.37 |
| Granted | 400,000 | 0.51 |
| Exercised | (1,384,000) | (0.22) |
| Expired | (500,000) | (0.70) |
| Balance, December 31, 2019 | 8,438,000 | 0.37 |

On September 29, 2019, the Company granted a total of 400,000 stock options to members of the Board of Directors and the Acting Chief Financial Officer of PyroGenesis. The stock options have an exercise price of

\$0.51 per common share, 50% vested at grant date and 50% at the first anniversary of the grant and are exercisable over a period of 5 years. The fair value of the stock options was estimated at \$0.34 per option by applying the Black-Sholes option pricing model.

On October 29, 2018, the Company granted 100,000 stock options to an Officer of the Company. The stock options have an exercise price of \$0.52 per common share and are exercisable over a period of 5 years. The fair value of the stock options was estimated at \$0.30 per option by applying the Black-Sholes option pricing model.

On July 3, 2018, the Company granted 300,000 stock options to a member of the Board of Directors of the Company. The stock options have an exercise price of \$0.51 per common share and are exercisable over a period of 60 months. The fair value of the stock options was estimated at \$0.24 per option by applying the Black- Sholes option pricing model.

On May 10, 2018, the Company granted 250,000 stock options to a member of the Board of Directors of the Company. The stock options have an exercise price of \$0.52 per common share and are exercisable over a period of 60 months. The fair value of the stock options was estimated at \$0.29 per option by applying the Black- Sholes option pricing model.

On April 3, 2018, the Company granted 500,000 stock options to a consultant, to promote the business interests of the Company worldwide. The stock options have an exercise price of \$0.70 per common share and are exercisable over a period of 18 months. The fair value of the stock options was estimated at \$0.22 per option by applying the Black-Sholes option pricing model.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

Stock option plan (continued)

On February 23, 2018, the Company issued 200,000 stock options to an Officer of the Company with an exercise price of \$0.60 and are exercisable over a period of 60 months. The fair value of the stock options was estimated at \$0.37 per option by applying the Black-Scholes option pricing model.

The fair value of the stock options granted in the years ended December 31, 2019 and 2018 was measured based on the Black-Scholes option pricing model using the following assumptions:

| Date of grant | February 23, 2018 | April 3, 2018 | May 10, 2018 | July 3, 2018 | October 29, 2018 | September 29, 2019 (1) |
|--|----------------------|------------------|-----------------|-----------------|---------------------|---------------------------|
| Number of options granted | 200,000 | 500,000 | 250,000 | 300,000 | 100,000 | 400,000 |
| Exercise price (\$) | 0.60 | 0.70 | 0.52 | 0.51 | 0.52 | 0.51 |
| Fair value of each option under the Black Scholes pricing model (\$) | 0.365 | 0.220 | 0.289 | 0.244 | 0.300 | 0.34 |
| Assumptions under the Black Scholes model: | | | | | | |
| Fair value of the market share (\$) | 0.60 | 0.66 | 0.55 | 0.49 | 0.52 | 0.51 |
| Risk free interest rate (%) | 2.04 | 1.79 | 2.00 | 2.19 | 2.42 | 1.39 |
| Expected volatility (%) | 73 | 73 | 58 | 58 | 68 | 83 |
| Expected dividend yield | - | - | - | - | - | - |
| Expected life (number of months) | 60 | 18 | 60 | 60 | 60 | 60 |
| Forfeiture rate (%) | - | - | - | - | - | - |

(1) A total of 200,000 of the stock options granted vested on the day of the grant and 200,000 will vest on September 29, 2020.

The underlying expected volatility was determined by reference to historical data of the Company's share price. No special features inherent to the stock options granted were incorporated into the measurement of fair value.

