LIGHTBRIDGE Corp
Form 10-K
March 29, 2019

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended **December 31, 2018**

OR

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

Commission file number: **001-34487**

LIGHTBRIDGE CORPORATION

(Exact name of registrant as specified in its charter)

Nevada	**91-1975651**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

11710 Plaza America Drive, Suite 2000 Reston, VA 20190

(Address of principal executive offices) (Zip Code)

(571) 730-1200

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Name of each exchange on which registered**
Common Stock, $0.001 par value	The Nasdaq Capital Market

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ¨ No x

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ¨ No x

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was

required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes x No ¨

Indicate by check mark whether the registrant has submitted electronically Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes x No ¨

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer	¨	Accelerated Filer	¨
Non-Accelerated Filer	x	Smaller reporting company	x
		Emerging growth company	¨

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ¨ No x

At June 30, 2018, the aggregate market value of shares held by non-affiliates of the registrant (based upon the closing sale price of such shares on the Nasdaq Capital Market on June 30, 2018) was $28,411,145.

At March 1, 2019 there were 34,956,267 shares of the registrant's common stock issued and outstanding.

Documents Incorporated by Reference

Portions of the registrant's definitive proxy statement to be filed with the Securities and Exchange Commission in connection with its 2019 Annual Meeting of Stockholders are incorporated by reference into Part III of this Form 10-K.

LIGHTBRIDGE CORPORATION

FORM 10-K

For the Fiscal Year Ended December 31, 2018

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FORWARD-LOOKING STATEMENTS

In addition to historical information, this report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. We use words such as “believe”, “expect”, “anticipate”, “project”, “target”, “plan”, “optimistic”, “intend”, “ai similar expressions, which are intended to identify forward-looking statements. Such statements include, among others:

- those concerning market and business segment growth, demand, and acceptance of our nuclear fuel technology;

You are cautioned that any such forward-looking statements are not guarantees of future performance and involve risks and uncertainties, as well as assumptions that if they were to ever materialize or prove incorrect, could cause the results of the Company to differ materially from those expressed or implied by such forward-looking statements. Such risks and uncertainties, among others, include:

- our ability to commercialize our nuclear fuel technology, including risks related to the design and testing of nuclear fuel incorporating our technology;

Most of these factors are beyond our ability to predict or control. Future events and actual results could differ materially from those set forth in, contemplated by or underlying the forward-looking statements. Forward-looking statements speak only as of the date on which they are made. The Company assumes no obligation and does not intend to update these forward-looking statements, except as required by law.

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PART I

ITEM 1. DESCRIPTION OF BUSINESS

When used in this Annual Report on Form 10-K, the terms “Lightbridge”, the “Company”, “we”, “our”, and “us” refer Lightbridge Corporation together with its wholly-owned subsidiaries Lightbridge International Holding LLC and Thorium Power Inc.

Company Overview

Lightbridge is a leading nuclear fuel technology company. Our goal is to produce the next generation of nuclear fuel that could significantly improve the economics, safety, and proliferation resistance of existing and new reactors, with a meaningful impact on addressing climate change and air pollution. We project that the world’s energy and climate needs can only be met if nuclear power’s share of the energy-generating mix grows substantially.

Our primary focus is the development and commercialization of metallic fuel rods that will replace the uranium oxide ceramic pellets that have traditionally fueled nuclear reactors. We believe our metallic fuel offers significant economic and safety benefits over traditional fuel, primarily because of the superior heat transfer properties of all-metal fuel and the resulting lower operating temperature of the reactor. We also believe that uprating a reactor with Lightbridge fuel will add incremental electricity at a lower levelized cost than any other means of generating baseload electric power, including any renewable, fossil, or hydroelectric energy source.

We have built a significant portfolio of patents reflecting years of research and development, and we anticipate substantial completion of our research efforts and the testing of our fuel over the next few years. We expect the first purchase orders for our metallic fuel as soon as 2028, with final deployment of our fuel in commercial reactors as soon as 2030.

From 2008 to 2018, we also had a nuclear consulting business segment, which provided early funding for our metallic nuclear fuel development efforts. We discontinued our consulting business segment in 2018; however, we may opportunistically provide nuclear power consulting and strategic advisory services to commercial and governmental entities worldwide.

Enfission, LLC

On January 24, 2018 we formed Enfission, LLC ("Enfission"), a 50/50 joint venture with Framatome Inc., to develop, license, manufacture, and sell nuclear fuel assemblies based on Lightbridge-designed metallic fuel technology and other advanced nuclear fuel intellectual property. Framatome Inc. is a wholly-owned US subsidiary of Framatome, which we refer to individually or collectively in this Annual Report on Form 10-K, together with their affiliates, as Framatome. Framatome is a global leader in designing, manufacturing, and installing components and fuel for nuclear power plants, and Framatome offers a full range of reactor services.

We currently conduct our fuel development activities principally through Enfission. Enfission serves as the exclusive vehicle through which the Company and Framatome are researching, developing, obtaining regulatory approvals, manufacturing and will be using, marketing and selling nuclear fuel assemblies based on the Lightbridge metallic fuel technology comprising uranium-zirconium (U-Zr) multi-lobe, helically twisted fuel rods and associated manufacturing processes and other advanced nuclear fuel intellectual property contributed by both Lightbridge and Framatome within the operating domain. The operating domain of Enfission includes pressurized water reactors (excluding water-cooled water-moderated energetic reactor (Russian VVER) types) and boiling water reactors, which collectively constitute most of the power reactors in the world, as well as water-cooled small modular reactors and water-cooled research reactors. While we expect our focus to be on Enfission for the foreseeable future, Lightbridge maintains the rights to develop fuel for VVER reactors outside Enfission, and Lightbridge also maintains the right to develop fuel for pressurized heavy water reactors (including CANDU reactors) outside Enfission.

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In addition to distributions from Enfission based on our ownership interest in the joint venture, we anticipate receiving future licensing revenues in connection with sales by Enfission of nuclear fuel incorporating our intellectual property.

Lightbridge and Enfission's principal executive offices are located at 11710 Plaza America Drive, Suite 2000, Reston, Virginia 20190 USA.

Nuclear Power as Clean and Low Carbon Emissions Energy Source

Nuclear power provides clean, reliable baseload electricity generation source. According to the World Nuclear Association (WNA), nuclear power plants produce no greenhouse gas emissions during operation, and over the course of its life-cycle, nuclear produces about the same amount of CO2 equivalent emissions per unit of electricity as wind. The WNA further notes that almost all proposed pathways to achieving significant decarbonization suggest an increased role for nuclear power, including those published by the International Energy Agency, Massachusetts Institute of Technology Energy Initiative, US Energy Information Administration, and World Energy Council.

We believe that deep cuts to CO2 emissions are only possible with electrification of most of the transportation and industrial sectors globally and powering them and the current electricity needs of the world with non-emitting or low-emitting power. We believe this can be done only with a large increase in nuclear power, several times the amount that is generated globally today. We believe that our nuclear fuel technology will be an essential element of reaching this goal.

Overview of Our Next Generation Nuclear Fuel

Nuclear Fuel Development

Since 2008, we have been engaged in the design and development of proprietary, innovative nuclear fuels to improve the cost competitiveness, safety, proliferation resistance and performance of nuclear power generation. In 2010, we announced the concept of all-metal fuel (i.e., non-oxide fuel) for currently operating as well as new-build reactors. Our focus on metallic fuel is based on listening to the voices of prospective customers, as nuclear utilities have expressed interest in the improved economics and enhanced safety that we believe metallic fuel can provide.

The fuel in a nuclear reactor generates heat energy. That heat is then converted through steam into electricity that is sold. We have designed our innovative, proprietary metallic fuels to be capable of significantly higher burnup and power density compared to conventional oxide nuclear fuels. Burnup is the total amount of electricity generated per unit mass of nuclear fuel and is a function of the power density of a nuclear fuel and the amount of time the fuel operates in the reactor. Power density is the amount of heat power generated per unit volume of nuclear fuel. Conventional oxide fuel used in existing commercial reactors is just about at the limit of its burnup and power density capability. As a result, further optimization to increase power output from the same core size and improve the economics and safety of nuclear power generation using conventional oxide fuel technologies is limited. A new fuel is needed to bring enhanced performance to reactors; we are developing that new fuel.

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As the nuclear industry prepares to meet the increasing global demand for electricity production, longer operating cycles and higher reactor power outputs have become a much sought-after solution for the current and future reactor fleet. We believe our proprietary nuclear fuel designs have the potential to improve the nuclear power industry's economics by:

- providing an increase in power output of potentially up to 10% while simultaneously extending the operating cycle length from 18 to 24 months in existing pressurized water reactors (PWRs), including in Westinghouse-type four-loop PWR plants which are currently constrained to an 18-month operating cycle by oxide fuel, or increasing the power potentially up to 17% while retaining an 18-month operating cycle;
- enabling increased reactor power output via a power uprate (potentially up to a 30% increase) or a longer operating cycle (instead of a power uprate) without changing the core size in new build PWRs; and
- reducing the volume of spent fuel per unit of electricity generated as well as enhancing proliferation resistance of spent fuel.

We believe our fuel designs will allow current and new build nuclear reactors to safely increase power production and reduce operations and maintenance costs on a per kilowatt-hour basis. New build nuclear reactors could also benefit from the reduced upfront capital investment per kilowatt of generating capacity in case of implementing a power uprate. In addition to the projected electricity production cost savings, we believe that our technology can result in utilities or countries needing to deploy fewer new reactors to generate the same amount of electricity (in case of a power uprate), resulting in significant capital cost savings. For utilities or countries that already have operating reactors, our technology could be utilized to increase the power output of those reactors as opposed to building new reactors.

Due to the significantly lower fuel operating temperature, our metallic nuclear fuel rods are also expected to provide major improvements to safety margins during off-normal events. US Nuclear Regulatory Commission licensing processes require engineering analysis of a large break loss-of-coolant accident (LOCA), as well as many other scenarios. The LOCA scenario assumes failure of a large water pipe in the reactor coolant system. Under LOCA conditions, the fuel and cladding temperatures rise due to reduced cooling capacity. Preliminary analytical modeling shows that under a design-basis LOCA scenario, unlike conventional uranium dioxide fuel, the cladding of the Lightbridge-designed metallic fuel rods would stay at least 200 degrees below the 850-900 degrees Celsius temperature at which steam begins to react with the zirconium cladding to generate hydrogen gas. Build-up of hydrogen gas in a nuclear power plant can lead to the hydrogen exploding, which is what happened at the Fukushima Daiichi nuclear power plant in Japan in 2011. Lightbridge fuel is designed to prevent hydrogen gas generation in design-basis LOCA situations, which is a major safety benefit.

Anticipated advantages of Lightbridge's metallic fuel over the conventional uranium dioxide fuels used now

- Has better heat transfer (due to higher thermal conductivity and greater surface area of fuel rods) and therefore increases power output from nuclear reactors

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- Under design basis accidents when there is a loss of coolant in the reactor, does not generate hydrogen gas, which can explode

Lightbridge Spent Fuel – Proliferation Resistance

The April 2018 issue of Nuclear Engineering and Design, a technical journal affiliated with the European Nuclear Society, included an article stating that after analyzing Lightbridge's fuel, the authors concluded that any plutonium extracted from Lightbridge's spent fuel would not be useable for weapon purposes. We anticipate the following proliferation resistance advantages for our metallic fuel:

- ½ of the amount of plutonium produced and remaining in the spent fuel as compared to conventional uranium oxide fuels

Nuclear Utility Fuel Advisory Board ("NUFAB")

Our NUFAB, formed in 2011, comprises senior fuel managers from electric utilities that account for approximately 50% of installed US nuclear capacity. NUFAB members represent the "voice of the customer" in Lightbridge's nuclear fuel development and commercialization activities. These members include the following:

- Exelon Generation;

Research and Development Advancements in 2018

1. Fabrication:

- Identified a US-based pilot facility located at a Framatome-operated fuel fabrication site in Richland, WA to develop the fabrication process and produce partial-length and full-length fuel rods.

i. Developed coextrusion models for process evaluation and optimization;

· Identified supply chain for key equipment and began procurement process.

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2. Fuel Design:

- Prepared product requirements document and data sheet.

  i. Developed fuel assembly CFD model to investigate CHF performance; and

- Devised and evaluated lead test rod (LTR) design options.

3. Regulatory Licensing:

- Established interaction with the US Nuclear Regulatory Commission (NRC), with the first Enfission project kick-off meeting held with NRC staff in August 2018.

Near-term fuel development milestones:

- 2019: Demonstrate fabrication of full length co-extruded rods using surrogate materials.

Anticipated Schedule for Development and Sale of Nuclear Fuel Assemblies

Set forth below is our anticipated schedule for Enfission's development and sale of nuclear fuel assemblies. Please see Item 1A, *Risk Factors* in this Annual Report, for a discussion of certain risks that may delay or impair the commercialization of nuclear fuel assemblies incorporating our nuclear fuel technology. Based on our current expectations, we anticipate that, either directly or through Enfission, we will:

- Enter into a Lead Test Assembly agreement with a host reactor in 2020-2022;

Accordingly, based on our current expected schedule, a purchase order for an initial reload batch placed by a utility is expected as soon as 2028-2030, with final qualification (i.e., deployment of fuel in the first reload batch) in a commercial reactor expected as soon as 2030-2032. We are seeking development funding contributions or other financing arrangements with utilities and the US Department of Energy.

Our earlier plan was to begin irradiation of metallic fuel samples in the Halden research reactor in 2020-2021. The Halden research reactor was operated by the Institute for Energy Technology (IFE) in Norway. In June 2018, IFE's board of directors announced its decision not to seek renewal of the Halden reactor operating license beyond 2020, and to permanently shut down the reactor immediately.

In lieu of the Halden Reactor in Norway, the Company now plans to conduct the initial testing and demonstration of its advanced metallic nuclear fuel in the United States.

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Ownership and Management of Enfission

Lightbridge owns 50 percent of Enfission's Class A voting membership units and Framatome owns the other 50 percent. Any distributions will be first allocated to cause the capital accounts of the initial members to be equal, then allocated on a 50/50 basis. Lightbridge and Framatome each provided certain licensed intellectual property to Enfission. Certain additional capital contributions made by Lightbridge and Framatome will partly be in the form of exclusive license rights to intellectual property developed pursuant to a research and development service agreement with Enfission.

Seth Grae, our Chief Executive Officer, also serves as Chief Executive Officer of Enfission. Enfission is managed by a board of directors composed of six directors, half of whom are appointed by Lightbridge and the other half are appointed by Framatome. The Enfission board acts by majority vote, provided that at least one director appointed by each of Lightbridge and Framatome votes in favor of the action. Certain major decisions require the approval of at least two-thirds of the directors, and certain fundamental decisions, including amending the Enfission operating agreement and issuing additional membership units, require the approval of two-thirds of the Class A members.

Agreements with Enfission and Framatome

Enfission has entered into several agreements with Lightbridge and Framatome relating to intellectual property, the provision of personnel and administrative support to Enfission, and research and development efforts.

Lightbridge and Framatome have also directly entered into binding agreements forming the foundation for Enfission, including the following agreements in November 2017, which govern joint research and development activities and the treatment of all related existing and future intellectual property:

- R&D Services Agreement ("RDSA") — The RDSA defines the terms and conditions for joint research and development activities between Framatome and Lightbridge. Enfission is a party to the RDSA. Key terms and conditions of the RDSA include: (i) designating a 17x17 fuel assembly as the first joint project of the parties; (ii) establishing a framework for future work release orders relating to research and development activities of the parties; and (iii) granting rights to the use of background and foreground intellectual property needed to perform research and development activities.

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Other Commercial Applications for Our Nuclear Fuel Technology

We retain the right to commercialize our nuclear fuel technology outside of the domain encompassed by Enfission, most notably in VVERs and Heavy Water Reactors (HWRs), including Canada Deuterium Uranium (CANDU) reactors. We anticipate most of our efforts for the foreseeable future will be directed towards Enfission.

Competition

To our knowledge, our nuclear fuel technology is the only technology that could be commercially viable in the foreseeable future to increase, in a safe and economically attractive way, power output potentially by up to 17% in existing PWRs and up to 30% in new build PWRs. Due to long product development timelines, significant nuclear regulatory requirements, and our intellectual property, we believe that the barriers to entry are very high for a competitor to our nuclear fuel technology.

Currently competition with respect to the design of commercially viable nuclear fuel products is limited to conventional uranium oxide fuels, which are reaching the limits in terms of their capability to provide increased power output or longer fuel cycles. We believe that the industry needs fuel products that can provide these benefits. While we believe conventional uranium oxide fuel may be capable of achieving power uprates of up to 10% in existing PWRs, doing so would require uranium-235 enrichment levels above 5% (as is also the case with our metallic fuel), higher reload batch sizes, or a combination thereof. The alternative route of increasing reload batch sizes while keeping uranium enrichment levels below 5% for power uprates up to 10% using conventional uranium oxide fuel raises the cost of each fuel reload, resulting in a significant fuel cycle cost penalty to the nuclear utility. The cost penalty could have a dramatic adverse impact on the economics of existing plants whose original capital cost has already been written off, which includes most US nuclear power plants.

Nuclear power faces competition from other sources of electricity, including natural gas, which is currently the cheapest option for power generation in the US and has resulted in some utilities abandoning nuclear power. Other sources of electricity may also be viewed as safer than nuclear power, although we believe that generating nuclear energy with Lightbridge fuel is the safest way to produce baseload electricity in suitable power reactors. To the extent demand for electricity generated by nuclear power decreases, the potential market for our nuclear fuel technology will decline.

In addition to conventional uranium dioxide fuel, potential competition to our metallic fuel technology can come from so-called Accident Tolerant Fuels (ATF). After the accident at the Fukushima Daiichi nuclear power plant in March 2011, the US Congress directed the US Department of Energy (DOE) to investigate every aspect of nuclear plant

operation including the existing uranium dioxide fuel pellets enveloped by zirconium based alloy tubes (cladding). According to the February 2019 Nuclear Energy Institute technical report on ATF titled “Safety and Economic Benefits of Accident Tolerant Fuel”, advanced fuel design concepts (such as ATF) were accelerated by combining recent operating experience with worldwide research and development. Over the past several years, the ATF program has received significant DOE funding support and initial interest from utility customers in ATF demonstration programs in their operating reactors. However, we believe that the ATF concepts may only offer incremental safety and operating improvements over conventional uranium dioxide fuel that could not effectively compete with the safety and economic benefits of our metallic fuel. In addition, some of the ATF concepts may be used in combination with our metallic fuel for additional safety and operating improvements.

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Raw Materials

We do not plan to utilize any raw materials directly in the conduct of our operations. The fuel fabricators which will ultimately fabricate fuel products incorporating our nuclear fuel technology will require zirconium and uranium, and additional raw materials that are required for the production of nuclear fuel assemblies that go into the reactor core. Uranium and zirconium are available from various suppliers at market prices. Our plan is that utilities will contract with Enfission to order nuclear fuel assemblies, and Enfission will subcontract manufacturing of fuel assemblies to Framatome, which will physically produce and then ship the completed nuclear fuel assemblies to the reactor sites on behalf of Enfission.

Government Support/Approvals and Relationships with Critical Development Partners/Vendors

The sales and marketing of our services and technology internationally may be subject to US export control regulations and the export control laws of other countries. Governmental authorizations may be required before we can export our services or technology or collaborate with foreign entities. If authorizations are required and not granted, our international business plans could be materially affected. Furthermore, the export authorization process is often time consuming. Violation of export control regulations could subject us to fines and other penalties, such as losing the ability to export for a period of years, which would limit our revenue growth opportunities and significantly hinder our attempts to expand our business internationally.

