



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, 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 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

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

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.

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

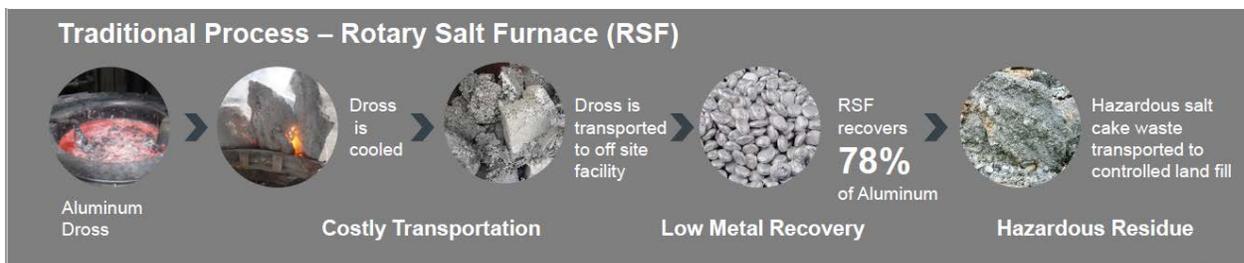


Figure 2 - PYROGENESIS' DROSRITE PROCESS



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

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."

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 Street, Suite 200, Montréal, Québec, Canada, 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

Month	Shares		
	High (\$)	Low (\$)	Average Daily volume
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%)

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
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%)
<p>Notes:</p> <p>(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".</p>					

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

Ms 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.

Ms 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, Ms 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.

Ms 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 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.

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.