As at December 31, 2019, the outstanding options, as issued under the stock option plan to directors, officers, employees and consultants for the purchases of one common share per option, are as follows:

| | Number of stock options Dec 31, 2018 | Granted | Exercised | Forfeitures | Number of stock options Dec 31, 2019 | Number of stock options vested | Exercise price per option \$ | Expiry date |
|--------------------|--------------------------------------|----------------|--------------------|------------------|--------------------------------------|--------------------------------|------------------------------|---------------|
| February 12, 2015 | 1,965,000 | - | (477,000) | - | 1,488,000 | 1,488,000 | 0.30 | Feb 12, 2020 |
| September 25, 2016 | 3,875,000 | - | (875,000) | - | 3,000,000 | 3,000,000 | 0.18 | Sep 25, 2021 |
| October 20, 2016 | 32,000 | - | (32,000) | - | - | - | 0.18 | Oct 20, 2021 |
| October 25, 2016 | 100,000 | - | - | - | 100,000 | 100,000 | 0.19 | Oct 25, 2021 |
| November 3, 2017 | 2,600,000 | - | - | - | 2,600,000 | 2,520,000 | 0.58 | Nov 3, 2022 |
| February 9, 2018 | 200,000 | - | - | - | 200,000 | 60,000 | 0.60 | Feb 9, 2023 |
| April 3, 2018 | 500,000 | - | - | (500,000) | - | - | 0.70 | Oct 3, 2019 |
| May 10, 2018 | 250,000 | - | - | - | 250,000 | 250,000 | 0.52 | May 10, 2023 |
| July 3, 2018 | 300,000 | - | - | - | 300,000 | 300,000 | 0.51 | July 3, 2023 |
| October 29, 2018 | 100,000 | - | - | - | 100,000 | 30,000 | 0.52 | Oct 29, 2023 |
| September 29, 2019 | - | 400,000 | - | - | 400,000 | 200,000 | 0.51 | Sept 29, 2024 |
| | <u>9,922,000</u> | <u>400,000</u> | <u>(1,384,000)</u> | <u>(500,000)</u> | <u>8,438,000</u> | <u>7,948,000</u> | <u>0.37</u> | |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

19. Shareholders' deficiency (continued)

Share purchase warrants

The following table reflects the activity in warrants during the years ended December 31, 2019 and the number of issued and outstanding share purchase warrants at December 31, 2019:

| | Number of warrants December 31, 2018 | Issued | Expired | Number of warrants December 31, 2019 | Price per warrant \$ | Expiry date |
|--|---|------------------|--------------------|---|-------------------------------|--------------|
| Issuance of units – February 9, 2018 | 4,871,429 | - | (4,871,429) | - | 1.25 | Aug 9, 2019 |
| Broker warrants – February 9, 2018 | 88,000 | - | (88,000) | - | 1.25 | Aug 9, 2019 |
| Issuance of units – April 19, 2018 | 3,108,333 | - | - | 3,108,333 | 0.85 | Apr 19, 2020 |
| Issuance of broker warrants – April 19, 2018 | 74,000 | - | - | 74,000 | 0.85 | Apr 19, 2020 |
| Issuance of units – April 20, 2018 | 3,385,715 | - | - | 3,385,715 | 0.85 | Apr 20, 2020 |
| Issuance of units – September 28, 2018 | 3,448,276 | - | - | 3,448,276 | 0.58 | Jan 28, 2021 |
| Issuance of units – October 19, 2018 | 1,500,750 | - | - | 1,500,750 | 0.58 | Feb 13, 2021 |
| Issuance of units – December 17, 2018 | 2,146,967 | 97,400 | - | 2,244,367 | 0.85 | Dec 18, 2020 |
| Issuance of units – May 15, 2019 | - | 2,996,500 | - | 2,996,500 | 0.85 | May 15, 2021 |
| Issuance of units – May 24, 2019 | - | 2,024,500 | - | 2,024,500 | 0.85 | May 24, 2021 |
| Issuance of units – June 19, 2019 | - | 1,000,000 | - | 1,000,000 | 0.85 | Jun 19, 2021 |
| Issuance of units – October 25, 2019 | - | 225,000 | - | 225,000 | 0.75 | Oct 25, 2021 |
| | <u>18,623,470</u> | <u>6,343,400</u> | <u>(4,959,429)</u> | <u>20,007,441</u> | <u>0.78</u> | |

20. Supplemental disclosure of cash flow information

Net changes in non-cash components of operating working capital

| | 2019 \$ | 2018 \$ |
|--|------------------|------------------|
| Decrease (increase) in: | | |
| Accounts receivable | 420,612 | (193,283) |
| Costs and profits in excess of billings on uncompleted contracts | 184,852 | (192,606) |
| Investment tax credits receivable | 4,099 | 164,484 |
| Deposits | 434,324 | (300,816) |
| Prepaid expenses | (30,564) | 51,254 |
| Increase (decrease) in: | | |
| Accounts payable and accrued liabilities | 2,103,997 | 405,003 |
| Billings in excess of costs and profits on uncompleted contracts | (1,267,753) | 2,505,695 |
| | <u>1,849,567</u> | <u>2,439,731</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

21. Other information

The aggregate amortization of intangible assets expense for the year ended December 31, 2019 was \$20,133 (2018 - \$60,326) and was recorded in cost of sales and services.