In 2015-2016, we received our export controls authorization from the US Department of Energy for all of our planned work outside the United States, specifically in France, Germany, Norway, Sweden, and Canada.

The testing, fabrication and use of nuclear fuels by Enfission and our future partners, licensees and nuclear power generators will be heavily regulated. The test facilities and other locations where our fuel designs may be tested before commercial use require governmental approvals from the host country's nuclear regulatory authority. The responsibility for obtaining the necessary regulatory approvals will lie with our research and development contractors that conduct such tests and experiments. Nuclear fuel fabricators, which will ultimately fabricate fuel using our technology under commercial licenses from us, are similarly regulated. Utilities that operate nuclear power plants that may utilize the fuel produced by these fuel fabricators require specific licenses relating to possession and use of nuclear materials as well as numerous other governmental approvals for the ownership and operation of nuclear power plants.

Certain Challenges

The ability to fabricate the lead test assemblies (LTAs) and a nuclear utility that is willing to accept the LTAs, is required for LTA demonstration in a commercial reactor. In the US, the fabricator and the utility will be primarily responsible for securing necessary regulatory licensing approvals for the LTA operation. To this end, in 2011, we established a Nuclear Utility Fuel Advisory Board (NUFAB) to further strengthen dialogue with global nuclear utilities. Separately, we formed Enfission with the fabricator Framatome to complete the development, demonstration, regulatory licensing, and commercial deployment of our metallic nuclear fuel in most types of reactors that are currently in operation, under construction, and planned around the world.

Establishment of required supply chain infrastructure to support high assay low enriched uranium (HALEU) metallic fuel. Existing commercial nuclear infrastructure, including conversion facilities, enrichment facilities, fabrication facilities, fuel storage facilities, fuel handling procedures, fuel operation at reactor sites, used fuel storage facilities and shipping containers, were designed and are currently licensed to handle uranium in oxide form with enrichment up to 5%. Our fuel designs are expected to use uranium metal with uranium enrichment levels up to 19.75% and would therefore require certain modifications to existing commercial nuclear infrastructure to enable commercial nuclear facilities to handle our fuels. Those nuclear facilities will need to go through a regulatory licensing process and obtain regulatory approvals to be able to process, handle, or ship uranium metal with enrichment levels up to 19.75% and operate commercial reactors and spent fuel storage facilities using our metallic fuel.

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There is a lack of publicly available experimental data on our metallic fuel. We will need to conduct various irradiation experiments to confirm fuel performance under normal and off-normal events. Loop irradiation in a test reactor environment prototypic of commercial reactor operating conditions and other experiments on unirradiated and irradiated metallic fuel samples will be essential to demonstrate the performance and advantages of our metallic fuel. We are currently planning loop irradiation testing of our metallic fuel samples in a research reactor as part of this effort.

Existing analytical models may be inadequate. New analytical models, capable of accurately predicting the behavior of our metallic fuel during normal operation and off-normal events, may be required. Experimental data measured from our planned irradiation demonstrations will help to identify areas where new analytical models or modifications to existing ones may be required.

Demonstration of a fabrication process both for semi-scale irradiation fuel samples and subsequently for full-length (12-14 feet) metallic fuel rods for PWR LTAs is required. Past operating experience with differently shaped fuel rods with a similar metallic fuel composition involved fabrication of metallic fuel rods up to 3 feet in length in Russia. Fabrication of full-length (approximately 3.5 to 4.5 meters) PWR metallic fuel rods has yet to be demonstrated. We plan to demonstrate fabrication of full-length rods using surrogate materials in 2019.

Overview of the Nuclear Power Industry

Presently, nuclear power provides approximately 7% of the world's energy, including approximately 11% of the world's electricity. According to the World Nuclear Association, as of March 1, 2019 there were 450 operable nuclear power plants worldwide, mostly light water reactors, with the most common types being PWRs, boiling-water reactors (BWRs), and VVER reactors. Nuclear power provides a non-fossil fuel, low-carbon energy solution that can meet baseload electricity needs.

Due to substantial project risks and the significant upfront capital commitment associated with building new reactors, many nuclear utilities in deregulated markets choose to optimize their existing generating capacity through increasing their capacity utilization factor, power uprates and plant life extensions. We expect this trend to continue, particularly in the mature nuclear markets with significant existing nuclear capacity. We expect most of the new build activity to occur in emerging nuclear markets.

Of the world's existing reactors currently in operation, PWRs (including Russian-designed VVERs) account for more than half of the net operating capacity, with BWRs being the second most prevalent and accounting for another 15-20%.

Of the nuclear reactors currently under construction, we estimate over 80% are either PWRs or VVERs with a rated electric power output of 1,000 megawatts (“MWe”) or greater.

Utilities have embraced power uprates as a cost-effective way to increase their generation capacity. While the efforts thus far have occurred mostly in the United States, we believe there is a large, untapped worldwide market for power uprates. The incentive to proceed with longer operating cycles and/or power uprates of up to 10% level is significant since there are few changes required to implement the power uprate, and the changes that are required are relatively inexpensive. The limiting factor at the moment is the fuel.

In some instances, utilities will modify and/or replace components in order to accommodate a higher power level. Technical analyses must demonstrate that the proposed plant configuration remains safe and that measures to protect the health and safety of the public continue to be effective. These analyses, which span many technical disciplines, are reviewed and approved by the regulator before a power uprate can be performed.

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The utility will conduct an economic analysis to evaluate the potential financial benefits of the proposed uprate. Typically, power uprates enable utilities to increase their generating capacity at a cost significantly less than the cost of building a new plant. In many cases, power uprates can be completed in months as opposed to the several years required for new build, thus the invested dollars begin producing revenue shortly after they are spent. Power uprates, therefore, represent an efficient use of capital.

Most nuclear power plants originally had a licensed lifetime of 25 to 40 years, but engineering assessments have established that many can operate much longer. In the US, approximately 60 reactors have been granted license extensions to continue operating for a total of 60 years. Most of the plants that have not already requested a license extension are expected to apply in the near future. A license extension at about the 30-year mark requires additional capital expenditure for the replacement of worn equipment and outdated control systems. Multiple utilities have stated plans to apply to the NRC for additional 20 years of licensed lifetime, up to a total of 80 years per reactor.

The technical and economic feasibility of replacing major reactor components, such as steam generators in PWRs, has been demonstrated. The increased revenue generated from extending the lifetime of existing plants is attractive to utilities, especially in view of the difficulties in obtaining public acceptance of constructing replacement nuclear capacity.

Almost all of the new build reactor designs are either Generation III or Generation III+ type reactors. The primary difference from second-generation designs is that many incorporate passive or inherent safety features which require no active controls or operational intervention to avoid accidents in the event of malfunction. Many of these passive systems rely on gravity, natural convection, or resistance to high temperatures.

Influence of the Accident at Fukushima, Japan and New International Nuclear Build

The nuclear accident at the Fukushima nuclear power plant in Japan following the strong earthquake and massive tsunami that occurred on March 11, 2011 increased public opposition to nuclear power, resulting in a slowdown in, or, in some cases, a complete halt to, new construction of nuclear power plants and an early shut down of existing power plants in certain countries. As a result, some countries that were considering launching new domestic nuclear power programs before the Fukushima accident have delayed or cancelled preparatory activities they were planning to undertake as part of such programs. This has diminished the number of consulting opportunities that we could compete for globally, at least in the near-term. In addition, the Fukushima accident appears to have shrunk the projected size of the global nuclear power market in 2025-2030 as reflected in the most recent reference case projections published by the World Nuclear Association. At the same time, the event has brought a greater emphasis on safety to the forefront that may be beneficial to us because our metallic fuel provides improved safety and fuel performance during normal operation and design-basis accidents.

Our Intellectual Property

Our nuclear fuel technologies are protected by multiple US and international patents. Set forth below are the patents, which we consider material to our business based on our current plans, all of which we have licensed to Enfission:

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Country	Application Date	Registration Date	Title	Case Status
Fabrication method using the casting route				
United States of America	2/20/2018		FUEL ASSEMBLY	Pending
Belgium	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Bulgaria	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Czech Republic	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
European Patent Office	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Hungary	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
United Kingdom	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
China	5/11/2011	03/27/2018	FUEL ASSEMBLY	Registered
Japan	5/11/2011	4/13/2018	FUEL ASSEMBLY	Registered
Republic of Korea	5/11/2011		FUEL ASSEMBLY	Pending
Fabrication method using the powder metallurgy route				
United States of America	5/11/2011	7/31/2018	FUEL ASSEMBLY	Registered
United States of America	2/20/2018		FUEL ASSEMBLY	Pending
Australia	5/11/2011	7/2/2015	FUEL ASSEMBLY	Registered
Belgium	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Bulgaria	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Czech Republic	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
European Patent Office	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Hungary	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
United Kingdom	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Bulgaria	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Czech Republic	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
European Patent Office	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Finland	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
France	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Germany	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Hungary	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Sweden	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Turkey	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
China	5/11/2011	5/18/2016	FUEL ASSEMBLY	Registered
Japan	5/11/2011	9/9/2016	FUEL ASSEMBLY	Registered
Republic of Korea	5/11/2011	8/30/2017	FUEL ASSEMBLY	Pending
Australia	5/11/2011		FUEL ASSEMBLY	Pending
Canada	5/11/2011		FUEL ASSEMBLY	Pending
China	5/11/2011	3/27/2018	FUEL ASSEMBLY	Registered

India	5/11/2011	FUEL ASSEMBLY	Pending

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All-metal fuel assembly design and a mixed grid pattern of metallic fuel rods

United States of America	11/15/2013	1/1/2019	FUEL ASSEMBLY	Registered
Belgium	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
Bulgaria	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
Czech Republic	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
European Patent Office	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
Finland	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
France	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
Germany	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
Hungary	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
Spain	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
Sweden	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
Turkey	5/1/2014	1/31/2018	FUEL ASSEMBLY	Registered
China	5/1/2014	11/24/2017	FUEL ASSEMBLY	Registered
Australia	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
Canada	5/1/2014		FUEL ASSEMBLY	Pending
Canada	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
China	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
Eurasian Patent Organization	5/1/2014		FUEL ASSEMBLY	Pending
Eurasian Patent Organization	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
European Patent Office	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
Japan	5/1/2014	7/13/2018	FUEL ASSEMBLY	Registered
Japan	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
Republic of Korea	5/1/2014		FUEL ASSEMBLY	Pending
Republic of Korea	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
India	5/1/2014		FUEL ASSEMBLY	Pending

All-metal fuel assembly design (i.e., no oxide rods in the outer row)

United States of America	5/11/2011	7/31/2018	FUEL ASSEMBLY	Registered
United States of America	11/15/2013	1/1/2019	FUEL ASSEMBLY	Registered
Australia	5/11/2011	7/2/2015	FUEL ASSEMBLY	Registered
Canada	12/26/2007	4/26/2016	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
India	12/26/2007		NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL	Pending

FOR A FUEL ASSEMBLY

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Multi-lobe metallic fuel rod design

United States of America	12/25/2008	5/31/2016	LIGHT-WATER REACTOR FUEL ASSEMBLY (ALTERNATIVES), A LIGHT-WATER REACTOR, AND A FUEL ELEMENT OF FUEL ASSEMBLY	Registered
United States of America	12/26/2007	2/18/2014	NUCLEAR REACTOR (ALTERNATIVES), FUEL ASSEMBLY OF SEED-BLANKET SUBASSEMBLIES FOR NUCLEAR REACTOR (ALTERNATIVES), AND FUEL ELEMENT FOR FUEL ASSEMBLY	Registered
United States of America	5/11/2011	7/31/2018	FUEL ASSEMBLY	Registered
United States of America	11/15/2013	1/1/2019	FUEL ASSEMBLY	Registered
United States of America	9/16/2015	1/29/2019	FUEL ASSEMBLY	Registered
United States of America	2/20/2018		FUEL ASSEMBLY	Pending
Australia	5/11/2011	7/2/2015	FUEL ASSEMBLY	Registered
Australia	12/25/2008	9/3/2015	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Australia	12/26/2007	8/4/2016	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
Australia	12/26/2007	5/24/2014	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
Belgium	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Bulgaria	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Czech Republic	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
European Patent Office	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Finland	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
France	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Germany	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Hungary	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Sweden	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered

Turkey	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
United Kingdom	12/26/2007	5/18/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Belgium	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Bulgaria	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Czech Republic	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
European Patent Office	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Finland	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
France	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Germany	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Hungary	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Spain	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Sweden	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Turkey	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
United Kingdom	12/23/2008	9/21/2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Registered
Belgium	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Bulgaria	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Czech Republic	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
European Patent Office	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Hungary	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
United Kingdom	5/11/2011	10/25/2017	FUEL ASSEMBLY	Registered
Bulgaria	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered

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Czech Republic	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
European Patent Office	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Finland	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
France	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Germany	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Hungary	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Sweden	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Turkey	5/11/2011	4/6/2016	FUEL ASSEMBLY	Registered
Bulgaria	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Czech Republic	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
European Patent Office	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Finland	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
France	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Germany	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Hungary	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Sweden	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Turkey	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
United Kingdom	12/25/2008	4/13/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR	Registered

			REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	
Canada	12/25/2008	11/29/2016	A LIGHT-WATER REACTOR FUEL ASSEMBLY (ALTERNATIVES), A LIGHT-WATER REACTOR, AND A FUEL ELEMENT OF FUEL ASSEMBLY	Registered
Canada	12/26/2007	4/26/2016	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
China	5/11/2011	5/18/2016	FUEL ASSEMBLY	Registered
China	12/25/2008	6/29/2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
China	12/26/2007	6/23/2017	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
Japan	5/11/2011	9/9/2016	FUEL ASSEMBLY	Registered
Japan	5/11/2011	9/9/2016	FUEL ASSEMBLY	Registered

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Japan	12/25/2008	6/5/2015	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Japan	12/26/2007	4/22/2016	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
Republic of Korea	5/11/2011	8/30/2017	FUEL ASSEMBLY	Pending
Republic of Korea	12/25/2008	8/18/2015	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Registered
Republic of Korea	12/26/2007	4/20/2015	NUCLEAR REACTOR(ALTERNATIVES), FUEL ASSEMBLY OF SEED-BLANKET SUBASSEMBLIES FOR NUCLEAR REACTOR(ALTERNATIVES), AND FUEL ELEMENT FOR FUEL ASSEMBLY	Registered
Republic of Korea	12/26/2007	12/15/2014	NUCLEAR REATION (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
Australia	5/1/2014	10/11/2018	FUEL ASSEMBLY	Registered
Australia	5/11/2011		FUEL ASSEMBLY	Pending
Australia	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
Canada	12/25/2008		A LIGHT-WATER REACTOR FUEL ASSEMBLY AND FUEL ELEMENT THEREOF	Pending
Canada	5/1/2014		FUEL ASSEMBLY	Pending
Canada	5/11/2011		FUEL ASSEMBLY	Pending
Canada	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
China	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
Eurasian Patent Organization	5/1/2014		FUEL ASSEMBLY	Pending
Eurasian Patent Organization	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
European Patent Office	12/25/2008		FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Pending
European Patent Office	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
Japan	5/1/2014	7/13/2018	FUEL ASSEMBLY	Registered
Japan	5/11/2011	4/13/2018	FUEL ASSEMBLY	Registered
Japan	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
Republic of Korea	5/11/2011		FUEL ASSEMBLY	Pending
Republic of Korea	5/1/2014		FUEL ASSEMBLY	Pending

Republic of Korea	9/16/2015		NUCLEAR FUEL ASSEMBLY	Pending
China	12/26/2007	2/12/2014	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
Japan	12/26/2007	8/1/2014	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Registered
India	5/11/2011		FUEL ASSEMBLY	Pending
India	5/1/2014		FUEL ASSEMBLY	Pending
India	12/25/2008		FUEL ASSEMBLY FOR A LIGHT-WATER, NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Pending
India	12/26/2007		NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Pending
Australia	5/1/2014		FUEL ASSEMBLY	Pending
United States of America	12/28/2018		FUEL ASSEMBLY	Pending
United States of America	1/7/2019		FUEL ASSEMBLY	Pending

None of the above

United States of America	12/22/2008	2/14/2012	NUCLEAR REACTOR (ALTERNATIVES), FUEL ASSEMBLY OF SEED-BLANKET SUBASSEMBLIES FOR NUCLEAR REACTOR (ALTERNATIVES), AND FUEL ELEMENT FOR FUEL ASSEMBLY	Registered

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We also own a number of US and international patents associated with fuel assembly designs for all-uranium seed and blanket fuel for existing plants and new build reactors and thorium-based seed and blanket fuel for both existing and new build reactors, which we do not consider material, individually or collectively, based on our current business plan. In addition to our patent portfolio, we also own trademarks to Lightbridge and Thorium Power corporate names and the Lightbridge logo.

Our Consulting Business

Although we discontinued our consulting business segment in 2018, we may opportunistically provide nuclear power consulting and strategic advisory services to commercial and governmental entities worldwide. Our consulting business in the past was primarily engaged in the business of assisting commercial and governmental entities globally with developing and expanding their nuclear industry capabilities and infrastructure. We can provide integrated strategic advice across a range of expertise areas including, for example, regulatory development, nuclear reactor site selection, procurement and deployment, reactor and fuel technology, international relations, program management and infrastructure development.

We only engage with commercial entities and governments that are dedicated to non-proliferative and transparent nuclear programs.

Our consulting services are expert and relationship based, with particular emphasis on key decision makers in senior positions within governments or companies, as well as focus on overall management of nuclear energy programs. We believe that our independence, experience, expertise, reputation and segment focus enable us to compete effectively as a strategic advisor for governments wishing to develop a new civil nuclear program.

Our major challenge in pursuing our consulting business is that the decision-making process for nuclear power programs typically involves careful consideration by many parties and therefore requires significant time. Many of the potential clients that could benefit from our services are in regions of the world where tensions surrounding nuclear energy are high, or in countries where public opinion plays an important role.

Financial information about our nuclear fuel technology and consulting is incorporated by reference from Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations*, and Note 11 of the notes to the consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Employees

Our business model is to limit the number of our full-time employees and to rely on individual independent contractors, outside agencies and technical facilities with specific skills to assist with various business functions including, but not limited to, corporate overhead, personnel, research and development, and government relations. This model limits overhead costs and allows us to draw upon resources that are specifically tailored to our internal and external (client) needs. As of December 31, 2018, we had eleven full-time employees. We utilize a network of independent contractors available for deployment for specialized consulting assignments. We believe that our relationship with our employees and contractors is satisfactory.

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Available Information

Our internet address is *www.ltbridge.com*. We make available free of charge on our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, including exhibits, and amendments to those reports filed or furnished pursuant to Sections 13(a) and 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the Securities and Exchange Commission ("SEC"). Copies of these reports may also be obtained free of charge by sending written requests to Investor Relations, Lightbridge Corporation, 11710 Plaza America Drive, Suite 2000, Reston, Virginia 20190 USA. The SEC also maintains an internet site that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC at *www.sec.gov*. The information posted on our website is not incorporated into this Annual Report on Form 10-K, and any reference to our website is intended to be inactive textual references only.

ITEM 1A. RISK FACTORS

Risks Related to the Company

We will need to raise significant additional capital in the future to expand our operations and continue our research and development and we may be unable to raise such funds when needed or on acceptable terms, and any capital raises may cause significant dilution to our shareholders.

As of December 31, 2018, we had $24.6 million in cash and equivalents, and as of March 1, 2019, we had approximately $23 million in cash and equivalents. We will need to raise significant additional capital in order to continue our research and development activities and fund our operations through commercialization of our nuclear fuel technology, including funding Enfission for 2019 and beyond. Our current plan is to maximize external funding from third party sources to support the remaining development, testing and demonstration activities relating to our metallic nuclear fuel technology.

When we elect to raise additional funds or additional funds are required, we may raise such funds from time to time through public or private equity offerings, debt financings or other financing alternatives. Additional equity or debt financing or other alternative sources of capital may not be available to us on acceptable terms, if at all. In addition, if we are unable to demonstrate meaningful progress in our Enfission joint venture with Framatome to further the development of our fuel products, it may be difficult for us to raise additional capital on terms acceptable to us or at all.

If we raise additional funds by issuing equity securities, our stockholders will experience dilution. Sales of substantial amounts of our common stock may cause the trading price of our common stock to decline in the future. New investors may have rights superior to existing securityholders. Debt financing, if available, would result in substantial fixed payment obligations and may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, or declaring dividends. Any debt financing or additional equity that we raise may contain terms, such as liquidation and other preferences, which are not favorable to us or our stockholders. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may not be able to fully develop our nuclear fuel designs, our future operations will be limited, and our ability to generate revenues and achieve or sustain future profitability will be substantially harmed. In particular, we may be required to delay, reduce the scope of or terminate one or more of our research projects, sell rights to our nuclear fuel technology or license the rights to such technologies on terms that are less favorable to us than might otherwise be available. If we raise additional funds by issuing equity or securities convertible into equity, further dilution to stockholders may result and new investors could have rights superior to existing stockholders.

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We are dependent upon a joint venture for substantially all of our anticipated future income.

In January 2018, we entered into the Enfission joint venture with Framatome. We anticipate that distributions from Enfission and licensing revenue from nuclear fuel sold by Enfission will constitute substantially all of our income in the future. We are dependent upon the success or failure of Enfission, and if Enfission is not successful or Enfission does not perform its research and development activities as expected, our future financial performance will be negatively impacted.

Our Enfission joint venture could be adversely affected by our lack of sole decision-making authority, any disputes that may arise between us and our joint venture partner and our exposure to potential losses from the joint venture.

Joint ventures involve risks not present in investments or operations in which a third party is not involved, including the possibility that a joint venture partner may at any time have other business interests and investments other than the joint venture with us, may have economic or business goals different from ours, and may be in a position to take actions contrary to our policies or objectives. Conflicts of interest may cause a joint venture partner to take actions that could harm the joint venture or the Company, such as seeking undue benefit from the joint venture or its assets or operations, acting in bad faith to undermine the joint venture or its operations, or causing unnecessary expense or delay. A joint venture partner may also become bankrupt or fail to fund its required capital contributions. Consequently, actions by or disputes with a joint venture partner might result in subjecting our business to additional risk.

Under the Enfission operating agreement, neither we nor Framatome are in a position to unilaterally control the joint venture, and deadlocks may occur. Such deadlocks could adversely impact the operations and profitability of Enfission, including delaying the commercialization of nuclear fuel incorporating our technology. Disputes between us and Framatome may result in litigation or arbitration that would increase our expenses and prevent our officers and directors from focusing their time and effort on our business.

Neither Framatome nor Enfission is a publicly reporting entity in the United States, and as such they are not subject to the internal control requirements of the Sarbanes-Oxley Act or other SEC rules and regulations applicable to the Company. If Framatome or Enfission does not comply with the information and notice provisions set forth in the Enfission operating agreement and/or Research and Development Services Agreement, the Company may not be able to satisfy its reporting obligations under the Exchange Act or maintain adequate internal control over financial reporting, and our business, the market value of our securities and our access to capital markets could be materially adversely affected. Non-compliance by Framatome or Enfission could also adversely impact the operations and profitability of Enfission, including delaying the commercialization of nuclear fuel incorporating our technology.

In addition, the Enfission joint venture may result in other difficulties including, among other things, diversion of our management's attention from other business concerns and managing regulatory compliance and corporate governance matters.

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Our interest in Enfission exposes us to risks related to the manufacturing of nuclear fuel.

Historically, we anticipated licensing our nuclear fuel technology to third parties that would undertake the manufacturing and sale of nuclear fuel incorporating our technology. With our entry into the Enfission joint venture, we will be indirectly exposed to certain risks in connection with the manufacturing of nuclear fuel, including procurement, quality assurance, regulatory, environmental and litigation risks. If such risks or other anticipated or unanticipated liabilities were to materialize, any desired benefits of our entry into the joint venture may not be fully realized, if at all, and our future financial performance may be negatively impacted.

If the price of non-nuclear energy sources falls, whether as the result of government policy or otherwise, there could be an adverse impact on nuclear energy, which would have a material adverse effect on our operations.

In certain markets with a diversified energy base, decisions on new build power plants are largely affected by the economics of various energy sources. If prices of non-nuclear energy sources fall, it could limit the deployment of new build nuclear power plants in such markets. This could reduce the size of the potential markets for both our fuel technology and our consulting services.

In addition, many states and the federal government have adopted a variety of government subsidies and utility incentives to allow renewable energy sources, such as biofuels, wind and solar energy, to compete with conventional sources of energy that have historically been less expensive, such as fossil fuels and nuclear power. We may face additional competition from providers of renewable energy sources, particularly in wind and solar energy, if government subsidies and utility incentives for those sources of energy remain or increase or if such sources of energy are mandated. Additionally, the availability of subsidies and other incentives from utilities or government agencies to install alternative renewable energy sources may negatively impact our potential customers' desire to purchase our products and services, or may be utilized by our existing or new competitors to develop a competing business model or products or services that may be potentially more attractive to customers than ours, any of which could have a material adverse effect on our results of operations or financial condition.

We may be adversely affected by uncertainty in the global financial markets and worldwide economic downturn.

Our future results may be adversely affected by the worldwide economic downturn, continued volatility or further deterioration in the debt and equity capital markets, inflation, deflation, or other adverse economic conditions that may negatively affect us. At present, it is likely that we will require additional capital in the near future in order to fund our operations. Due to the above listed factors, we cannot be certain that additional funding will be available on terms that are acceptable to us, or at all.

Our limited operating history with our joint venture with Framatome makes it difficult to judge our prospects.

The success of our research and development activities, like other competing research and development projects similar to ours, is uncertain. If such efforts are not successful, we will be unable to generate revenues from our operations and we may have to cease doing business. Similarly, our fuel design patents and technology have not been commercially used and we have not received any royalty or sales revenue from this area of our business. We are subject to the risks, expenses and problems frequently encountered by companies in the early stages of development.

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We rely upon certain members of our senior management, including Seth Grae, Andrey Mushakov, and Larry Goldman and the loss of any of Mr. Grae, Mr. Mushakov, or Mr. Goldman or any of our management team would have an adverse effect on the Company.

Our success depends upon certain members of our senior management, including Seth Grae, our Chief Executive Officer, Mr. Andrey Mushakov, our Executive Vice President - Nuclear Operations, and Larry Goldman, our Chief Financial Officer. Mr. Grae's and Mr. Mushakov's knowledge of the nuclear power industry, their network of key contacts within that industry and in governments and, in particular, their expertise in the potential markets for our technologies, are critical to the implementation of our business model. Mr. Grae, Mr. Mushakov, or Mr. Goldman are likely to be significant factors in our future growth and success. The loss of services by either Mr. Grae, Mr. Mushakov, or Mr. Goldman could have a material adverse effect on our business, results of operations or financial condition. Also, we rely heavily on other members of our management team and our inability to hire, retain and motivate adequate numbers of consultants and managers could adversely affect our ability to meet client needs and to continue the development of our fuel designs.

Competition for highly qualified technical personnel is intense in our industry.

Our future success depends in part on our ability to contract with, hire, integrate and retain engineers and scientists, and other qualified personnel with a focus in our nuclear fuel technology and products. Competition for these skilled professionals is intense. If we are unable to adequately anticipate our needs for certain key competences and implement human resource solutions to recruit or improve these competences, our business, results of operations and financial condition would suffer. In addition, a loss of the service of any of our existing skilled employees or contractors could have a significant negative effect on our ability to operate.

Successful execution of our business model is dependent upon public support for nuclear power and overcoming public opposition to nuclear energy as a result of the major nuclear accident at Fukushima.

Successful execution of our business model is dependent upon public support for nuclear power in the United States and other countries. Nuclear power faces strong opposition from certain competitive energy sources, individuals, and organizations. The major nuclear accident that occurred at the Fukushima nuclear power plant in Japan beginning on March 11, 2011 increased public opposition to nuclear power in some countries, resulting in a slowdown in, or, in some cases, a complete halt to, new construction of nuclear power plants, an early shut down of existing power plants, or a dampening of the favorable regulatory climate needed to introduce new nuclear technologies. In addition, the Fukushima accident appears to have shrunk the projected size of the global nuclear power market in 2025-2030 as reflected in the most recent reference case projections published by the World Nuclear Association. As a result of the Fukushima accident, some countries that were considering launching new domestic nuclear power programs have delayed or cancelled preparatory activities they were planning to undertake as part of such programs. This has

diminished the number of consulting opportunities that we could compete on globally, at least in the near-term. Furthermore, nuclear fuel fabrication and the use of new nuclear fuels in reactors must be licensed by the US Nuclear Regulatory Commission and equivalent governmental authorities around the world. In many countries, the licensing process includes public hearings in which opponents of the use of nuclear power might be able to cause the issuance of required licenses to be delayed or denied.

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We may not be able to receive or retain authorizations that may be required for us to sell our services or license our technology internationally.

The sales and marketing of our services and technology internationally may be subject to US and France export control regulations and the export control laws of other countries. Governmental authorizations may be required before we can export our services or technology. If authorizations are required and not granted, our international business plans could be materially affected. The export authorization process is often time consuming. Violation of export control regulations could subject us to fines and other penalties, such as losing the ability to export for a period of years, which would limit our revenue growth opportunities and significantly hinder our attempts to expand our business internationally.

Our fuel designs have never been tested in an existing commercial reactor and actual fuel performance, as well as the willingness of commercial reactor operators and fuel fabricators to adopt a new design, is uncertain.

Nuclear power research and development entails significant technological risk. New designs must undergo extensive development and testing necessary for regulatory approval. Our fuel designs are still in the research and development stage and while certain testing on our fuel technologies has been completed, further testing and experiments will be required in test facilities. For example, our proposed metallic fuel uses a helical cruciform form to increase its surface area and shorten the distance for heat generated in the fuel rod to reach water and improve the coolability of the fuel. However, this proposed shape may also result in non-uniform distribution of azimuthal heat flux that may have an adverse impact on the critical heat flux and limit power uprate capabilities of our metallic fuel resulting from an increased surface area of the cruciform fuel rod compared to a conventional cylindrical fuel rod. Additional testing and development may result in changes to the design of our proposed metallic fuel, which could decrease its realizable benefits and impair the ability of nuclear utilities to utilize nuclear fuel incorporating our technology.

Furthermore, the fuel technology has yet to be demonstrated in operating conditions equivalent to those found in an existing commercial reactor. Until we are able to successfully demonstrate operation of our fuel designs in commercial reactor conditions, we cannot confirm the ability of our fuel to perform as expected, including its ability to enable a power uprate or a longer operating cycle. In addition, there is also a risk that suitable testing or manufacturing facilities may not be available to us on a timely basis or at a reasonable cost, which could cause development program schedule delays.

If our fuel designs do not perform as anticipated in commercial reactor conditions, we will not realize revenues from licensing or other use of our fuel designs.

The amount of time and funding needed to bring our nuclear fuel to market may greatly exceed our projections.

The development of our nuclear fuel will take a significant amount of time and funding, and any delay in procuring equipment or in achieving development milestones, regulatory licensing timelines uncertainty could result in significant delays and cost overruns. We have come to the point where certain manufacturing equipment and a manufacturing facility are necessary for the development of our fuel; however, we cannot at this stage accurately predict the amount of funding or the time required to successfully manufacture and sell our fuel in the future. The actual cost and time required to commercialize our fuel technology may vary significantly depending on, among other things, the results of our research and product development efforts; the cost of developing or licensing our fuel; changes in the focus and direction of our research and product development programs; competitive and technological advances; the cost of filing, prosecuting, defending and enforcing claims with respect to patents; the regulatory approval process; fuel manufacturing process; and marketing and other costs associated with commercialization of these technologies. Because of this uncertainty, even if financing is available to us, we may need significantly more capital than anticipated, which may not be available on terms acceptable to us or at all, and the expected revenues and other benefits from our nuclear fuel technology may be delayed or never realized.

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Our current economic model for selling our fuel may prove to be inaccurate and our nuclear fuel technology products may not be cost effective.

Although our economic model concludes that our fuel technology can provide a significant payback to utilities, it is based upon a number of assumptions that may not prove accurate. If such model is inaccurate, our nuclear fuel product may not provide nuclear utility customers with sufficient economic incentive to switch from existing nuclear fuels, and we would lose or fail to develop customers.

Development of our nuclear fuel technology is dependent upon the availability of a test reactor.

Our fuel designs are still in the research and development stage and further testing and experiments will be required in test facilities. We intended to conduct further testing of our fuel designs at the Halden research reactor located in Halden, Norway. However, the Halden research reactor, which became operative in 1958, has closed and will not reopen, so it will not be available for further testing of our fuel designs. The Company has identified alternative options to generate the irradiation data we need to support regulatory licensing of our lead test assembly operation in a commercial reactor but pursuing such alternatives to the Halden research reactor may delay further testing of our fuel designs. We may not be able to contractually secure another reactor in which to test our fuel designs. As a result, commercialization of our nuclear fuel technology may be delayed, perhaps indefinitely, which would adversely affect our business, financial condition and results of operations.

Potential competitors could limit opportunities to license our technology.

Other companies may develop new nuclear fuel designs that can be used in the same types of reactors as those that we target. Some of these companies have existing long-term commercial contracts with nuclear power utilities that we do not have. If another company were to successfully develop a new nuclear fuel that competes with our nuclear fuel design technology, opportunities to commercialize our technology would be limited, and our business would suffer.

Moreover, many of these other companies have substantially greater financial, technological, managerial and research and development resources and experience than we do. These larger companies may be better able to handle the corresponding long-term financial requirements to successfully develop new nuclear fuel and bring it to market.

We serve the nuclear power industry, which is highly regulated. Our fuel designs differ from fuels currently licensed and used by commercial nuclear power plants. The regulatory licensing and approval process for nuclear

power plants to use our fuels may be delayed and made more costly, and industry acceptance of our fuels may be hampered.

The nuclear power industry is a highly regulated industry. All entities that operate nuclear facilities and transport nuclear materials are subject to the jurisdiction of the US Nuclear Regulatory Commission, or its counterparts around the world.

Our fuel designs differ significantly in some aspects from the fuel used today by commercial nuclear power plants. These differences will likely result in more prolonged and extensive review by the US Nuclear Regulatory Commission or its counterparts around the world that could cause development program schedule delays. Entities within the nuclear industry may be hesitant to be the first to use our fuel, which has little or no history of successful commercial use. Furthermore, our fuel development timeline relies on the relevant nuclear regulator to accept and approve technical information and documentation about our fuel that is generated during the research and development program. There is a risk that regulators may require additional information regarding the fuel's behavior or performance that necessitates additional, unplanned analytical and/or experimental work which could cause program schedule delays and require more research and development funding.

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Existing commercial nuclear infrastructure in many countries is limited to uranium material in an oxide form with enrichments up to 5%. Our fuel is in metallic form and is enriched to higher levels which would require modifications to existing commercial nuclear infrastructure and could impede commercialization of our technology.

Existing commercial nuclear infrastructure, including conversion facilities, enrichment facilities, fabrication facilities, fuel storage facilities, fuel handling procedures, fuel operation at reactor sites, used fuel storage facilities and shipping containers, were designed and are currently licensed to handle uranium in oxide form with enrichment up to 5%. Our fuel designs are expected to use uranium metal with uranium enrichment levels up to 19.75% and would therefore require certain modifications to existing commercial nuclear infrastructure to enable commercial nuclear facilities to handle our fuels. Those nuclear facilities will need to go through a regulatory licensing process and obtain regulatory approvals to be able to process, handle, or ship uranium metal with enrichment levels up to 19.75% and operate commercial reactors using our metallic fuel. There is a risk that some relevant entities within the nuclear power industry may be slow in making any required facility infrastructure modifications or obtaining required licenses or approvals to enable enrichment to 19.75%, conversion to metallic uranium, fabrication of metallic fuel rods and assemblies, shipment of fresh and irradiated metallic fuel assemblies, interim storage of fresh and irradiated fuel assemblies in spent fuel pools or dry cask storage facilities at reactor sites, and permanent disposal of spent metallic fuel at a high-level repository. There is also a risk associated with possible negative perception of uranium enrichment greater than 5% that could potentially delay or hinder regulatory approval of our nuclear fuel designs.

Our nuclear fuel designs rely on fabrication technologies that in certain material ways are different from the fabrication techniques presently utilized by existing commercial fuel fabricators. In particular, our metallic fuel rods must be produced using a co-extrusion fabrication process. Presently, most commercial nuclear fuel is produced using a pellet fabrication technology, whereby uranium oxide is packed into small pellets that are stacked and sealed inside metallic tubes. Our co-extrusion fabrication technology involves extrusion of a single-piece solid fuel rod from a metallic matrix containing uranium and zirconium alloy. Fabrication of full-length (approximately 3.5 to 4.5 meters) PWR metallic fuel rods has yet to be demonstrated. There is a risk that the fuel fabrication process utilized to produce one meter long metallic fuel rods may not be adaptable to the fabrication of full-length metallic fuel rods used in commercial reactors.

If the US Department of Energy ("DOE") were to successfully assert that an invention claimed within our 2007 or 2008 Patent Cooperation Treaty, or PCT, patent applications was first conceived or actually reduced to practice under a contract with the DOE, then our intellectual property rights in that invention could become compromised and our business model could become significantly impeded.

Work on finite aspects and/or testing of some subject matter disclosed in our 2007 and 2008 Russian PCT patent applications was done under a government contract with the DOE. If the DOE asserted that an invention claimed in the 2007 and/or 2008 Russian PCT applications was first conceived or actually reduced to practice under such a contract, and a US court agreed, the DOE could gain an ownership interest in such an invention outside of the Russian

Federation and our intellectual property rights in that claimed invention could become compromised and our business model may then be significantly impeded.

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If we are unable to obtain or maintain intellectual property rights and trade secrets relating to our technology, the commercial value of our technology may be adversely affected, which could in turn adversely affect our business, financial condition and results of operations.

Our success and ability to compete depends in part upon our ability to obtain protection in the United States and other countries for our nuclear fuel designs by establishing and maintaining intellectual property rights relating to or incorporated into our fuel technologies and products. We own a variety of patents and patent applications in the United States, as well as corresponding patents and patent applications in several other jurisdictions. We have not obtained patent protection in each market in which we plan to compete. We do not know how successful we would be should we choose to assert our patents against suspected infringers. Our pending and future patent applications may not issue as patents or, if issued, may not issue in a form that will be advantageous to us. Even if issued, patents may be challenged, narrowed, invalidated, or circumvented, which could limit our ability to stop competitors from marketing similar products or limit the length of term of patent protection we may have for our products. Changes in either patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property or narrow the scope of our patent protection, which could in turn adversely affect our business, financial condition and results of operations.

We intend to apply for additional patents for our nuclear fuel technologies and fuel, as we deem appropriate. We may, however, fail to apply for patents on important technologies or products in a timely fashion, if at all. Our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from practicing our technologies or from developing competing products and technologies. In addition, in general the patent positions of energy technology companies are highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. As a result, the validity and enforceability of our patents cannot be predicted with certainty.