Depreciation on property and equipment amounted to \$168,835 for the year ended December 31, 2019 (2018 - \$212,621) and is recorded in selling, general and administrative. Employee benefits totaled \$5,967,563 in the year ended December 31, 2019 (2018 - \$6,504,081) and included share-based compensation of \$171,807 (2018 - \$673,249).

The Company has been awarded various grants during the year, which were recognized when they became receivable. The grants, received in 2019, are unconditional and amounted to \$261,088 (2018 - \$191,380). An amount of \$204,525 (2018 - \$145,470) was recorded as a reduction to the related expenses in research and development and an amount of \$56,563 (2018 - \$45,910) was recorded as a reduction to the related expenses in selling, general and administrative.

22. Net finance costs:

| | <u>2019</u> | <u>2018</u> |
|---|------------------|------------------|
| | <u>\$</u> | <u>\$</u> |
| Finance costs | | |
| Interest and fees on convertible debentures | 285,000 | 291,140 |
| Interest accretion of convertible debentures | 371,117 | 328,153 |
| Interest on term loans | 46,749 | 54,063 |
| Interest on promissory notes | 53,317 | 7,427 |
| Interest on lease liabilities | 258,288 | - |
| Interest on obligations under capital leases | - | 1,534 |
| Interest accretion on promissory notes | - | 22,646 |
| Change in the fair value of investments | (176,237) | 919,463 |
| Penalties and other interest expenses | 275,183 | 3,428 |
| | <u>1,113,417</u> | <u>1,627,854</u> |
| Dividend in kind | - | (102,579) |
| Capitalized borrowing costs on Equipment under construction | (52,150) | - |
| Net finance costs | <u>1,061,267</u> | <u>1,525,275</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

23. Related party transactions

During the year ended December 31, 2019 and 2018, the Company concluded the following transactions with related parties:

The Company entered into a lease agreement for rent of a property with a trust whose beneficiary is the controlling shareholder and CEO of the Company. As at January 1, 2019, following the first application of IFRS 16, the Company recognized a right-of-use asset and lease liabilities in the amount of \$1,350,487. As at December 31, 2019, the right-of-use asset and the lease liabilities amount to \$1,183,416 and \$1,218,958 respectively. In 2019, the variable components of the leases which are not included in the lease liabilities under IFRS 16, comprise property taxes for an amount of \$266,581 (2018 - \$260,803) which were charged to the Company. A balance due of \$51,134 is included in accounts payable and accrued liabilities.

In 2018, rent and property taxes were charged by a trust whose beneficiary is the controlling shareholder and CEO of the Company in the amount of \$260,803. The balance due is \$Nil.

In 2018, an amount of \$240,159 was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company, of this amount \$172,941 is included in prepaids.

An amount of \$Nil (2018 – \$240,159) was paid as a deposit for rent to a trust whose beneficiary is the controlling shareholder and CEO of the Company.

Interest expenses of \$Nil (2018 - \$9,700) were accreted on a loan from a trust whose beneficiary is the controlling shareholder and CEO of the Company.

An amount of \$Nil (2018 – \$10,213) was owed by a trust whose beneficiary is the controlling shareholder and CEO of the Company.

Interest of \$Nil (2018 - \$14,171) was paid on the \$755,000 convertible debentures held by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO. Accreted interest related to the 2015 Convertible Debenture held by Peter Photis Pascali amounted to \$Nil (2018 - \$11,623).

A balance due to the controlling shareholder and CEO of the Company amounted to \$214,470 (2018 - \$205,222) for expense report, salary and vacation payable and is included in accounts payable and accrued liabilities.

An amount of \$53,317 (2018 - \$20,373), of interest accretion was expensed in net financing costs in the year on the loan of \$295,000 from the controlling shareholder and CEO of the Company and is also included in accounts payable and accrued liabilities.