We also rely on trade secrets to protect some of our technology, especially where it is believed that patent protection is undesirable for the Company or unobtainable. We generally require our employees, consultants, advisors and collaborators to execute appropriate agreements with us recently regarding the safeguarding of confidential information. If any of these agreements are violated, or if any of our employees, consultants, advisors or collaborators unintentionally or willfully disclose our proprietary information to competitors, we may not be able to fully perfect our rights to the technologies in question, and in some instances, we may not have an appropriate remedy available for the damages that we may incur as a result of any such violation. Enforcement of claims that a third party has illegally obtained and is using trade secrets is expensive, time consuming and uncertain. In addition, non-US courts are sometimes less willing than US courts to protect trade secrets. If our competitors independently develop equivalent knowledge, methods and know-how, we would not be able to assert our trade secrets against them and our business could be harmed.

If we infringe or are alleged to infringe intellectual property rights of third parties, our business, financial condition and results of operations could be adversely affected.

Our nuclear fuel designs may infringe, or be claimed to infringe, patents or patent applications under which we do not hold licenses or other rights. Third parties may own or control these patents and patent applications in the United States and elsewhere. Third parties could bring claims against us that would cause us to incur substantial expenses and, if successfully asserted against us, could cause us to pay substantial damages. If a patent infringement suit were brought against us, we could be forced to stop or delay commercialization of the fuel design or a component thereof that is the subject of the suit. As a result of patent infringement claims, or in order to avoid potential claims, we may choose or be required to seek a license from the third party and be required to pay license fees, royalties, or both. These licenses may not be available on acceptable terms, or at all. Even if we were able to obtain a license, the rights may be nonexclusive, which could result in our competitors gaining access to the same intellectual property. Ultimately, we could be forced to cease some aspect of our business operations if, as a result of actual or threatened patent infringement claims, we are unable to enter into licenses on acceptable terms. This could significantly and adversely affect our business, financial condition, and results of operations. In addition to infringement claims against us, we may become a party to other types of patent litigation and other proceedings, including interference proceedings declared by the United States Patent and Trademark Office regarding intellectual property rights with respect to our nuclear fuel designs. The cost to us of any patent litigation or other proceeding, even if resolved in our favor, could be substantial. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace. Patent litigation and other proceedings may also absorb significant management time.

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Applicable Russian intellectual property law may be inadequate to protect some of our intellectual property, which could have a material adverse effect on our business.

Intellectual property rights are evolving in Russia, and are trending towards international norms, but are by no means fully developed. We have worked closely with employees in Russia and other Russian contractors and entities to develop some of our material intellectual property. Some of our earlier intellectual property rights originate from our patent filings in Russia. Our worldwide rights in some of this intellectual property, therefore, may be affected by Russian intellectual property laws. If the application of Russian laws to some of our intellectual property rights proves inadequate, then we may not be able to fully avail ourselves of all of our intellectual property, and our business model may be impeded.

The laws of certain foreign jurisdictions do not protect intellectual property rights to the same extent as the laws of the United States, and many companies have encountered significant challenges in protecting and defending such rights in such foreign jurisdictions. The legal systems of certain countries, particularly developing countries, do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business.

Our nuclear fuel process is dependent on outside suppliers of nuclear and other materials and any difficulty by a fuel fabricator in obtaining these materials could be detrimental to our ability to eventually market our fuel through a fuel fabricator.

Production of fuel assemblies using our nuclear fuel designs is dependent on the ability of fuel fabricators to obtain supplies of nuclear material utilized in our fuel assembly design. Our proposed fuel products require high-assay low enriched uranium in the metallic form, enriched between 5% to 19.75% (HALEU), with presently no commercial supply of HALEU available in the US. Currently HALEU can only be sourced in limited quantities from the DOE.

Recently, major commercial enrichment companies, such as Urenco facilities have expressed interest in supplying HALEU. Several Urenco enrichment facilities are already licensed to produce at enrichments above 5% U235, in line with today’s nuclear industry market requirements. Urenco is now exploring the construction of a dedicated HALEU unit at the Urenco USA facility. Urenco is progressing the design engineering and related licensing activities to support this project.

Fabricators will also need to obtain metal for components, particularly zirconium or its alloys. These materials are regulated and can be difficult to obtain or may have unfavorable pricing terms. Any difficulties in obtaining these

materials by fuel fabricators could have a material adverse effect on their ability to market fuel based on our technology.

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We are exposed to risks related to cybersecurity and protection of confidential information.

We retain highly confidential information in our systems and databases on third party network providers. Although we maintain security features in our systems designed to protect proprietary information and prevent data loss and other security breaches, such measures cannot provide absolute security and our operations may be susceptible to breaches on our third party networks, including from circumvention of security systems, denial of service attacks or other cyber-attacks, hacking, computer viruses or malware, technical malfunction, employee error, malfeasance, physical breaches, system disruptions or other disruptions. We outsource certain functions, including IT functions, and these relationships allow for the storage and processing of our information, as well as customer, counterparty and employee information. While we engage in actions to reduce our exposure resulting from outsourcing, ongoing threats may result in unauthorized access, loss, exposure or destruction of data, or other cybersecurity incidents, with increased costs and other consequences, including those described below.

Disruptions from cybersecurity events may jeopardize the security of information stored in and transmitted through our systems or the systems of outsourcing parties. An increasing number of websites, including those owned by several other large Internet and offline companies, have disclosed breaches of their security, some of which have involved sophisticated and highly targeted attacks on portions of their websites or infrastructure. The techniques used to obtain unauthorized access, disable, or degrade service, or sabotage systems, change frequently, may be difficult to detect for a long time, and often are not recognized until launched against a target. Certain efforts may be state sponsored and supported by significant financial and technological resources and therefore may be even more difficult to detect. We may not anticipate these techniques or implement adequate preventive measures. We currently expend, and may be required to expend significant additional capital and other resources to protect against such security breaches or to alleviate problems caused by such breaches. Our insurance coverage may be inadequate to compensate us for any related losses we incur.

These issues are likely to become more difficult as we expand our operations. Any breach of our security measures, or even a perceived breach of our security measures, could cause us to lose potential customers and governmental approvals; suffer material harm to our business, financial condition, operating results and reputation; or be subject to regulatory actions, litigation, sanctions or other statutory penalties.

Technological changes could render our technology and products uncompetitive or obsolete, which could prevent us from achieving market share and sales.

Our failure to refine or advance our fuel technologies could cause our nuclear fuel to become uncompetitive or obsolete, which could prevent us from achieving market share and sales. We may need to invest significant financial resources in research and product development to keep pace with technological advances in the industry and to compete in the future; we may be unable to secure such financing. We believe that a variety of competing alternative

technologies may be in development by other companies that could result in lower manufacturing costs and/or higher fuel performance than those expected for our fuel products. Our development efforts may be rendered obsolete by the technological advances of others, and other technologies may prove more advantageous for commercialization.

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Risks related to the ownership of our common stock

We have issued preferred stock with rights senior to our common stock.

Approximately 3.5 million shares of our Series A and Series B preferred stock were issued and outstanding at December 31, 2018. We can issue additional shares of preferred stock in one or more series and can set the terms of the preferred stock without seeking any further approval from the holders of our common stock. Any preferred stock that we issue may rank ahead of our common stock in terms of dividend priority or liquidation premiums, may have greater voting rights than our common stock, and may have consent rights over certain fundamental transactions. The interests of the holders of the preferred stock may as a consequence be different from the interests of the holders of our common stock, including in certain fundamental transactions in which the preferred stockholders would receive distributions before any distributions may be made to our common stockholders. In addition, such preferred stock may contain provisions allowing it to be converted into shares of common stock, which could dilute the value of our common stock to then current stockholders and could adversely affect the market price of our common stock.

There may be volatility in our stock price, which could negatively affect investments, and our stockholders may not be able to resell their shares at or above the value they originally purchased such shares.

The market price of our common stock may fluctuate significantly in response to a number of factors, some of which are beyond our control, including:

- trading volume of our common stock;

The stock market may experience extreme volatility that is often unrelated to the performance of particular companies. These market fluctuations may cause our stock price to fall regardless of its performance.

Our inability to comply with the listing requirements of the Nasdaq Capital Market will result in our common stock being delisted, which could affect its market price and liquidity and reduce our ability to raise capital.

We have received notice from the Nasdaq Stock Market (“Nasdaq”) that we are not in compliance with certain requirements for continued listing of our common stock on the Nasdaq Capital Market. On November 5, 2018, we

received a letter from the Nasdaq Listing Qualifications staff notifying us that for the preceding 30 consecutive business days, our common stock did not maintain a minimum closing bid price of at least $1.00 per share as required by Nasdaq Listing Rule 5550(a)(2). If we are not able to regain compliance with such requirements within the timeframe set by Nasdaq, or if we otherwise fail to comply with continued listing requirements, our common stock may be delisted.

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In accordance with Nasdaq Listing Rule 5810(c)(3)(A), we have a grace period of 180 calendar days, or until May 6, 2019, to regain compliance with the minimum closing bid price requirement for continued listing. In order to regain compliance, the closing bid price of our common stock must be at least $1.00 per share for a minimum of ten consecutive business days. In the event we do not regain compliance by May 6, 2019, we may be provided an additional 180-day compliance period, if we demonstrate that we meet the applicable market value of publicly held shares requirement for continued listing and all other applicable standards for initial listing on the Nasdaq Capital Market, with the exception of the bid price requirement, and provides written notice of our intention to cure the minimum bid price deficiency during the second grace period, including by implementation of a reverse stock split, if necessary.

If we fail to regain compliance with, or otherwise fail to comply with, all applicable continued requirements, Nasdaq may determine to delist our common stock, which could substantially decrease trading in our common stock and adversely affect the market liquidity of our common stock and cause the market price of our common stock to decline. In addition, our ability to raise additional capital, including through future at-the-market offerings and other offerings utilizing short-form registration statements on Form S-3, would be substantially impaired.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

Our office space is located at 11710 Plaza America Drive, Suite 2000 Reston, VA 20190 USA. The term of the lease extends through December 31, 2019. We are obligated to pay approximately $15,000 per month for office rent. This space is used by our executives, employees, and contractors for administrative purposes, consulting work, and research and development activities. Our joint venture company Enfission has a virtual office at the same address.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we may become involved in various lawsuits and legal proceedings, which arise in the ordinary course of business. However, litigation is subject to inherent uncertainties, and an adverse result in these or other matters may arise from time to time that may harm our business. For a description of legal proceedings involving the Company, see the information set forth under “Litigation” in Note 6, “Commitments and Contingencies,” of the Notes to

our consolidated financial statements in Part II, Item 8, *Financial Statements and Supplementary Data,* of this Annual Report on Form 10-K.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS, AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common stock is quoted on the Nasdaq Capital Market under the symbol "LTBR".

Holders

As of March 1, 2019, our common stock was held by approximately 63 stockholders of record, including Cede & Co., the nominee for the Depository Trust & Clearing Corporation, and consequently that number does not include beneficial owners of our common stock who hold their stock in "street name" through their brokers.

Dividends

We have never paid dividends. While any future dividends will be determined by our directors after consideration of the earnings and financial condition of the Company and other relevant factors, it is currently expected that available cash resources will be utilized in connection with our ongoing operations for the foreseeable future.

Transfer Agent

Our transfer agent and registrar for our common stock is Computershare Trust Company, 8742 Lucent Blvd., Suite 225, Highlands Ranch, Colorado, 80129. Its telephone number is 800-962-4284 and facsimile is 303-262-0604.

Recent Sales of Unregistered Securities

We did not sell any securities without registration under the Securities Act during the fiscal year ended December 31, 2018 other than as previously disclosed in the Company's quarterly reports on Form 10-Q and current reports on Form 8-K.

ITEM 6. SELECTED FINANCIAL INFORMATION.

Not applicable

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following Management's Discussion and Analysis of Financial Condition and Results of Operations, or MD&A, is intended to help the reader understand Lightbridge Corporation, our operations and our present business environment. MD&A is provided as a supplement to, and should be read in conjunction with, our consolidated financial statements and the accompanying Notes thereto, which are contained in Item 8, *Financial Statements and Supplementary Data*, of this report. This MD&A consists of the following sections:

- Overview of Our Business and recent developments — a general overview of our business and updates;

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- Operations Review — an analysis of our consolidated results of operations for the two years presented in our consolidated financial statements. Except to the extent that differences among our operating segments are material to an understanding of our business as a whole, we present the discussion in the MD&A on a consolidated basis; and

As discussed in more detail at the beginning of this Annual Report, the following discussion contains forward-looking statements that involve risks, uncertainties, and assumptions such as statements of our plans, objectives, expectations, and intentions. Our actual results may differ materially from those discussed in these forward-looking statements because of the risks and uncertainties inherent in future events.

OVERVIEW OF OUR BUSINESS

Lightbridge is a leading nuclear fuel technology company. Our goal is to produce the next generation of nuclear fuel that could significantly improve the economics, safety, and proliferation resistance of existing and new reactors, with a meaningful impact on addressing climate change and air pollution. We project that the world's energy and climate needs can only be met if nuclear power's share of the energy-generating mix grows substantially.

Our primary focus is the development and commercialization of metallic fuel rods that will replace the uranium oxide ceramic pellets that have traditionally fueled nuclear reactors. We believe our metallic fuel offers significant economic and safety benefits over traditional fuel, primarily because of the superior heat transfer properties of all-metal fuel and the resulting lower operating temperature of the reactor. We also believe that uprating a reactor with Lightbridge fuel will add incremental electricity at a lower levelized cost than any other means of generating baseload electric power, including any renewable, fossil, or hydroelectric energy source.

We have built a significant portfolio of patents reflecting years of research and development, and we anticipate substantial completion of our research efforts and the testing of our fuel over the next few years. We expect the first purchase orders for our metallic fuel as soon as 2028, with final deployment of our fuel in commercial reactors as soon as 2030.

We conduct our business principally through Enfission, our 50/50 joint venture with Framatome formed on January 24, 2018. Enfission serves as the exclusive vehicle through which the Company and Framatome are researching, developing, obtaining regulatory approvals, manufacturing and will be using, marketing and selling nuclear fuel assemblies based on the Lightbridge metallic fuel technology comprising U-Zr multi-lobe, helically twisted fuel rods and associated manufacturing processes and other advanced nuclear fuel intellectual property contributed by both Lightbridge and Framatome within the operating domain. The operating domain of Enfission includes pressurized

water reactors (excluding water-cooled water-moderated energetic reactor (VVER) types) and boiling water reactors, which collectively constitute most of the power reactors in the world, as well as water-cooled small modular reactors and water-cooled research reactors.

Within the operating domain of Enfission, in addition to distributions from Enfission based on our ownership interest in the joint venture, we anticipate receiving future licensing revenues in connection with sales by Enfission of nuclear fuel incorporating our background intellectual property as well as jointly owned foreground intellectual property co-owned on a 50-50 basis with Framatome SAS. Outside the domain of Enfission, such as future fuel sales to utility customers operating CANDU or VVER reactors, we expect to enter into separate technology licensing or other types of commercial arrangements to monetize our intellectual property.

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In addition to our nuclear fuel technology business, we may also opportunistically provide nuclear power consulting and strategic advisory services to commercial and governmental entities worldwide. We are not currently seeking consulting engagements and have no dedicated resources for that purpose and have discontinued this business segment, however we are open to opportunistically providing nuclear power consulting and strategic advisory services through reassignment of resources from our core business and employment of outside resources from our industry contacts, to commercial and governmental entities worldwide in the future.

We have included the audited financial results of the Enfission joint venture with Framatome as an exhibit to this Annual Report on Form 10-K, as we believe Enfission's financial results are significant to our operations and our financial results.

We were incorporated under the laws of the State of Nevada on February 2, 1999. Lightbridge and Enfission's principal executive offices are located at 11710 Plaza America Drive, Suite 2000, Reston, Virginia 20190 USA.

Refer to Part I, Item 1, *Business*, for additional information. Financial information about our business is included in Part II, Item 8, *Financial Statements and Supplementary Data,* of this Annual Report on Form 10-K.

Nuclear Power as Clean and Low Carbon Emissions Energy Source

Nuclear power provides clean, reliable baseload electricity generation source. According to the World Nuclear Association (WNA), nuclear power plants produce no greenhouse gas emissions during operation, and over the course of its life-cycle, nuclear produces about the same amount of CO2 equivalent emissions per unit of electricity as wind. The WNA further states that almost all proposed pathways to achieving significant decarbonization suggest an increased role for nuclear power, including those published by the International Energy Agency, Massachusetts Institute of Technology Energy Initiative, US Energy Information Administration, and World Energy Council.

We believe that deep cuts to CO2 emissions are only possible with electrification of most of the transportation and industrial sectors globally and powering them and the current electricity needs of the world with non-emitting or low-emitting power. We believe this can be done only with a large increase in nuclear power, several times the amount that is generated globally today. We believe that our nuclear fuel technology can be an essential element of reaching this goal.

Operations Review

Financial information is included in Part II, Item 8, *Financial Statements and Supplementary Data,* of this Annual Report on Form 10-K.

We have provided a discussion of our results of operations on a consolidated basis and have also provided certain detailed segment information for each of our business segments below for the year ended December 31, 2017. In 2017, we had organized our operations into two principal segments (1) the technology business segment and (2) the consulting business segment. We presented our financial information along the same lines that our chief executives reviewed our operating results in assessing performance and allocating resources. For the year ended December, 31, 2018, we focused our efforts on our technology business segment and commercialization of metallic nuclear fuel, resulting in just one segment, and consequently segment analysis is not applicable this year.

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Technology Business

Our goal is to develop and commercialize innovative, proprietary nuclear fuel designs, which we expect will significantly enhance the nuclear power industry's economics due to higher power output and improved safety margins.

We are focusing our technology development efforts on the metallic fuel with a potential power uprate of up to 10% and an operating cycle extended from 18 to 24 months in existing Westinghouse-type four-loop pressurized water reactors. Those reactors represent the largest segment of our global target market. The metallic fuel could also be adapted for use in other types of water-cooled commercial power reactors, such as boiling water reactors, Russian-type VVER reactors, CANDU heavy water reactors, water-cooled small and modular reactors, as well as water-cooled research reactors.

We have obtained and will continue to seek patent validation in key countries that either currently operate or are expected to build and operate a large number of suitable nuclear power reactors.

We expect to invest a total of $15 million to $20 million in the development of our nuclear fuel products, including corporate research and development expenditures, over the next 12 to 15 months.

Consulting Business

The Company's business model expanded with consulting revenue in 2008, where we have provided consulting and strategic advisory services to companies and governments planning to create or expand electricity generation capabilities using nuclear power plants. As of January 1, 2018, we no longer had a consulting business segment and there was no consulting revenue for the year ended December 31, 2018 as we focused our efforts on our technology business segment and commercialization of our metallic nuclear fuel. We presently do not have any consulting clients, or operations as of the date of this filing. We may from time to time opportunistically provide nuclear power consulting and strategic advisory services through reassignment of resources from our core business and employment of outside resources from our industry contacts, to commercial and governmental entities worldwide in the future.

Consolidated Results of Operations

The following table presents our historical operating results as a percentage of revenues for the years indicated:

	Year Ended December 31,		Changes	
	2018	2017	2018 vs 2017	
			$	%
Consulting Revenues	$ -	$ 175,446	$ (175,446)	(100)%
Cost of Services Provided				
Consulting expenses	$ -	$ 107,091	$ (107,091)	(100)%
Gross Margin	$ -	$ 68,355	$ (68,355)	(100)%
Operating Expenses				
General and administrative	$ 6,715,378	$ 4,383,066	$ 2,332,312	53%
Research and development expenses	$ 3,458,377	$ 2,282,938	$ 1,175,439	51%
Total Operating Expenses	$ 10,173,755	$ 6,666,004	$ 3,507,751	53%
Other Operating Income and (Loss)				
Other income from joint venture	$ 1,056,551	$ -	$ 1,056,551	100%
Equity in loss from joint venture	$ (5,835,263)	$ -	$ (5,835,263)	(100)%
Total Other Operating and (Loss)	$ (4,778,712)	$ -	$ (4,778,712)	(100)%
Operating Loss	$ (14,952,467)	$ (6,597,649)	$ (8,354,818)	(127)%
Other Income and (Expenses)	$ (723,641)	$ (507,248)	$ (216,393)	(43)%
Net Loss Before Income Taxes	$ (15,676,108)	$ (7,104,897)	$ (8,571,211)	(121)%

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Revenue

The market for nuclear industry consulting services is competitive, fragmented, and subject to rapid change. Our main business is developing our nuclear fuel. We may pursue some consulting services opportunities in the future, but we have further increased the focus and resources of the Company to the fuel division and away from consulting. There was no revenue for the year ended December 31, 2018 as compared to approximately $0.2 million for the year ended December 31, 2017.

Cost of Services Provided

Because we have shifted the focus and resources of the Company to the fuel division and away from consulting, we have not incurred costs related to consulting in 2018. Cost of services provided in 2017 was comprised of expenses related to the consulting, professional, administrative, and other support costs and stock-based compensation allocated to our consulting projects labor, which were incurred to perform and support the work done for our consulting projects.

Total stock-based compensation included in cost of services provided was approximately $0.02 million for the year ended December 31, 2017.

Research and Development

Research and development expenses consist primarily of compensation and related fringe benefits including stock-based compensation and related allocable overhead costs for the research and development of our fuel, including work performed and billed to our Enfission joint venture. Total research and development expenses increased by approximately $1.2 million for the year ended December 31, 2018, as compared to the year ended December 31, 2017.

There was an increase in the number of employees, an increase in employee compensation and employee benefits in supporting research and development activities for Enfission of approximately $0.7 million, which was offset by service income charged to Enfission for employee support services provided to Enfission of $0.2 million. There was an increase in stock-based compensation of approximately $0.5 million due to the vesting of performance-based stock options issued in 2017 and the issuance of performance-based stock options in August 2018, an increase in legal fees related to our Enfission joint venture of approximately $0.4 million. These increases were offset by a decrease in outside research and development work performed by outside entities in 2017 of approximately $0.2 million.

Total stock-based compensation included in research and development expenses was approximately $1.0 million and $0.5 million for the year ended December 31, 2018 and 2017, respectively.

Primarily all of our above reported research and development activities were conducted in the United States and France. We expense research and development costs as they are incurred. Research and development expenses may increase in dollar amount because we expect to invest $15 million to $20 million in the development of our nuclear fuel products over the next 12 to 15 months. Due to the research and development nature of these expenditures, cost and schedule estimates are inherently uncertain and can vary significantly as new information and the outcome of these research and development activities become available.

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General and Administrative Expenses

General and administrative expenses consist mostly of compensation and related costs for personnel and facilities, stock-based compensation, finance, human resources, information technology, and fees for consulting and other professional services. Professional services are principally comprised of outside legal, audit, strategic advisory services, and outsourcing services.

Total general and administrative expenses increased by approximately $2.3 million for the year ended December 31, 2018, as compared to the year ended December 31, 2017.

There was an increase in professional fees of approximately $0.8 million, which was due to the increased legal and professional work in negotiating and forming the Enfission joint venture, an increase in accounting support regarding the implementation of our new project management and time and expense software and other services, and an increase in other professional and consulting fees regarding engaging a consulting firm to assist in preparing the application for a grant from the US Department of Energy (“DOE”). There was also an increase in employee wages and benefits of approximately $0.7 million due to an increase in the number of employees and an increase in employee compensation and employee benefits, offset by service income charged to Enfission for employee support services to Enfission of $0.2 million, an increase in stock-based compensation of approximately $0.8 million, due to the vesting of performance-based stock options issued in 2017 and the issuance of performance-based options in August 2018, and an increase in corporate travel expenses of approximately $0.1 million.

Total stock-based compensation included in general and administrative expenses was approximately $1.4 million and $0.7 million for the year ended December 31, 2018 and 2017, respectively.

See Note 9. Stockholders’ Equity and Stock-Based Compensation of the Notes to our Consolidated Financial Statements included in this Annual Report on Form 10-K for more information regarding our stock-based compensation.

Other Operating Income and (Loss) – Related Party

Reported in other operating income is other income for activities performed by our employees and consultants billed to the Enfission joint venture for research and development work. Total other income from these activities was approximately $1.1 million for the year ended December 31, 2018. In 2018, approximately 77% of the total Enfission

cash inflow or capital contributions into Enfission were funded by Lightbridge and the remaining 23% was funded as capital contributions into Enfission from Framatome. Equity in loss from joint venture consists of our share of the allocated loss in Enfission.

Other Income (Expenses)

There was a net increase in other income and (expenses) of approximately $(0.2) million. This change was due to an increase in amortization of deferred financing costs of approximately $0.5 million due to the write-off of the deferred financing costs in the first quarter of 2018 for the expired equity line option agreement, partially offset by an increase of $0.3 million in interest income generated from the interest earned from the purchase of treasury bills and from our bank savings account for the year ended December 31, 2018 as compared to the year ended December 31, 2017.

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Provision for Income Taxes

We incurred a pre-tax net loss for both 2018 and 2017. We reviewed all sources of income for purposes of recognizing the deferred tax assets and concluded a full valuation allowance for 2018 and 2017 was necessary. Therefore, we did not have a provision for taxes for both years ended December 31, 2018 and 2017.

See Note 8 of the Notes to our Consolidated Financial Statements included in this Annual Report on Form 10-K for information regarding our income taxes.

LIQUIDITY, CAPITAL RESOURCES AND FINANCIAL POSITION

At December 31, 2018, we had cash and cash equivalents of approximately $24.6 million, as compared to approximately $4.5 million at December 31, 2017. The $20.1 million increase in cash and cash equivalents resulted from net proceeds from the sale of approximately $29.5 million of common stock and net proceeds from the issuance of approximately $3.9 million of preferred stock during the year ended December 31, 2018. This amount of cash inflow was partially offset by net cash used in operating activities of approximately $7.4 million and our capital contributions for our capital investment in Enfission of approximately $5.6 million. We used cash during the year ended December 31, 2018 primarily to fund our research and development expenses and general and administrative expenses. We did not have any consulting revenue for the year ended December 31, 2018 and presently do not expect to have consulting revenue for the next 12 months.

We currently project a cash flow shortfall averaging approximately $0.8 million per month for our general and administrative and corporate research and development expenses for total expected expenditures of approximately $9.3 million for the next 12 months. We currently anticipate the amount of cash outlays to Enfission and third parties for research and development expenditures and equipment purchases of approximately $10.7 million, for the next 12 months. Total cash budget for the next 12 months is approximately $20 million. The Company believes that its current financial resources, as of the date of the issuance of these financial statements, are sufficient to fund its current 12 month operating budget, alleviating the substantial doubt raised by our historical operating results and satisfying our estimated liquidity needs 12 months from the issuance of these financial statements.

We can provide no assurances about meeting our budgeted expenditures regarding our future research and development efforts to meet our desired fuel development milestones for the next 12 months and beyond, as well as predicting future market trends in nuclear that can affect the future sale of our nuclear fuel. Furthermore, any negative results from our research and development may require us to increase our research and development spending to achieve our desired milestones in developing our nuclear fuel. Presently, we fund substantially all of the cash that is

required for the research and development activities to be conducted in Enfission. These additional capital needs relate to the development, manufacturing, and commercialization of our nuclear fuel assemblies. We have the ability to delay incurring certain operating expenses in the next 12 to 15 months, which could reduce our cash flow shortfall, if needed.

The current primary future potential sources of cash available to us in 2019 are potential funding from equity investments and potential grants that we are actively seeking from DOE. We anticipate that current cash on hand and additional equity investments in 2019 will help us meet the DOE minimum cost-sharing requirements that typically range from 20% to 50% of the total project cost (i.e., a 25% to 100% match in Company's cost-sharing contributions is required for each dollar of DOE funding) or even higher in some cases. We have no debt or debt credit lines and we have financed our operations to date through our prior years' consulting revenue and the sale of our preferred stock and common stock. Management believes that public or private equity investments will be available as needed, however adverse market conditions in our common stock price and trading volume could substantially impair our ability to raise capital in the future.

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Short-Term and Long-Term Liquidity Sources

As discussed above, we may seek new financing or additional sources of capital, depending on the capital market conditions, over the next 12 months. There can be no assurance that some of these additional sources of capital will be made available to us. The primary potential sources of cash that may be available to us are as follows:

- Equity investment from third party investors in Lightbridge or Enfission; and

In support of our long-term business plan with respect to our fuel technology business, we endeavor to create strategic alliances with other strategic parties during the next three years, to support the remaining research and development activities through Enfission that is required to further enhance and complete the development of our fuel products to a commercial stage. We may be unable to form such strategic alliances on terms acceptable to us or at all.

We will need to raise additional capital to fund our overall corporate and research and development activities for future operations in 2020 and beyond, which may involve offerings of equity or debt securities, securing financing through one or more banks or entering into strategic alliances with other parties.

See Note 9. Stockholders' Equity and Stock-Based Compensation of the Notes to our financial statements included in Part II Item 8, *Financial Statements and Supplementary Data,* of this Annual Report on Form 10-K for information regarding our prior financings.

The following table provides detailed information about our net cash flows for the years ended December 31, 2018 and 2017.

Cash Flow (rounded in millions)

	Year Ended December 31,	
	2018	**2017**
Net cash used in operating activities	$ (7.4)	$ (5.0)
Net cash used in investing activities	$ (5.8)	$ (0.2)

Net cash provided by financing activities	$	33.3	$	6.1
Net cash inflow	$	20.1	$	0.9

Operating Activities

The increase in our cash used in operating activities in 2018 of approximately $2.4 million was primarily due to an increase in our operating expenses and net loss and the change in working capital items as explained below.

Cash used in operating activities in the year ended December 31, 2018 consisted of net loss adjusted for non-cash (income) expense items such as stock-based compensation, amortization of deferred financing costs and others, as well as the effect of changes in working capital. Cash used in operating activities in the year ended December 31, 2018 consisted of a net loss of approximately $15.7 million and net adjustments to net loss for non-cash income items or a negative cash flow offset (decrease to cash flow used in operating activities) totaling approximately $9.2 million, consisting of non-cash adjustments for stock-based compensation of approximately $2.4 million, write-off of deferred financing costs of approximately $1.0 million and equity in loss from joint venture of approximately $5.8 million. Total cash used in operating working capital totaled approximately $0.9 million which was due to a decrease in accounts payable and other accrued liabilities and an increase in other receivables from joint venture of $0.1 million.

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Investing Activities

Net cash used by our investing activities for the year ended December 31, 2018, as compared to net cash used by our investing activities in 2017, was increased by approximately $5.6 million. The increase was due primarily to the spending for investment in our Enfission joint venture for the amount of approximately $5.6 million. The spending for patent application costs are primarily the same for the year ended December 31, 2018. These applications are filed for the new developments resulting from our research and development activities in our technology business segment. We anticipate these patent costs to increase in the future periods due to the continuing research and development work we plan to perform on our all-metal fuel design.

Financing Activities

Net cash provided by our financing activities for the year ended December 31, 2018, as compared to net cash provided by our financing activities for the year ended December 31, 2017 was an increase by approximately $27.2 million.

The increase was primarily due to the increase in the proceeds from the issuance of our Series A Preferred Stock of approximately $3.9 million, an increase in the net proceeds from the issuance of our common stock through our equity purchase agreements and our ATM agreements of approximately $29.4 million in 2018 as compared to $6.0 million raised in 2017.

Critical Accounting Policies and Estimates

The SEC issued Financial Reporting Release No. 60, “Cautionary Advice Regarding Disclosure About Critical Accounting Policies” suggesting that companies provide additional disclosure and commentary on their most critical accounting policies. In Financial Reporting Release No. 60, the SEC has defined the most critical accounting policies as the ones that are most important to the portrayal of a company’s financial condition and operating results and require management to make its most difficult and subjective judgments, often as a result of the need to make estimates of matters that are inherently uncertain. Based on this definition, we have identified the following significant policies as critical to the understanding of our financial statements.

The preparation of financial statements and related disclosures in conformity with US generally accepted accounting principles (“GAAP”) and the Company’s discussion and analysis of its financial condition and operating results require the Company’s management to make judgments, assumptions and estimates that affect the amounts reported in its

consolidated financial statements and accompanying notes. Note 1, “Summary of Significant Accounting Policies,” of the Notes to Consolidated Financial Statements in Part II, Item 8 *Financial Statements and Supplementary Data,* of this Form 10-K describes the significant accounting policies and methods used in the preparation of the Company’s consolidated financial statements.

Our management expects to make judgments and estimates about the effect of matters that are inherently uncertain. As the number of variables and assumptions affecting the future resolution of the uncertainties increase, these judgments become even more subjective and complex. Although we believe that our estimates and assumptions are reasonable, actual results may differ significantly from these estimates. Changes in estimates and assumptions based upon actual results may have a material impact on our results of operation and/or financial condition. We have identified certain accounting policies that we believe are most important to the understanding of our current financial condition and results of operations.

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Accounting for Stock-Based Compensation, Stock Options and Stock Granted to Employees and Non-employees

We adopted the requirements for stock-based compensation, where all forms of share-based payments to employees or non-employees, including stock options and stock purchase plans, are treated the same as any other form of compensation by recognizing the related cost in the statement of operations.

Under these requirements, stock-based compensation expense for employees is measured at the grant date based on the fair value of the award, and the expense is recognized ratably over the award's vesting period.

The stock-based compensation expense incurred by Lightbridge in connection with its employees is based on the employee model of ASC 718. Under ASC 718 employee is defined as "An individual over whom the grantor of a share-based compensation award exercises or has the right to exercise sufficient control to establish an employer-employee relationship based on common law as illustrated in case law and currently under US tax regulations." Our consultants do not meet the employer-employee relationship as defined by the IRS and therefore stock-based compensation associated to them is accounted for under ASC 505-50. Under these requirements, stock-based compensation expense for non-employees is based on the fair value of the award on the measurement date which is the earlier of the date at which a commitment for performance by the counterparty to earn the equity instruments is reached (a performance commitment), or the date at which the counterparty's performance is complete. For all service-based grants made, we recognize compensation cost under the straight-line method.

We measure the fair value of service-based stock options on the measurement date using the Black-Scholes option-pricing model which requires the use of several estimates, including:

- the volatility of our stock price;

We use the historical volatility of our stock price over the number of years that matches the expected life of our stock option grants or we use the historical volatility of our stock price since January 5, 2006, the date we announced that we were becoming a public company, to estimate the future volatility of our stock. At this time, we do not believe that there is a better objective method to predict the future volatility of our stock. The expected life of options is based on internal studies of historical experience and projected exercise behavior. We estimate expected forfeitures of stock-based awards at the grant date and recognize compensation cost only for those awards expected to vest. The forfeiture assumption is ultimately adjusted to the actual forfeiture rate. Estimated forfeitures are reassessed in subsequent periods and may change based on new facts and circumstances. We utilize a risk-free interest rate, which is based on the yield of US treasury securities with a maturity equal to the expected life of the options. We have not and do not expect to pay dividends on our common shares for the foreseeable future.

We use the Monte Carlo valuation model to determine the fair value of market-based and performance-based stock options at the date of grant, which requires us to make assumptions, including:

- expected term;

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These assumptions are based on historical information and judgment regarding market factors and trends. If actual results differ from our assumptions and judgments used in estimating these factors, future adjustments to these estimates may be required.

Investment in Enfission – Equity Method

As of January 24, 2018, the Company owns a 50% interest in Enfission – accounted for using the equity method of accounting. Enfission is deemed to be a variable interest entity ("VIE") under the VIE model of consolidation because it currently does not have sufficient funds to finance its operations and will require significant additional equity or subordinated debt financing. The Company has determined that it is not the primary beneficiary of the VIE since it does not have the power to direct the activities that most significantly impact the VIE's performance.

In determining whether the Company is the primary beneficiary and whether it has the right to receive benefits or the obligation to absorb losses that could potentially be significant to the VIE, the Company evaluates all its economic interests in the entity, regardless of form. This evaluation considers all relevant factors of the entity's structure including the entity's capital structure, contractual rights to earnings (losses) as well as other contractual arrangements that have potential to be economically significant. Although the Company has the obligation to absorb the losses as of this reporting period, it has concluded that it is not the primary beneficiary since the major decision making for all significant economic activities require the approval of both the Company and Framatome. Changes in the operating agreement may affect the evaluation of who is a primary beneficiary of the VIE.

Intangibles

As presented on the accompanying balance sheet, we had patents with a net book value of approximately $1.6 million and $1.4 million as of December 31, 2018 and December 31, 2017, respectively. There are many assumptions and estimates that may directly impact the results of impairment testing, including an estimate of future expected revenues, earnings, and cash flows, and discount rates applied to such expected cash flows to estimate fair value. We have the ability to influence the outcome and ultimate results based on the assumptions and estimates we choose for testing. To mitigate undue influence, we set criteria that are reviewed and approved by various levels of management. The determination of whether or not intangible assets have become impaired involves a significant level of judgment in the assumptions.

Changes in our strategy or market conditions could significantly impact these judgments and require adjustments to recorded amounts of intangible assets.

Research and development expenses

Research expenses are recognized as expenses when incurred. Costs incurred on development projects are recognized as intangible assets as of the date as of which it can be established that it is probable that future economic benefits attributable to the asset will flow to us considering its commercial feasibility. This is generally the case when regulatory approval for commercialization is achieved and costs can be measured reliably. Given the current stage of the development of our products, no development expenditures have yet been capitalized.

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Loss Contingency

Our loss contingency analysis contains uncertainties because it requires management to assess the degree of probability of an unfavorable outcome and to make a reasonable estimate of the amount of potential loss.

Recent Accounting Standards and Pronouncements

Refer to Note 1 of the Notes to our Consolidated Financial Statements for a discussion of recent accounting standards and pronouncements.

Off Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that have or are reasonably likely to have a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity or capital expenditures or capital resources that is material to an investor in our securities.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Not applicable.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The full text of our audited consolidated financial statements as of and for the years ended December 31, 2018 and 2017 begins on page 50 of this Report.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None

ITEM 9A. CONTROLS AND PROCEDURES EVALUATION OF DISCLOSURE CONTROLS AND PROCEDURES

As of the end of the period covered by this report, our management, under the supervision and with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of the design and operation of our disclosure controls and procedures, as such term is defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2018 to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is (a) recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and (b) accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

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Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in the *Internal Control — Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles in the United States of America. Our internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018. Based on this assessment, management, with the participation of our Chief Executive Officer and Chief Financial Officer, determined that as of December 31, 2018, the Company's internal control over financial reporting was effective.

This Annual Report on Form 10-K does not include an attestation report of the Company's independent public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by the Company's independent public accounting firm pursuant to rules of the Securities and Exchange Commission that permit the Company to provide only management's report in this Annual Report on Form 10-K.