In 2018, the Company and a company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, and under common control of the controlling shareholder and CEO, entered into a settlement agreement to resolve a claim in the amount of \$5,531,928 filed on or about April, 5, 2018, made by the company owned by Mr. Peter Photis Pascali, the father of the controlling shareholder and CEO, in connection with the share for debt conversion transaction between the parties that took place in 2014. Under the share for debt conversion, the Company issued 7,500,000 common shares in 2014 to settle \$6,000,000 of the carrying value of the Balance of sale payable. The current claim was settled for an amount of \$3,700,000. The settlement agreement also constitutes the final payment of the Balance of sale, and provides for the issuance of units by the Company having a fair value of \$3,327,571 to the company owned by Mr. Peter Photis Pascali, as follows:

(i) on February 9 and March 7, 2018, issuance of 1,899,999 units at a value of \$0.70 per unit with each unit

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

23. Related party transactions (continued)

consisting of 1 common share of the Company and 1 common share purchase warrant which entitles the holder to purchase 1 common share at a price of \$1.25 until August 9, 2019, and (ii) on April 30, 2018, 3,385,715 units at a value of \$0.59 per unit with each unit consisting of 1 common share of the Company and 1 common share purchase warrant which entitles the holder to purchase 1 common share at a price of \$0.85 until April 19, 2020. The units agreed to on April 30, 2018 were issued on October 25, 2018. As the claim related to a dispute that existed at year-end, a liability and related expense of \$3,215,643 was recorded as at December 31, 2017. The liability was initially measured based on the fair value of the units as at their expected issuance date, which is

\$0.70 on February 9 and March 7, 2018 and \$0.59 on April 30, 2018. The difference between the fair value of the units as at April 30, 2018 and October 25, 2018 has been considered a transaction with shareholders and recorded in the shareholders' (Deficiency) Equity.

The key management personnel of the Company are the members of the Board of Directors and certain officers. Total compensation to key management consisted of the following:

| | <u>2019</u> | <u>2018</u> |
|---|------------------|------------------|
| | \$ | \$ |
| Salaries – key management | 723,000 | 408,000 |
| Pension contributions | 10,960 | 8,160 |
| Fees – Board of Directors | 110,750 | 118,000 |
| Share-based compensation – officers | 13,473 | 365,379 |
| Share-based compensation – Board of Directors | 89,025 | 114,070 |
| Other benefits – officers | 58,412 | 13,066 |
| Total compensation | 1,005,620 | 1,026,675 |

The Company has added three employees in key management amounts for 2019. A balance of \$130,604 of key management compensation, of the amounts noted above, is included in accounts payable and accrued liabilities as at December 31, 2019 (December 31, 2018 - \$127,748).

24. Financial instruments

As part of its operations, the Company carries a number of financial instruments. It is management's opinion that the Company is not exposed to significant interest, currency or credit risks arising from these financial instruments except as otherwise disclosed. The Company's overall risk management program focuses on the unpredictability of the financial market and seeks to minimize potential adverse effects on the Company's financial performance. The Company does not use derivative financial instruments to hedge these risks.

Foreign currency risk

The Company enters into transactions denominated in US dollars for which the related revenues, expenses, accounts receivable and accounts payable and accrued liabilities balances are subject to exchange rate fluctuations.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

24. Financial instruments (continued)

As at December 31, the following items are denominated in US dollars:

| | 2018 CDN | 2019 CDN |
|--|------------------|----------------|
| | \$ | \$ |
| Cash | 74,749 | 4,472 |
| Accounts receivable | 28,704 | 527,761 |
| Accounts payable and accrued liabilities | (403,273) | (240,866) |
| Total | <u>(299,820)</u> | <u>291,367</u> |

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.

Sensitivity analysis

At December 31, 2019, if the US Dollar changes by 10% against the Canadian dollar with all other variables held constant, the impact on pre-tax gain or loss for the year ended December 31, 2019 would have been \$(28,000) (December 31, 2018 – \$29,000).