Changes in Internal Controls

There were no changes in the Company’s internal control over financial reporting during the fourth quarter of 2018 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

Effective March 29, 2019, the Company and B. Riley FBR, Inc. terminated the At-the-Market Issuance Sales Agreement, dated March 30, 2018, pursuant to which the Company could issue and sell shares of its common stock from time to time through B. Riley FBR, Inc. as the Company’s sales agent. Further details regarding the agreement are included in the Company’s Current Report on Form 8-K filed with the SEC on March 30, 2018, which is incorporated by reference herein.

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PART III

Item 10. Directors and Executive Officers of the Registrant

The information required by Item 10 of Part III will be included in our Proxy Statement relating to the 2019 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 11. Executive Compensation

The information required by Item 11 of Part III will be included in our Proxy Statement relating to the 2019 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Shareholders The information required by

Item 12 of Part III will be included in our Proxy Statement relating to the 2019 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information required by Item 13 of Part III will be included in our Proxy Statement relating to the 2019 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

Information required by Item 14 of Part III will be included in our Proxy Statement relating to the 2019 Annual Meeting of Stockholders and is incorporated herein by reference.

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PART IV

Item 15. Exhibits And Financial Statement Schedules

(a) Documents filed as part of this report.

(1) The following financial statements of Lightbridge Corporation, supplemental information and report of independent registered public accounting firm are included in this Form 10-K:

- Consolidated Balance Sheets at December 31, 2018 and 2017
- Consolidated Statements of Operations for the Years Ended December 31, 2018 and 2017
- Consolidated Statements of Cash Flows for the Years Ended December 31, 2018 and 2017
- Consolidated Statements of Changes in Stockholders' Equity for the Years Ended December 31, 2018 and 2017
- Notes to Consolidated Financial Statements
- Report of BDO USA, LLP dated March 29, 2019 on the Company's financial statements filed as a part hereof for the fiscal years ended December 31, 2018 and 2017. The independent registered public accounting firm's consent with respect to this report appears in Exhibit 23 of this Annual Report on Form 10-K.

(2) All schedules have been omitted because they are not required, not applicable or the information is otherwise included.

(3) Exhibits.

Exhibit Number	**Description**
1.1	At-the-Market Issuance Sales Agreement, dated March 30, 2018, between the Company and B. Riley

	FBR, Inc. (incorporated by reference to Exhibit 1.1 to the Form 8-K filed by the Company on March 30, 2018).
3.1	Articles of Incorporation of the Company, as amended (incorporated by reference to Exhibit 3.1 to the Form 10-K filed by the Company on March 15, 2016).
3.2	Certificate of Change filed with the Nevada Secretary of State on July 14, 2016 (incorporated by reference to Exhibit 3.1 to the Form 8-K filed by the Company on July 20, 2016).
3.3	Amended and Restated Bylaws of the Company (incorporated by reference to Exhibit 3.1 to the Form 8-K filed by the Company on August 29, 2016).
3.4	Certificate of Designation of Non-Voting Series A Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Form 8-K filed by the Company on August 3, 2016).
3.5	Certificate of Amendment to the Certificate of Designation of Non-Voting Series A Convertible Preferred Stock (incorporated by reference to Exhibit 3.2 to the Form 8-K filed by the Company on January 30, 2018).
3.6	Certificate of Designation of Non-Voting Series B Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Form 8-K filed by the Company on January 30, 2018).
4.1	Form of Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.1 to the Form 8-K filed by the Company on October 22, 2013).
4.2	Form of Common Stock Purchase Warrant, as amended (incorporated by reference to Exhibit 4.1 to the Form 8-K filed by the Company on July 7, 2016).
10.1‡	R&D Services Agreement between the Company and Framatome Inc. (as successor to AREVA NP SAS), dated November 14, 2017 (incorporated by reference to Exhibit 10.1 to the Form 8-K/A filed by the Company on March 5, 2018).
10.2‡	Amendment Number One to the R&D Services Agreement, deemed effective January 25, 2018, among the Company, Framatome SAS, and Enfission, LLC (incorporated by referenced to Exhibit 10.1 to the Form 10-Q filed by the Company on November 9, 2018).
10.3‡	Amendment Number Two to the R&D Services Agreement, deemed effective June 20, 2018, among the Company, Framatome SAS, and Enfission, LLC (incorporated by referenced to Exhibit 10.2 to the Form 10-Q filed by the Company on November 9, 2018).

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10.4‡	Co-ownership Agreement between the Company and Framatome Inc. (as successor to AREVA NP SAS), dated November 14, 2017 (incorporated by reference to Exhibit 10.2 to the Form 8-K/A filed by the Company on March 5, 2018).
10.5	Intellectual Property Annex between the Company and Framatome Inc. (as successor to AREVA NP SAS), dated November 14, 2017 (incorporated by reference to Exhibit 10.3 to the Form 8-K/A filed by the Company on March 5, 2018).
10.6‡	Operating Agreement of Enfission, LLC, dated January 25, 2018 (incorporated by reference to Exhibit 10.1 to the Form 8-K/A filed by the Company on March 5, 2018).
10.7	Amendment Number One to the Operating Agreement of Enfission, LLC, deemed effective May 7, 2018, between the Company and Framatome Inc. (incorporated by referenced to Exhibit 10.3 to the Form 10-Q filed by the Company on November 9, 2018).
10.8‡	Amendment Number Two to the Operating Agreement of Enfission, LLC, deemed effective January 25, 2018, between the Company and Framatome Inc. (incorporated by referenced to Exhibit 10.4 to the Form 10-Q filed by the Company on November 9, 2018).
10.9	Investors Rights Agreement, dated August 2, 2016, between the Company and General International Holdings, Inc. (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by the Company on August 3, 2016).
10.10	Investors Rights Agreement, dated January 30, 2018, between the Company and investors identified therein (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by the Company on January 30, 2018).
10.11	Securities Purchase Agreement, dated as of January 18, 2018, between the Company and purchasers identified therein (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by the Company on January 18, 2018).
10.12**	Lightbridge Corporation 2006 Stock Plan (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by the Company on February 21, 2006).
10.13**	Lightbridge Corporation 2015 Equity Incentive Plan, as amended (incorporated by reference to Appendix A to the definitive proxy statement filed on March 29, 2018, File No. 001-34487).
10.14**	Form of Incentive Stock Option Agreement for Employees under the 2015 Equity Incentive Plan (incorporated by reference to Exhibit 99.2 to the Company's Registration Statement on Form S-8, File No. 333-218796, filed on June 16, 2017).
10.15**	Form of Non-Qualified Stock Option Agreement for Employees under the 2015 Equity Incentive Plan (incorporated by reference to Exhibit 99.3 to the Company's Registration Statement on Form S-8, File No. 333-218796, filed on June 16, 2017).
10.16**	Form of Non-Qualified Stock Option Agreement for Non-Employee Directors under the 2015 Equity Incentive Plan (incorporated by reference to Exhibit 99.4 to the Company's Registration Statement on Form S-8, File No. 333-218796, filed on June 16, 2017).
10.17**	Form of Performance Share Unit Agreement under the 2015 Equity Incentive Plan (incorporated by reference to Exhibit 99.5 to the Company's Registration Statement on Form S-8, File No. 333-218796, filed on June 16, 2017).
10.18**	Form of Restricted Stock Award Agreement for Employees under the 2015 Equity Incentive Plan (incorporated by reference to Exhibit 99.6 to the Company's Registration Statement on Form S-8, File No. 333-218796, filed on June 16, 2017).
10.19**	Form of Restricted Stock Award Agreement for Non-Employee Directors under the 2015 Equity Incentive Plan (incorporated by reference to Exhibit 99.7 to the Company's Registration Statement on Form S-8, File No. 333-218796, filed on June 16, 2017).
10.20**	Stock Option Agreement, dated July 14, 2009, between the Company and Seth Grae (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by the Company on July 20, 2009).

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10.21**	Independent Director Contract, dated August 21, 2006, between the Company and Victor Alessi (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by the Company on August 25, 2006).
10.22**	Independent Director Contract, dated October 10, 2013, between the Company and Kathleen Kennedy Townsend (incorporated by referenced to Exhibit 10.5 to the Form 10-K filed by the Company on March 27, 2014).
10.23**	Independent Director Contract, dated October 23, 2006, between the Company and Daniel B. Magraw (incorporated by reference to Exhibit 10.2 to the Form 8-K filed by the Company on October 23, 2006).
10.24**	Employment Agreement, dated August 8, 2018, between the Company and Seth Grae (incorporated by referenced to Exhibit 10.2 to the Form 10-Q filed by the Company on August 9, 2018).
10.25**	Employment Agreement, dated August 8, 2018, between the Company and Andrey Mushakov (incorporated by referenced to Exhibit 10.3 to the Form 10-Q filed by the Company on August 9, 2018).
10.26**	Employment Agreement, dated August 8, 2018, between the Company and Larry Goldman (incorporated by referenced to Exhibit 10.4 to the Form 10-Q filed by the Company on August 9, 2018).
10.27**	Form of Indemnification Agreement (August 2018) (incorporated by referenced to Exhibit 10.5 to the Form 10-Q filed by the Company on August 9, 2018).
21.1	Subsidiaries of the Company (incorporated by reference to Exhibit 21.1 to the Form 10-K filed by the Company on March 15, 2016).
23.1*	Consent of BDO USA, LLP.
23.2*	Consent of BDO USA, LLP, regarding report in Exhibit 99.1.
31.1*	Rule 13a-14(a)/15d-14(a) Certification — Principal Executive Officer.
31.2*	Rule 13a-14(a)/15d-14(a) Certification — Principal Financial Officer and Principal Accounting Officer.
32*	Section 1350 Certifications.
99.1*	Audited Financial Statements of Enfission, LLC for the Period from Inception (January 24, 2018) to December 31, 2018, with Report of Independent Auditor.
101*	The following materials from Lightbridge Corporation's Annual Report on Form 10-K for the year ended December 31, 2018, formatted in eXtensible Business Reporting Language (XBRL): (i) the Consolidated Balance Sheets; (ii) Consolidated Statement of Operations; (iii) Consolidated Statement of Cash Flows; (iv) Consolidated Statement of Changes in Stockholders' Equity; and (v) Notes to Consolidated Financial Statements.

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* Filed or furnished herewith

** Indicates management contract or compensatory plan or arrangement.

‡ Certain portions of this exhibit have been omitted be redacting a portion of text (indicated by asterisks in the text). This exhibit has been filed separately with the US Securities and Exchange Commission pursuant to a request for confidential treatment.

Item 16. Form 10–K Summary

None.

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LIGHTBRIDGE CORPORATION

DECEMBER 31, 2018 and 2017

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Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors

Lightbridge Corporation

Reston, Virginia

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Lightbridge Corporation (the "Company") as of December 31, 2018 and 2017, the related consolidated statements of operations, stockholders' equity, and cash flows for each of the years then ended and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2018 and 2017, and the results of their operations and their cash flows for the years then ended**,** in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ BDO USA, LLP

We have served as the Company's auditor since 2015.

Philadelphia, Pennsylvania

March 29, 2019

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Lightbridge Corporation

Consolidated Balance Sheets

	December 31, 2018	December 31, 2017
ASSETS		
Current Assets		
Cash and cash equivalents	$ 24,637,295	$ 4,515,398
Accounts receivable - project revenue and reimbursable project expenses	—	10,400
Other receivable from joint venture	93,253	—
Prepaid expenses and other current assets	36,745	70,067
Deferred financing costs, net	—	491,168
Total Current Assets	24,767,293	5,087,033
Other Assets		
Patent costs	1,577,421	1,367,692
Deferred financing costs, net	—	491,268
Total Other Assets	1,577,421	1,858,960
Total Assets	$ 26,344,714	$ 6,945,993
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Accounts payable and accrued liabilities	$ 258,056	$ 1,151,210
Investee losses in excess of investment	218,263	—
Total Current Liabilities	476,319	1,151,210
Commitments and contingencies - Note 6		
Stockholders' Equity		
Preferred stock, $0.001 par value, 10,000,000 authorized shares:		
Convertible Series A preferred shares, 813,624 shares and 1,020,000 shares issued and outstanding at December 31, 2018 and 2017, respectively (liquidation preference $2,640,862, and $3,088,764 at December 31, 2018 and 2017, respectively)	813	1,020
Convertible Series B preferred shares, 2,666,667 and 0 shares issued and outstanding at December 31, 2018 and 2017, respectively (liquidation preference $4,262,855 at December 31, 2018)	2,667	—
Common stock, $0.001 par value, 100,000,000 authorized, 32,862,090 shares and 12,737,703 shares issued and outstanding as of December 31, 2018 and 2017, respectively	32,863	12,738
Additional paid-in capital	129,329,674	93,602,539
Accumulated deficit	(103,497,622)	(87,821,514)
Total Stockholders' Equity	25,868,395	5,794,783
Total Liabilities and Stockholders' Equity	$ 26,344,714	$ 6,945,993

The accompanying notes are an integral part of these consolidated financial statements.

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Lightbridge Corporation

Consolidated Statements of Operations

	Years Ended December 31,	
	2018	**2017**
Revenue:		
Consulting Revenue	$ —	$ 175,446
Cost of Consulting Services Provided	—	107,091
Gross Margin	—	68,355
Operating Expenses		
General and administrative	6,715,378	4,383,066
Research and development expenses	3,458,377	2,282,938
Total Operating Expenses	10,173,755	6,666,004
Other Operating Income and (Loss)		
Other income from joint venture	1,056,551	—
Equity in loss from joint venture	(5,835,263)	—
Total Operating Income and (Loss)	(4,778,712)	—
Operating Loss	(14,952,467)	(6,597,649)
Other Income and (Expenses)		
Interest income	258,795	65
Financing costs	(982,436)	(491,218)
Interest expense	—	(16,095)
Total Other Income and (Expenses)	(723,641)	(507,248)
Net Loss Before Income Taxes	(15,676,108)	(7,104,897)
Income Taxes	—	—
Net Loss	$ (15,676,108)	$ (7,104,897)
Accumulated Preferred Stock Dividend	(461,187)	(276,578)
Deemed additional dividend on preferred stock dividend due to the beneficial conversion feature	(187,892)	—
Deemed dividend on issuance on Series B convertible preferred stock due to the beneficial conversion feature	(2,624,836)	—
Net Loss Attributable to Common Shareholders	$ (18,950,023)	$ (7,381,475)
Net Loss Per Common Share		
Basic and Diluted	$ (0.71)	$ (0.71)

Weighted Average Number of Shares Outstanding	26,636,250	10,424,481

The accompanying notes are an integral part of these consolidated financial statements.

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Lightbridge Corporation

Consolidated Statements of Cash Flows

	Years Ended December 31,	
	2018	**2017**
Operating Activities:		
Net Loss	$ (15,676,108)	$ (7,104,897)
Adjustments to reconcile net loss from operations to net cash used in operating activities:		
Stock-based compensation	2,379,905	1,193,306
Amortization of deferred financing costs	—	491,218
Abandonment loss	—	37,780
Implied interest expense on deferred lease abandonment liability	—	16,095
Write off of deferred financing costs	982,436	—
Equity in loss from joint venture	5,835,263	—
Changes in operating working capital items:		
Accounts receivable - fees and reimbursable project costs	10,400	378,034
Other receivable from joint venture	(93,253)	—
Prepaid expenses and other assets	33,322	10,866
Accounts payable and accrued liabilities	(893,154)	159,953
Deferred lease abandonment liability		(185,683)
Net Cash Used in Operating Activities	(7,421,189)	(5,003,328)
Investing Activities:		
Investment in joint venture	(5,617,000)	—
Patent costs	(209,729)	(207,227)
Net Cash Used in Investing Activities	(5,826,729)	(207,227)
Financing Activities:		
Net proceeds from the issuance of common stock	29,469,814	6,027,064
Net proceeds from the issuance of preferred stock	3,900,001	—
Restricted cash	—	114,012
Net Cash Provided by Financing Activities	33,369,815	6,141,076
Net Increase in Cash and Cash Equivalents	20,121,897	930,521
Cash and Cash Equivalents, Beginning of Year	4,515,398	3,584,877
Cash and Cash Equivalents, End of Year	$ 24,637,295	$ 4,515,398
Supplemental Disclosure of Cash Flow Information:		
Cash paid during the year:		
Interest	$ —	$ —

Income taxes	$	—	$	—
Non-Cash Financing Activities:				
Deemed dividend on issuance Series B convertible preferred stock due to beneficial conversion feature	$	2,624,836	$	—
Accumulated preferred stock dividend	$	649,079	$	276,578
Conversion of Series A convertible preferred stock to common stock and payment of paid-in-kind dividends to Series A preferred stockholder	$	206,376	$	—
Decrease in accrued liabilities - stock-based compensation	$	—	$	121,720

The accompanying notes are an integral part of these consolidated financial statements.

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Lightbridge Corporation

Consolidated Statement of Changes in Stockholders' Equity For The Years Ended December 31, 2018 and 2017

	Preferred Stock - Class A		Preferred Stock - Class B		Common Stock		Additional Paid-in	Accumulated	Total
	Shares	Amount	Shares	Amount	Shares	Amount	Capital	Deficit	Equity
Balance - December 31, 2016	1,020,000	$ 1,020	—	$ —	7,112,143	$ 7,112	$ 86,266,075	$ (80,716,617)	$ 5,557
Consulting fees paid in stock - non-cash payment of accrued expenses	—	—	—	—	102,975	103	121,617	—	121
Shares issued - registered offerings - net of offering costs	—	—	—	—	5,236,001	5,236	6,021,828	—	6,027
Cashless exercise of stock warrants	—	—	—	—	286,584	287	(287)	—	
Stock-based compensation	—	—	—	—	—	—	1,193,306	—	1,193
Net loss	—	—	—	—	—	—	—	(7,104,897)	(7,104
Balance - December 31, 2017	1,020,000	$ 1,020	—	$ —	12,737,703	$ 12,738	$ 93,602,539	$ (87,821,514)	$ 5,794
Conversion of Preferred Shares to Common Shares	(206,376)	(206)	—	—	235,413	236	(30)	—	
Shares issued payment of Series A PS dividend	—	(1)	—	—	729	1		—	
	—	—	2,666,667	2,667			3,897,334	—	3,900

Issuance of Preferred stock									
Cashless exercise of stock warrants	—	—	—	—	496,644	496	(496)	—	
Shares issued – equity line	—	—	—	—	579,961	580	711,648	—	712
Shares issued - registered ATM offering - net of offering costs	—	—	—	—	18,811,640	18,812	28,738,774	—	28,757
Stock-based compensation	—	—	—	—	—	—	2,379,905	—	2,379
Net loss	—	—	—	—	—	—	—	(15,676,108)	(15,676
Balance - December 31, 2018	813,624	$ 813	2,666,667	$ 2,667	32,862,090	$ 32,863	$ 129,329,674	$ (103,497,622)	$ 25,868

The accompanying notes are an integral part of these consolidated financial statements.

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LIGHTBRIDGE CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Basis of Presentation, Summary of Significant Accounting Policies, and Nature of Operations

The Company was formed on October 6, 2006, when Thorium Power, Ltd., which was incorporated in the state of Nevada on February 2, 1999, merged with Thorium Power, Inc., ("TPI"), which was incorporated in the state of Delaware on January 8, 1992 (subsequently and collectively referred to as "we" or the "Company"). On September 29, 2009, the Company changed its name from Thorium Power, Ltd. to Lightbridge Corporation and began its focus on developing and commercializing metallic nuclear fuels. We are a nuclear fuel technology company developing and commercializing next generation nuclear fuel technology.