Credit risk and credit concentration

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The maximum credit risk to which the Company is exposed as at December 31, 2019 represents the carrying amount of cash and trade accounts receivable. The Company manages its credit risk by performing credit assessments of its customers and provides allowances for potentially uncollectible accounts receivable. The Company does not generally require collateral or other security from customers on accounts receivable. The Company believes that there is no unusual exposure associated with the collection of these receivables. During the year ended December 31, 2019, five customers accounted for 77% (December 31, 2018 – three customers for 82%) of revenues from operations.

| | Revenues | 2019 % of total revenues | Revenues | 2018 % of total revenues |
|------------|------------------|--------------------------------|------------------|--------------------------------|
| | \$ | % | \$ | % |
| Customer 1 | 1,166,705 | 24 | 1,718,904 | 34 |
| Customer 2 | 835,142 | 17 | 1,221,811 | 24 |
| Customer 3 | 637,841 | 13 | 1,214,403 | 24 |
| Customer 4 | 560,916 | 12 | - | - |
| Customer 5 | 525,556 | 11 | - | - |
| Total | <u>3,726,160</u> | <u>77</u> | <u>4,155,118</u> | <u>82</u> |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

24. Financial instruments (continued)

Three customers accounted for 93% (December 31, 2018 – one customer for 85%) of trade accounts receivable with amounts owing to the Company of \$96,874 (2018 - \$478,699), representing the Company's major credit risk exposure. Credit concentration is determined based on customers representing 10% or more of total revenues and/or total accounts receivable.

Fair value of financial instruments

Financial instruments are comprised of cash, accounts receivable, investments, deposits, accounts payable and accrued liabilities, term loans, long-term debt and convertible debentures. There are three levels of fair value that reflect the significance of inputs used in determining fair values of financial instruments:

Level 1 — quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 — inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices).

Level 3 — inputs for the asset or liability that are not based on observable market data.

Investments in BGF shares are valued as at December 31, 2019 at quoted market prices and are classified as Level 1. Investments in BGF shares were valued as at December 31, 2018 based on a valuation technique that estimates a business' value based on a recent round of financing and were classified as Level 3.

Investments in HPQ shares are valued at quoted market prices and are classified as Level 1.

Investments in HPQ warrants are valued using the Black-Scholes pricing model and are classified as Level 3.

The fair values of cash, trade accounts receivable, accounts payable and accrued liabilities, term loans and long-term debt approximate their carrying amounts due to their short-term maturities.

Interest rate risk

Interest rate risk is the risk that the value of a financial instrument might be adversely affected by a change in interest rates. Changes in market interest rates may have an effect on the cash flows associated with some financial assets and liabilities, known as cash flow risk, and on the fair value of other financial assets or liabilities, known as price risk, and on the fair value of investments or liabilities, known as price risks. The Company is exposed to a risk of fair value on the term loans and convertible debentures as those financial instruments bear interest at fixed rates.

Price risk

Price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market price (other than those arising from foreign currency risk and interest risk), whether those changes are caused by factors specific to the individual financial instrument or its issuers or factors affecting all similar financial instruments traded in the market. The most significant exposure to the price risk for the Company arises from its investments in shares of public companies quoted on the TSXV Exchange. If equity prices had increased or decreased by 15% as at December 31, 2019, with all other variables held constant, the Company's investments would have increased or decreased respectively, by approximately \$241,000 (December 31, 2018 - \$262,000).

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

24. Financial instruments (continued)*Liquidity risk*

Liquidity risk is the risk that the Company will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivery of cash or another financial asset. The Company's ability to continue as a going concern is dependent on management's ability to raise required funding through future equity and / or debt issuances and to generate positive cash flows from operations (see note 1 (b)). The Company manages its liquidity risk by forecasting cash flows from operations and anticipating any investing and financing activities.

The following table summarizes the contractual amounts payable and maturities of financial liabilities as at December 31, 2019:

| | <u>Carrying value</u> | <u>Total contractual amount</u> | <u>6 months or less</u> | <u>6 to 12 months</u> |
|--|---------------------------|---|-----------------------------|-----------------------|
| | \$ | \$ | \$ | \$ |
| Accounts payable and accrued liabilities | 4,913,155 | 4,900,355 | 4,900,355 | - |
| Term loans | 496,000 | 579,795 | 332,295 | 247,500 |
| Long-term debt | 284,956 | 299,425 | 299,425 | - |
| Convertible debentures | 2,898,358 | 3,142,500 | 3,142,500 | - |
| | <u>8,592,469</u> | <u>8,922,075</u> | <u>8,674,575</u> | <u>247,500</u> |

25. Contingent liabilities

The Company is currently a party to various legal proceedings. If management believes that a loss arising from these proceedings is probable and can reasonably be estimated, that amount of the loss is recorded. As additional information becomes available, any potential liability related to these proceedings is assessed and the estimates are revised, if necessary. Based on currently available information, management believes that the ultimate outcome of these proceedings, individually and in aggregate, will not have a material adverse effect on the Company's financial position or overall trends in results of operations.

The Company had received a government grant in prior years of approximately \$800,000 to assist with the development of a new system of advanced waste treatment systems technology. The grant is potentially repayable at the rate of 3% of any consideration received as a result of the project, for which funding has been received, to a maximum of the actual grant received. This repayment provision will remain in effect until May 30, 2024. The Company abandoned the project in 2011 and accordingly, no amount is expected to be repaid.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

26. Capital management

The Company's objectives in managing capital are:

- a) To ensure sufficient liquidity to support its current operations and execute its business plan; and
- b) To provide adequate return to the shareholders

The Company's primary objectives when managing capital is to ensure the entity continues as a going concern as well as to maintain optimal returns to shareholders and benefits for other stakeholders.

The Company currently funds these requirements from cash flows from operations and with financing arrangements with third parties and shareholders. The Company is not subject to any externally imposed capital requirements.

The management of capital includes common shares, warrants reserve, contributed surplus and equity portion of convertible debentures for a total amount of \$54,154,733 (2018 - \$50,060,490) and debt of \$3,679,323, (2018 - \$3,055,508). The Company monitors its working capital in order to meet its financial obligations. As at December 31, 2019, the Company's working capital deficiency was \$10,492,101 (2018 – deficiency of \$4,101,428).

There were no changes in the Company's approach during fiscal 2019.

27. Income taxes

a) Reconciliation of income taxes

| | 2019 | 2018 |
|--|-------------|-------------|
| | \$ | \$ |
| Loss before income taxes | (9,171,116) | (7,845,800) |
| Income tax rates | 26.6% | 26.7% |
| Income tax recovery at the combined basic Federal and Provincial tax rates | (2,439,517) | (2,094,829) |
| Permanent differences | 271,576 | 835,340 |
| Tax rate changes | 8,153 | (68,446) |
| True-up deferred | (652,185) | (53,208) |
| Unrecognized tax assets | 2,811,973 | 1,381,143 |
| Income tax expense | - | - |

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

27. Income taxes (continued)

b) Deferred tax expense

| | 2019 | 2018 |
|---|-------------|-------------|
| | \$ | \$ |
| Origination and reversal of temporary differences | (2,511,973) | (1,381,142) |
| Change in unrecognized deductible temporary differences | 2,511,973 | 1,381,142 |
| Income tax expense | - | - |

c) The tax effects of significant items comprising the Company's net deferred tax assets and liabilities are as follows:

| | 2019 | 2018 |
|------------------------------------|-------------|-------------|
| | \$ | \$ |
| Investments | 74,863 | 97,932 |
| Financing costs | 80,685 | 87,834 |
| Property, plant and equipment | 463,353 | 112,054 |
| Intangible assets | 1,116,566 | 1,101,341 |
| Right of use assets (IFRS 16) | 57,540 | - |
| Research and development expenses | 2,027,039 | 1,878,263 |
| Non-capital losses carried forward | 7,150,683 | 4,988,950 |
| | 10,970,729 | 8,266,374 |
| Deferred tax assets not recognized | -10,970,729 | (8,266,374) |
| | - | - |

d) Tax carry forward

The Company has the following non-capital losses available to reduce future income taxes:

| Expiry date | Federal | Provincial |
|-------------|------------|------------|
| | \$ | |
| \$2031 | 2,313,597 | 2,313,597 |
| 2032 | 3,945,870 | 3,945,870 |
| 2033 | 2,047,643 | 2,047,643 |
| 2034 | 589,007 | 589,007 |
| 2035 | 703,664 | 416,827 |
| 2036 | 3,579,827 | 3,440,527 |
| 2037 | 1,577,876 | 1,568,739 |
| 2038 | 5,716,536 | 5,650,620 |
| 2039 | 6,622,981 | 6,631,768 |
| | 27,097,001 | 26,604,598 |

PyroGenesis Canada Inc.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

27. Income taxes (continued)

The Company has a total of \$3,076,049 of federal income tax credits that can be carried forward for 20 years and expire from 2019 to 2038.

The Company has a total of \$9,232,220 of federal pool balance of deductible SR&ED expenditures and \$8,782,931 of Quebec R&D expenditures that can be carried forward indefinitely in the future to reduce income taxes.