Basis of presentation

Liquidity

The Company has adopted Accounting Standards Codification, ("ASC"), 205-40. This guidance amended the existing requirements for disclosing information about an entity's ability to continue as a going concern and explicitly requires management to assess an entity's ability to continue as a going concern and to provide related disclosure in certain circumstances. This guidance was effective for annual reporting periods ending after December 15, 2016, and for annual and interim reporting periods thereafter. The following information reflects the results of management's assessment, plans, and conclusion of the Company's ability to continue as a going concern.

At December 31, 2018, the Company had $24.6 million in cash and had a working capital surplus of approximately $24.3 million. The Company believes that its current financial resources, as of the date of the issuance of these financial statements, are sufficient to fund its current 12 month operating budget, alleviating the substantial doubt raised by our historical operating results and satisfying our estimated liquidity needs 12 months from the issuance of these financial statements.

The Company had expended substantial funds on its research and development activities to date and expects to increase this spending through its equity contributions to its joint venture company Enfission, LLC. The Company's net cash used in operating activities during the year ended December 31, 2018 was approximately $7.4 million, and

current projections indicate that the Company will have continued negative cash flows until the commercialization of its nuclear fuel. Net losses incurred for the years ended December 31, 2018 and 2017 amounted to approximately $(15.7) million, $(7.1) million, respectively. As of December 31, 2018, the Company has an accumulated deficit of approximately $103.5 million, representative of recurring losses since inception. The Company has incurred recurring losses since inception because it is a development stage nuclear fuel development company. The Company expects to continue to incur losses due to the costs and expenses related to the Company’s research and development expenses and corporate general and administrative expenses.

The amount of cash and cash equivalents on the balance sheet as of the date of this filing is approximately $23 million. The Company also may consider other plans to fund operations including: (1) raising additional capital through debt financings or from other sources; (2) additional funding through new relationships to help fund future research and development costs (e.g., potential Department of Energy funding); and (3) additional capital raises. The Company may issue securities, including common stock, preferred stock, and stock purchase contracts through private placement transactions or registered public offerings, pursuant to its registration statement on Form S-3 filed with the SEC on March 15, 2018 and declared effective on March 23, 2018. There can be no assurance as to the availability or terms upon which financing and capital might be available. The Company’s future liquidity needs, and ability to address those needs, will largely be determined by the success of the development of its nuclear fuel and key nuclear development and regulatory events and its business decisions in the future.

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Equity Method Investment – Enfission, LLC - Joint Venture with Framatome Inc.

In January 2018, Lightbridge and Framatome Inc., a subsidiary of Framatome SAS (formerly part of AREVA SAS), finalized and launched Enfission, LLC ("Enfission"), a 50-50 joint venture company, to develop, license, and sell nuclear fuel assemblies based on Lightbridge-designed metallic fuel technology and other advanced nuclear fuel intellectual property. Framatome SAS and Framatome Inc. (collectively "Framatome") is a global leader in designing, building, servicing, and fueling reactor fleet and advancing nuclear energy and is majority owned by Électricité de France, the world's largest owner and operator of nuclear power plants. Lightbridge and Framatome began joint fuel development and regulatory licensing work under previously signed agreements initiated in March 2016. The joint venture Enfission is a Delaware-based limited liability company that was formed on January 24, 2018.

Management has determined that its investment in Enfission should be accounted for under the equity method of accounting. Under the equity method of accounting, an investee company's accounts are not reflected within the Company's consolidated balance sheets and consolidated statements of operations; however, the Company's share of the losses of the investee company is reported in the "Equity in loss from joint venture" line item in the consolidated statements of operations, and the Company's carrying value in an equity method investee company is reported in the "Investment in joint venture" or "Investee losses in excess of investment" line item in the consolidated balance sheets.

The Company allocates income (loss) utilizing the hypothetical liquidation book value ("HLBV") method, in which the Company allocates income or loss based on the change in each JV member's claim on the net assets of the JV's operating agreement at period end after adjusting for any distributions or contributions made during such period. The Company uses this method because of the difference between the distribution rights and priorities set forth in the Enfission operating agreement and what is reflected by the underlying percentage ownership interests of the Joint Venture. The Company invested approximately $5.6 million in Enfission as of December 31, 2018. During the year ended December 31, 2018, the Company recorded its share of the loss in investment in Enfission, in accordance with the provisions in the joint venture operating agreement, of approximately $5.8 million. The Company's share of the joint venture losses for the year ended December 31, 2018 have exceeded its capital contributions by approximately $0.2 million and as a result, in accordance with equity method accounting, its share of the equity losses in excess of the equity contributions made in 2018 have been recorded as investee loss in excess of investment, under the current liability section of the accompanying balance sheets. The Company provides research and development services to Enfission and these amounts have been recorded as other operating income in the accompanying statement of operations.

We evaluate on a quarterly basis, whether our investment accounted for under the equity method of accounting has an other than temporary impairment ("OTTI"). An OTTI occurs when the estimated fair value of an investment is below the carrying value and the difference is determined to not be recoverable. This evaluation requires significant judgment regarding, but not limited to, the severity and duration of the impairment; the ability and intent to hold the security until recovery; financial condition, liquidity, and near-term prospects of the issuer; specific events; and other factors.

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Accounting Policies and Pronouncements

Basis of Consolidation

These consolidated financial statements include the accounts of Lightbridge, a Nevada corporation, and our wholly-owned subsidiaries, TPI, a Delaware corporation and Lightbridge International Holding LLC, a Delaware limited liability company. All significant intercompany transactions and balances have been eliminated in consolidation. Translation gains and losses for the years ended December 31, 2018 and 2017 were not significant.

As of January 24, 2018, the Company owns a 50% interest in Enfission – accounted for using the equity method of accounting (see Note 3. Investment in Joint Venture / Investee Losses in Excess of Investment). Enfission is deemed to be a variable interest entity ("VIE") under the VIE model of consolidation because it currently does not have sufficient funds to finance its operations and will require significant additional equity or subordinated debt financing. The Company has determined that it is not the primary beneficiary of the VIE since it does not have the power to direct the activities that most significantly impact the VIE's performance.

In determining whether the Company is the primary beneficiary and whether it has the right to receive benefits or the obligation to absorb losses that could potentially be significant to the VIE, the Company evaluates all its economic interests in the entity, regardless of form. This evaluation considers all relevant factors of the entity's structure including the entity's capital structure, contractual rights to earnings (losses) as well as other contractual arrangements that have potential to be economically significant. Although the Company has the obligation to absorb the losses as of this reporting period, it has concluded that it is not the primary beneficiary since the major decision making for all significant economic activities require the approval of both the Company and Framatome. The significant economic activities identified were financing activities; research and development activities; licensing activities; manufacturing of fuel assembly product activities; and marketing and sales activities. The evaluation of each of these factors in reaching a conclusion about the potential significance of our economic interests and control is a matter that requires the exercise of professional judgment.

Business Segments

For the year ended December 31, 2017, the Company had two principal business segments (1) the technology business and (2) the consulting services business. We discontinued our consulting business segment in 2018 and no longer report and disclose our financial results on a business segment basis at December 31, 2018.

Technology Business

The Company's business, based on future revenue potential, is to develop and commercialize innovative, proprietary nuclear fuel designs, which it expects will significantly enhance the nuclear power industry's economics due to higher power output and improved safety margins.

The Company is focusing its technology development efforts on the metallic fuel with a potential power uprate of up to 10% and an operating cycle extended from 18 to 24 months in existing Westinghouse-type four-loop pressurized water reactors. Those reactors represent the largest segment of our global target market. The metallic fuel could also be adapted for use in other types of water-cooled commercial power reactors, such as boiling water reactors, Russian-type VVER reactors, CANDU heavy water reactors, water-cooled small and modular reactors, as well as water-cooled research reactors.

Lightbridge has obtained and will continue to seek patent validation in key countries that either currently operate or are expected to build and operate a large number of suitable nuclear power reactors.

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Consulting Business

The Company has provided consulting and strategic advisory services to companies and governments planning to create or expand electricity generation capabilities using nuclear power plants. As of January 1, 2018, the Company no longer had a consulting business segment. The Company had no consulting revenue for the year ended December 31, 2018 as the Company focused its efforts on its technology business and commercialization of its metallic nuclear fuel. The Company does not presently have any consulting clients, or operations as of the date of this filing. The Company is open to opportunistically provide nuclear power consulting and strategic advisory services through reassignment of resources from its core business and employment of outside resources from its industry contacts, to commercial and governmental entities worldwide in the future.

Because of this, the Company will no longer show business segment results as it has in the past. The chief operating decision makers have determined that the Company's sole focus is on the developing and commercializing next generation nuclear fuel technology.

Use of Estimates and Assumptions

The preparation of financial statements, in conformity with accounting principles generally accepted in the United States of America, requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

Significant Estimates

These accompanying consolidated financial statements include some amounts that are based on management's best estimates and judgments. The most significant estimates relate to valuation of stock grants and stock options, impairment evaluation of the equity method investment, the valuation allowance on deferred tax assets, and various contingent liabilities. It is reasonably possible that these above-mentioned estimates and others may be adjusted as more current information becomes available, and any adjustment could be significant in future reporting periods. It is also reasonably possible that the actual grant date value of the stock options vested might have been materially different than the estimated value.

Fair Value of Financial Instruments

The Company's financial instruments consist principally of cash and cash equivalents, accounts receivable, and accounts payable. The fair value of a financial instrument is the amount that would be received in an asset sale or paid to transfer a liability in an orderly transaction between unaffiliated market participants. Assets and liabilities measured at fair value are categorized based on whether the inputs are observable in the market and the degree that the inputs are observable. The categorization of financial instruments within the valuation hierarchy is based on the lowest level of input that is significant to the fair value measurement.

Certain Risks, Uncertainties and Concentrations

The Company is an early stage company and will likely need additional funding by way of strategic alliances, government grants, further offerings of equity securities, an offering of debt securities, or a financing through a bank in order to support the remaining research and development activities required to further enhance and complete the development of our fuel products to a commercial stage.

The Company participates in a government-regulated industry. Our operating results are affected by a wide variety of factors including decreases in the use or public favor of nuclear power, the ability of our technology to safeguard the production of nuclear power, and our ability to safeguard our patents and intellectual property from competitors. Due to these factors, we may experience substantial period-to-period fluctuations in our future operating results. Potentially, a loss of a key officer, key management, and other personnel could impair our ability to successfully execute our business strategy, particularly when these individuals have acquired specialized knowledge and skills with respect to nuclear power and our operations.

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Our future operations and earnings may depend on the results of the Company's operations outside the United States, including some of its research and development activities. There can be no assurance that the Company will be able to successfully continue to conduct such operations, and a failure to do so would have a material adverse effect on the Company's research and development activities, financial position, results of operations, and cash flows. Also, the success of the Company's operations will be subject to other numerous contingencies, some of which are beyond management's control. These contingencies include general and regional economic conditions, competition, changes in government regulations and support for nuclear power, changes in accounting and taxation standards, inability to achieve overall long-term goals, future impairment charges, and global or regional catastrophic events. The Company may be subject to various additional political, economic, and other uncertainties.

Cash and Cash Equivalents

The Company may at times invest its excess cash in savings accounts and US Treasury Bills. It classifies all highly liquid investments with stated maturities of three months or less from date of purchase as cash equivalents and all highly liquid investments with stated maturities of greater than three months as marketable securities. The Company holds cash balances in excess of the federally insured limits of $250,000. It deems this credit risk not to be significant as cash is held by three prominent financial institutions in 2018 and one prominent financial institution in 2017. The Company buys and holds short-term US Treasury Bills from Treasury Direct to maturity. US Treasury Bills totaled approximately $10.0 million and $0 at December 31, 2018 and 2017, respectively. The remaining $14.6 million at December 31, 2018 are on deposit with three notable financial institutions with primarily all of the $14.6 million with one financial institution. Total cash and cash equivalents held, as reported on the accompanying consolidated balance sheets, totaled approximately $24.6 million and $4.5 million at December 31, 2018 and 2017, respectively.

Other Receivable – Joint Venture

The Company records its receivable from Enfission LLC at the invoiced amount. The Company determined that no bad debt reserve needed to be recorded at December 31, 2018.

Foreign Currency

Foreign currency transaction gains/losses were not significant for the years ended December 31, 2018 and 2017.

Patents and Legal Costs

Patents are stated on the accompanying consolidated balance sheets at cost. Patent costs consist primarily of legal fees and application costs for filing and pursuing patent applications. The costs of the patents, once placed in service, will be amortized on a straight-line basis over their estimated useful lives or the remaining legal lives of the patents, whichever is shorter. The amortization periods for our patents can range between 17 and 20 years if placed into service at the beginning of their legal lives. Our patents have not been placed in service for the years ended December 31, 2018 and 2017.

Legal costs are expensed as incurred except for legal costs to file for patent protection, which are capitalized and reported as patents on the accompanying consolidated balance sheets.

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Impairment of long-lived assets

Long-lived assets of the Company are reviewed for impairment whenever events or circumstances indicate that the carrying amount of assets may not be recoverable. The Company recognizes an impairment loss when the sum of expected undiscounted future cash flows is less than the carrying amount of the asset. The amount of impairment is measured as the difference between the asset's estimated fair value and its book value. The Company did not consider it necessary to record any impairment charges for the years ended December 31, 2018 and 2017.

Research, Development and Related Expenses

These costs are charged to operations in the period incurred and are shown on a separate line on the accompanying consolidated statements of operations.

Beneficial Conversion Feature of Convertible Preferred Stock

The Company accounts for the beneficial conversion feature on its convertible preferred stock in accordance with ASC 470-20, *Debt with Conversion and Other Options*. The Beneficial Conversion Feature ("BCF") of convertible preferred stock is normally characterized as the convertible portion or feature that provides a rate of conversion that is below market value or in-the-money when issued. The Company records a BCF related to the issuance of convertible preferred stock when issued. Beneficial conversion features that are contingent upon the occurrence of a future event are recorded when the contingency is resolved.

To determine the effective conversion price, the Company first allocates the proceeds received to the convertible preferred stock and then uses those allocated proceeds to determine the effective conversion price. If the convertible instrument is issued in a basket transaction (i.e., issued along with other freestanding financial instruments), the proceeds should first be allocated to the various instruments in the basket. The intrinsic value of the conversion option should be measured using the effective conversion price for the convertible preferred stock on the proceeds allocated to that instrument. The effective conversion price represents proceeds allocable to the convertible preferred stock divided by the number of shares into which it is convertible. The effective conversion price is then compared to the per share fair value of the underlying common shares on the commitment date. The accounting for a BCF requires that the BCF be recognized by allocating the intrinsic value of the conversion option to additional paid-in capital, resulting in a discount on the convertible preferred stock. This discount should be accreted from the date on which the BCF is first recognized through the earliest conversion date for instruments that do not have a stated redemption date. The intrinsic value of the BCF is recognized as a deemed dividend on convertible preferred stock over a period specified in the guidance. In the case of both the Series A and Series B preferred shares, the holders of the shares had the right to

convert beginning at the date of issuance with the result that the accretion of the related BCF was recognized immediately at issuance.

When the Company's preferred stock has dividends that are paid-in-kind ("PIK") (i.e., the holder is paid in additional shares or liquidation/dividend rights), and either (1) neither the Company nor the holder has the option for the dividend to be paid in cash, or (2) the PIK amounts do not accrue to the holder if the instrument is converted prior to the PIK amount otherwise being accrued or due, additional BCF is recognized as dividends accrue to the extent that the per share fair value of the underlying common shares at the commitment date exceeds the conversion price.

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Common Stock Warrants

The Company accounts for common stock warrants as either equity instruments or derivative liabilities depending on the specific terms of the warrant agreement. Common stock warrants are accounted for as a derivative in accordance with ASC 815, *Derivatives and Hedging* if the stock warrants contain terms that could potentially require "net cash settlement" and therefore, do not meet the scope exception for treatment as a derivative. Warrant instruments that could potentially require "net cash settlement" in the absence of express language precluding such settlement are initially classified as derivative liabilities at their estimated fair values, regardless of the likelihood that such instruments will ever be settled in cash.

Commitments and Contingencies

The Company follows Subtopic 450-20 of the FASB ASC to report accounting for contingencies. Certain conditions may exist as of the date the consolidated financial statements are issued, which may result in a loss to the Company but which will only be resolved when one or more future events occur or fail to occur. The Company assesses such contingent liabilities, and such assessment inherently involves an exercise of judgment.

If the assessment of a contingency indicates that it is probable that a material loss has been incurred and the amount of the liability can be estimated, then the estimated liability would be accrued in the Company's consolidated financial statements. If the assessment indicates that a potentially material loss contingency is not probable but is reasonably possible, or is probable but cannot be estimated, then the nature of the contingent liability, and an estimate of the range of possible losses, if determinable and material, would be disclosed.

Loss contingencies considered remote are generally not disclosed unless they involve guarantees, in which case the guarantees would be disclosed. The Company's legal costs associated with contingent liabilities are recorded to expense as incurred.

Stock-Based Compensation

The stock-based compensation expense incurred by Lightbridge for employees and directors in connection with its equity incentive plan is based on the employee model of ASC 718, and the fair value of the options is measured at the grant date. Under ASC 718 employee is defined as, "An individual over whom the grantor of a share-based compensation award exercises or has the right to exercise sufficient control to establish an employer-employee

relationship based on common law as illustrated in case law and currently under U.S. Tax Regulations." Our consultants do not meet the employer-employee relationship as defined by the IRS and therefore are accounted for under ASC 505-50. On July 1, 2018, the Company adopted ASU 2018-07, *Compensation – Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting.*

ASC 505-50-30-11 (previously EITF 96-18), which applied until the adoption of ASU 2018-07 on July 1, 2018, further provides that an issuer shall measure the fair value of the equity instruments in these transactions using the stock price and other measurement assumptions as of the earlier of the following dates, referred to as the measurement date:

- The date at which a commitment for performance by the counterparty to earn the equity instruments is reached (a performance commitment); and

Awards with service-based vesting conditions only – Expense recognized on a straight-line basis over the requisite service period of the award.

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Awards with performance-based vesting conditions – Expense is not recognized until it is determined that it is probable the performance-based conditions will be met. When achievement of a performance-based condition is probable, a catch-up of expense will be recorded as if the award had been vesting on a straight-line basis from the award date. The award will continue to be expensed on a straight-line basis until a higher performance-based condition is met, if applicable.

Awards with market-based vesting conditions – Expense recognized on a straight-line basis over the requisite service period, which is the lesser of the derived service period or the explicit service period if one is present. However, if the market condition is satisfied prior to the end of the requisite service period, the Company will accelerate all remaining expense to be recognized.

Awards with both performance-based and market-based vesting conditions – if an award vesting or exercisability is conditional upon the achievement of either a market condition or performance or service conditions, the requisite service period is generally the shortest of the explicit, implicit, and derived service period.

The Company has elected to use the Black-Scholes pricing model to determine the fair value of stock options on the measurement date of the grant for service-based vesting conditions and the Monte-Carlo valuation method for performance-based or market-based vesting conditions. Restricted stock units are measured based on the fair values of the underlying stock on the measurement date of the grant. Shares that are issued to officers on the exercise dates of their stock options may be issued net of the minimum statutory withholding requirements to be paid by us on behalf of our employees. As a result, the actual number of shares issued will be fewer than the actual number of shares exercised under the stock option. The Company recognized stock-based compensation for service-based stock options using the straight-line method over the requisite service period.

Segment Reporting

The Company used the “management approach” in determining reportable operating segments. The management approach considers the internal organization and reporting used by the chief decision makers for making operating decisions and assessing performance, as the source for determining our reportable segments. The Company has determined in 2018 that it no longer operates as two segments as defined by the FASB accounting pronouncement, “*Disclosures about Segments of an Enterprise and Related Information”*. Rather, the Company operates as a technology business developing and commercializing next generation nuclear fuel technology.