28. Segment information

The Company operates in one segment, based on financial information that is available and evaluated by the Company's Board of Directors.

The Company's head office is located in Montreal, Quebec. The operation of the Company is located in one geographic area: Canada. The following is a summary of the Company's geographic information:

| | <u>2019</u> | <u>2018</u> |
|--|-------------------------|------------------|
| | \$ | \$ |
| Revenues from external customers located in: | | |
| Canada | 889,284 | 1,908,109 |
| United States | 852,599 | 1,643,811 |
| Europe | 1,488,208 | 147,368 |
| Mexico | 122,890 | 1,214,403 |
| Asia | 1,399,824 | 116,425 |
| Australia | 53,190 | - |
| South America | 7,983 | - |
| | <u>4,813,978</u> | <u>5,030,116</u> |

Revenue by product line and revenues recognized by revenue recognition method are presented in note 6.

Notes to the Financial Statements

For the years ended December 31, 2019 and 2018

29. Subsequent events

In January and February 2020, the Company issued 1,488,000 common shares upon the exercise of 1,488,000 stock options with an exercise price of \$0.30 for total proceeds of \$446,400.

In March 2020, the World Health Organization declared a global pandemic due to the novel coronavirus (COVID- 19). The situation is constantly evolving, and the measures put in place are having multiple impacts on provincial, national and global economies. The overall effect of these events on the Company and its operations is too uncertain to be estimated at this time. The impacts will be accounted for when they are known and may be assessed.

On March 18, 2020, the Company closed a \$903,000 non-brokered secured convertible loan at 12% per annum, with a trust whose beneficiary is the controlling shareholder and CEO of the Company. The Loan bears interest at the rate of 12% per annum, with interest payable in cash on a quarterly basis in arrears and matures September 17, 2021. The Loan is convertible into common shares of the Company at a conversion price of \$0.28 per common share.

The Company received under the exclusivity contract with Drosrite International approximately US\$2,545,520 between March 23, 2020, and June 02, 2020.

On March 30, 2020 the Company reached an agreement to extend the maturity date of its \$3,000,000 convertible debenture to June 30, 2020, from the original maturity date of March 29, 2020. Under the terms of the agreement, the Company redeemed \$300,000 (representing 10% of the principal amount), paid a onetime accommodation fee of \$54,000, and is no longer subject to any prepayment penalties going forward. The interest rate and conversion feature have not changed.

The Company received under the exclusivity contract with a US tunneling corporation approximately \$1,000,000 between March and April, 2020.

On May 26, 2020, the Company completed a share debt transaction with HPQ to settle outstanding trade accounts receivable in the amount of \$395,514, for which an amount of \$30,002 was included in trade accounts receivable as at December 31, 2019, whereby the Company received 4,394,600 units at a price of \$0.09 per unit. Each unit is comprised of one common share and one common share purchase warrant. Each warrant will allow its holder to subscribe to one common share at the price of \$0.10 for a period of 36 months from the date of closing. Each share issued pursuant to the debt settlement will have a mandatory four month and one day holding period from the date of closing. This settlement is subject to the approval of the TSX Venture.

Between April 7, 2020 and June 15, 2020, the Company bought back 1,285,000 of its common shares for an amount of \$964,391 including commissions of \$12,845. In June 2020, the Company received proceeds of \$2,191,725 from 2,578,500 warrants exercised at a price of \$0.85 and \$156,600 from 270,000 warrants exercised at \$0.58.



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Consent of Independent Auditors

The Board of Directors
PyroGenesis Canada Inc.

We, KPMG LLP, consent to the use of our report dated June 15, 2020 included herein in the Registration Statement on Form 40-F of PyroGenesis Canada Inc., on the financial statements which comprise the statements of financial position as at December 31, 2019 and December 31, 2018, the statements of comprehensive loss, changes in shareholders' (deficiency) equity and cash flows for the years then ended, and the notes to the financial statements, including a summary of significant accounting policies.

Our report contains an explanatory paragraph that states that PyroGenesis Canada Inc. has incurred losses and negative cash flows from operations, has an accumulated deficit and its operations are dependent upon obtaining additional financing, which casts substantial doubt about its ability to continue as a going concern.

Our report refers to a change to the accounting policy for leases.

/s/ KPMG LLP
February 2, 2021
Montréal, Canada