Recently Adopted Accounting Pronouncements

Compensation – Stock Compensation — In June 2018, the FASB issued ASU 2018-07, *Compensation – Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting.* ASU 2018-07 allows companies to account for nonemployee awards in the same manner as employee awards. The guidance is effective for fiscal years beginning after December 15, 2018, and interim periods within those annual periods. The Company elected the early adoption of this ASU on July 1, 2018. The adoption of ASU 2018-07 did not have a material impact on the Company's financial position, results of operations or cash flows.

Compensation – Stock Compensation — In May 2017, the FASB issued ASU 2017-09, *Compensation – Stock Compensation (Topic 718): Scope of Modification Accounting*. ASU 2017-09 provides clarity and reduces both (1) diversity in practice and (2) cost and complexity when applying the guidance in Topic 718, to a change to the terms or conditions of a share-based payment award. The amendments in ASU 2017-09 should be applied prospectively to an award modified on or after the adoption date. This ASU is effective for fiscal years, and interim periods within those years, beginning after December 15, 2017. This pronouncement was adopted on January 1, 2018 and did not have a material effect on the Company's financial position, results of operations or cash flows.

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Financial Instruments — In January 2016, the FASB issued ASU 2016-01, *Financial Instruments (Subtopic 825-10) — Overall: Recognition and Measurement of Financial Assets and Financial Liabilities.* ASU 2016-01 provides guidance on how entities measure certain equity investments and present changes in the fair value. This standard requires that entities measure certain equity investments that do not result in consolidation and are not accounted for under the equity method at fair value and recognize any changes in fair value in net income. ASU 2016-01 is effective for fiscal years beginning after December 31, 2017. This pronouncement was adopted on January 1, 2018 and did not have a material effect on the Company's financial position, results of operations or cash flows.

Statement of Cash Flows — In 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments* and ASU 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash.* ASU 2016-15 addresses the presentation and classification of certain cash receipts and payments in the statement of cash flows. ASU 2016-18 is intended to reduce diversity in the presentation of restricted cash and restricted cash equivalents in the cash flows statement. The statement requires that restricted cash and restricted cash equivalents be included as components of total cash and cash equivalents as presented on the statement of cash flows. These pronouncements went into effect for periods beginning after December 15, 2017. This pronouncement was adopted on January 1, 2018 and did not have a material effect on the Company's financial position, results of operations or cash flows.

Revenue Recognition — In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606),* which supersedes most current revenue recognition guidance, including industry-specific guidance. The underlying principle is that an entity will recognize revenue to depict the transfer of goods or services to customers at an amount that the entity expects to be entitled to in exchange for those goods or services. The guidance provides a five-step analysis of transactions to determine when and how revenue is recognized. Other major provisions include capitalization of certain contract costs, consideration of time value of money in the transaction price and allowing estimates of variable consideration to be recognized before contingencies are resolved in certain circumstances. The guidance also requires enhanced disclosures regarding the nature, amount, timing, and uncertainty of revenue and cash flows arising from an entity's contracts with customers. In March 2016, the FASB issued ASU 2016-08, *Revenue from Contracts with Customers: Principal versus Agent Considerations*. ASU 2016-08 clarifies implementation guidance on principal versus agent considerations in ASU 2014-09. ASU 2016-10 was issued to clarify ASC Topic 606 related to (i) identifying performance obligations; and (ii) the licensing implementation guidance. In May 2016, the FASB issued ASU 2016-12, *Revenue from Contracts with Customers — Narrow-Scope Improvements and Practical Expedients*, to clarify certain narrow aspects of Topic 606 such as assessing the collectability criterion, presentation of sales taxes and other similar taxes collected from customers, noncash consideration, contract modifications at transition, completed contracts at transition, and technical correction. The guidance was effective for the interim and annual periods beginning on or after December 15, 2017, and this pronouncement was adopted on January 1, 2018. The guidance permits the use of either a retrospective or cumulative effect transition method. The Company has evaluated its prior various contracts subject to these updates and completed its assessment. The Company has concluded that the adoption of this pronouncement did not have a material effect on its consolidated financial statements and related disclosures since it did not enter into any consulting revenue contracts in 2018.

Equity Method Investments — In March 2016, the FASB issued ASU No. 2016-07, Simplifying the Transition to the Equity Method of Accounting. The new standard eliminates the requirement for an investor to retroactively apply the equity method when an increase in ownership interest in an investee triggers equity method accounting. It also simplifies, in certain areas, the accounting for equity method investments. The new standard is effective in the current fiscal year ending December 31, 2018 and interim periods therein. The new provisions are applied on a prospective basis to transactions within its scope. The adoption of this standard did not have a material impact on the Company's financial position, results of operations or cash flows.

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Recent Accounting Pronouncements – To Be Adopted

Intangibles, Goodwill and Other — In January 2017, the FASB issued ASU 2017-04, *Intangibles – Goodwill and Other (Topic 350) – Simplifying the Test for Goodwill Impairment*. To simplify the subsequent measurement of goodwill, ASU 2017-04 eliminates Step 2 from the goodwill impairment test. In computing the implied fair value of goodwill under Step 2, an entity had to perform procedures to determine the fair value at the impairment testing date of its assets and liabilities following the procedure that would be required in determining the fair value of assets acquired and liabilities assumed in a business combination. Instead, ASU 2017-04 requires an entity to perform its annual, or interim, goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. An entity should recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. ASU 2017-04 also eliminates the requirements for any reporting unit with a zero or negative carrying amount to perform a qualitative assessment and, if it fails that qualitative test, to perform Step 2 of the goodwill impairment test. Therefore, the same impairment assessment applies to all reporting units. An entity is required to disclose the amount of goodwill allocated to each reporting unit with a zero or negative carrying amount of net assets. An entity still has the option to perform the qualitative assessment for a reporting unit to determine if the quantitative impairment test is necessary. ASU 2017-04 is effective for fiscal years beginning after December 15, 2019. The Company will adopt ASU 2017-04 commencing in the first quarter of fiscal 2020. The Company does not believe this standard will have a material impact on its consolidated financial statements or the related footnote disclosures.

Leases — In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842).* ASU 2016-02 amends existing lease accounting guidance and requires recognition of most lease arrangements on the balance sheet. The adoption of this standard will result in the Company recognizing a right-of-use asset representing its rights to use the underlying asset for the lease term with an offsetting lease liability. ASU 2016-02 will be effective for fiscal years beginning after December 15, 2018, with early adoption permitted. The Company is currently evaluating the potential impact of the adoption of this accounting pronouncement to its consolidated financial statements. The Company does not believe this standard will have a material impact on its consolidated financial statements or the related footnote disclosures.

ASU 2018-09, Codification Improvements — This ASU represents changes in various Subtopics to clarify, correct errors, or make minor improvements. The amendments are not expected to have a significant effect on current accounting practice. Subtopics impacted by this ASU that are relevant to the Company include *Subtopic 220-10 Income Statement — Reporting Comprehensive Income-Overall, Subtopic 718-740 Compensation — Stock Compensation-Income Taxes, Subtopic 805-740 Business Combinations — Income Taxes*, and *Subtopic 820-10 Fair Value Measurement-Overall*. Many of the amendments within this ASU do not require transition and are effective upon issuance. However, some are not effective until fiscal years beginning after December 15, 2018. The amendments within this ASU are not expected to materially impact the Company's consolidated financial statements or the related footnote disclosures.

ASU 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework — Changes to the Disclosure Requirements for Fair Value Measurement — This ASU modifies the disclosure requirements on fair value measurements in Topic 820, including the removal, modification to, and addition of certain disclosure requirements. This ASU will be effective for fiscal years beginning after December 15, 2019 with early adoption permitted. The majority of the disclosure changes are to be applied on a prospective basis. Although this ASU has a significant impact to the Company's fair value disclosures, no additional impact is expected to the Company's consolidated financial statements.

The Company does not believe that other standards, which have been issued but are not yet effective, will have a significant impact on its financial statements.

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Note 2. Net Loss Per Share

Basic net loss per share is computed using the weighted-average number of common shares outstanding during the period except that it does not include unvested common shares subject to repurchase or cancellation. Diluted net income per share is computed using the weighted-average number of common shares and, if dilutive, potential common shares outstanding during the period. Potential common shares consist of the incremental common shares issuable upon the exercise of stock options, warrants, restricted shares, and unvested common shares subject to repurchase or cancellation. The dilutive effect of outstanding stock options, restricted shares, and warrants is not reflected in diluted earnings per share because we incurred net losses for the years ended December 31, 2018 and 2017, and the effect of including these potential common shares in the net loss per share calculations would be anti-dilutive, therefore not included in the calculations.

The following table sets forth the computation of the basic and diluted loss per share (rounded in millions except shares outstanding and per share amounts):

	2018	2017
Numerator:		
Net loss attributable to common stockholders	$ (19.0)	$ (7.4)
Denominator:		
Weighted-average common shares outstanding	26,636,250	10,424,481
Basic and diluted net loss per share	$ (0.71)	$ (0.71)

Note 3. Investment in Joint Venture (Investee Losses in Excess of Investment)

Pursuant to the Enfission operating agreement, both partners agreed that Enfission will serve as an exclusive vehicle to develop, license, and sell nuclear fuel assemblies based on Company-designed metallic fuel technology and other advanced nuclear fuel intellectual property licensed to Enfission by the Company and Framatome or their affiliates. The joint venture builds on the joint fuel development and regulatory licensing work under previously signed agreements initiated in March 2016.

The Enfission operating agreement provided that the Company and Framatome each hold 50% of the total issued Class A voting membership units of the joint venture.

The Company's equity in losses in excess of its investment are accounted for under the equity method consisted of the following as of December 31, 2018 (rounded in millions):

Investment Name	Ownership Interest	Carrying Amount
Enfission, LLC	50%	
Total contributions		$ 5.6
Less: Share of the loss in investment in Enfission		(5.8)
Equity losses in excess of investment		$ (0.2)

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The Company invested approximately $5.6 million in Enfission as of December 31, 2018. The cash balance in Enfission at December 31, 2018 was approximately $0.7 million. During the year ended December 31, 2018, Enfission incurred a loss of approximately $7.7 million, and accordingly, the Company recorded its share of the loss in investment in Enfission, in accordance with the provisions in the joint venture operating agreement, of approximately $5.8 million in the accompanying consolidated statement of operations. The Company's share of the joint venture losses for the period ended December 31, 2018 have exceeded its capital contributions by approximately $0.2 million and as a result, in accordance with equity method accounting, its share of the equity losses in excess of the equity contributions made in 2018 have been recorded as investee loss in excess of investment, under the current liability section of the accompanying balance sheets.

We were committed to fund Enfission for our share of its liabilities at December 31, 2018. The Company will continue providing additional equity contributions in 2019 and for the foreseeable future.

Summarized balance sheet information for the Company's equity method investee Enfission as of December 31, 2018 is presented in the following table (rounded in millions):

Current assets		
Cash	$	0.7
Other current assets		0.7
Total assets	$	1.4
Current liabilities	$	1.9
Total liabilities	$	1.9

Summarized income statement information for the Company's equity method investee Enfission is presented in the following table for the year ended December 31, 2018 (rounded in millions):

Net sales and revenue	$	0.0
Research and development costs		6.6
Administrative expenses		1.1
Total operating loss	$	7.7
Loss from operations	$	7.7
Net loss	$	7.7

As of December 31, 2018, the total receivable due from Enfission was approximately $0.1 million, which represents consulting fees Lightbridge charged to Enfission and reimbursable expenses paid by Lightbridge on Enfission's behalf (see Note 11. Related Party Transactions). Based on an evaluation of this equity method investment, we determined that no OTTI has occurred as of December 31, 2018.

Note 4. Patents

Patents represent legal fees and filing costs that are capitalized and will be amortized over their estimated useful lives of 17 to 20 years or their remaining legal lives, whichever is shorter, after they are placed in service. For the years ended December 31, 2018 and 2017, we capitalized approximately $0.2 million each year, for patent filing costs. The total investment in patents was approximately $1.6 million and $1.4 million as of December 31, 2018 and 2017, respectively.

No amortization expense of patents was recorded in either of the years ended December 31, 2018 and 2017. These patents were not placed in service for the years ended December 31, 2018 and 2017, or in prior years.

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Note 5. Accounts Payable and Accrued Liabilities

Accounts payable and accrued expenses consisted of the following (rounded in millions):

	December 31, 2018	December 31, 2017
Trade payables	$ 0.1	$ 0.3
Accrued expenses and other	0.2	0.6
Accrued bonuses	0.0	0.3
Total	$ 0.3	$ 1.2

Note 6. Commitments and Contingencies

Commitments

Operating Leases

The Company leases office space for a 12-month term with a monthly rent payment of approximately $15,000 per month for office rent. The term of the lease extends through December 31, 2019.

The future minimum lease payments required under the non-cancellable operating leases are as follows (rounded in millions):

Year ending December 31,	Amount
2019	$ 0.2
Total minimum payments required	$ 0.2

Employment Agreements

On August 8, 2018, the Company entered into employment agreements with the Chief Executive Officer, Executive Vice President of Fuel Operations, and Chief Financial Officer. The employment agreements provide for an initial annual base salary and establish a discretionary target annual bonus of 50% of base salary for each executive with the final amount of any such bonus to be determined by the Compensation Committee of the Board, based on the achievement of performance goals that are established by the Compensation Committee. Each employment agreement provides that if the executive's employment is terminated or not extended by the Company without "cause," or terminated by the executive for "good reason" (each as defined in the employment agreement), then, subject to the terms and conditions of the employment agreement, the executive will be entitled to certain severance payments and benefits.

Contingency

Litigation

A former Chief Financial Officer of the Company filed a complaint against the Company with the US Occupational Safety and Health Administration on March 9, 2015. This complaint was closed and dismissed by OSHA in January 2018 without any findings against the Company. On March 14, 2018 an appeal was filed and the Company will vigorously defend this appeal and believes that this appeal hearing will not result in any findings against the Company. As of December 31, 2018, legal fees of approximately $4,000 were incurred and are expected to be paid in full by the Company's insurance carriers.

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Note 7. Research and Development Costs

Lightbridge total corporate research and development costs, included in the caption research and development expenses in the accompanying consolidated statement of operations amounted to approximately $3.5 million and $2.3 million for the years ended December 31, 2018 and 2017, respectively. See note 11 – Related Party Transactions regarding consulting fees charged to Enfission for research and development expenses incurred by Lightbridge on behalf of Enfission.

Note 8. Income Taxes

On December 22, 2017, the US enacted the Tax Cuts and Jobs Act (the "Tax Act"), which significantly changed US tax law. The Act lowered the Company's US statutory federal income tax rate from 35% to 21% effective January 1, 2018, while also imposing a deemed repatriation tax on previously deferred foreign income. The Act also created a new minimum tax on certain future foreign earnings. The Act will impact the Company's income tax expense (benefit) from continuing operations in future periods (approximate 26% effective combined federal and state corporate tax rate). The Company has recorded a full valuation allowance on its net deferred tax assets, therefore any impact on the value of the company's deferred tax assets will be offset by a change in the valuation allowance.

The 2018 and 2017 annual effective tax rate is estimated to be a combined 26% for the combined US federal and state statutory tax rates. We review tax uncertainties in light of changing facts and circumstances and adjust them accordingly. As of December 31, 2018 and 2017, there were no tax contingencies or unrecognized tax positions recorded.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities recognized for financial reporting, and the amounts recognized for income tax purposes. The significant components of deferred tax assets (at an approximate 26% effective tax rate) as of December 31, 2018 and 2017, respectively, are as follows:

Deferred Tax Assets (rounded in millions)

	2018	2017
Capitalized start-up costs	$ 0.5	$ 0.6
Stock-based compensation	2.9	2.2

Accruals	0.0	0.1
Net operating loss carry-forward	19.7	16.1
Research and Development tax credits	0.2	0.0
Less: valuation allowance	(23.3)	(19.0)
Total	$ —$	—

The Company has a net operating loss carry-forward for federal and state tax purposes of approximately $76.6 million at December 31, 2018, that is potentially available to offset future taxable income. The Act changes the rules on NOL carryforwards. The 20-year limitation was eliminated for losses incurred after January 1, 2018, giving the taxpayer the ability to carry forward losses indefinitely. However, NOL carry forward arising after January 1, 2018, will now be limited to 80% of taxable income.

For financial reporting purposes, no deferred tax asset was recognized because at December 31, 2018 and 2017, management estimates that it is more likely than not that substantially all of the net operating losses will expire unused. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences are deductible. The timing and manner in which we can utilize our net operating loss carryforward and future income tax deductions in any year may be limited by provisions of the Internal Revenue Code regarding the change in ownership of corporations. Such limitation may have an impact on the ultimate realization of our carryforwards and future tax deductions. Section 382 of the Internal Revenue Code (“Section 382”) imposes limitations on a corporation’s ability to utilize net operating losses if it experiences an “ownership change.” In general terms, an ownership change may result from transactions increasing the ownership of certain stockholders in the stock of a corporation by more than 50 percentage points over a three-year period. Any unused annual limitation may be carried over to later years, and the amount of the limitation may under certain circumstances be increased by the built-in gains in assets held by us at the time of the change that are recognized in the five-year period after the change. Upon review of the ownership shifts, there has not been an ownership change as defined under Section 382.

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The Company recognized, as a provisional estimate in 2017, a $9.6 million non-cash reduction of its deferred tax assets, with an offsetting reduction in the valuation allowance, for the re-measurement of deferred tax assets and liabilities due to changes in tax laws included in the 2017 Tax Act. This re-measurement of deferred taxes had no impact on cash flows and would not have had such an effect, even if not offset with the valuation allowance.

On December 22, 2017, the SEC issued Staff Accounting Bulletin No. 118 (SAB 118), which addresses income tax accounting implications of the 2017 Tax Act. The purpose of SAB 118 was to address any uncertainty or diversity of view in applying ASC Topic 740, *Income Taxes* in the reporting period in which the 2017 Tax Act was enacted. SAB 118 addresses situations where the accounting is incomplete for certain income tax effects of the 2017 Tax Act upon issuance of a company's financial statements for the reporting period, which include the enactment date. SAB 118 allows for a provisional amount to be recorded if it is a reasonable estimate of the impact of the 2017 Tax Act. Additionally, SAB 118 allows for a measurement period to finalize the impacts of the 2017 Tax Act, not to extend beyond one year from the date of enactment. The Company has completed the accounting for the tax effects of the 2017 Tax Act in 2018 which resulted in no further adjustments to its tax provision positions. The Company files a consolidated tax return with its subsidiaries. The Company is no longer subject to US federal, state, or non-US income tax examinations by tax authorities for tax years before 2015, except that earlier years can be examined for the sole purpose of challenging the net operating loss carry-forwards arising in those years.

The reconciliation between income taxes (benefit) at the US and State statutory tax rates of approximately 26% and the amount recorded in the accompanying consolidated financial statements is as follows (rounded in millions):

	December 31, 2018	December 31, 2017
Tax benefit at US federal statutory rates	$ (3.3)	$ (2.3)
Tax benefit at state statutory rates	(0.7)	(0.7)
Change in Federal statutory rate	0.0	9.6
Tax benefit from federal and state R&D tax credits	(0.2)	0.0
Other	0.0	0.4
Increase (decrease) in valuation allowance	4.2	(7.0)
Total provision for income tax benefit	$ —	$ —

Note 9. Stockholders' Equity and Stock-Based Compensation

At December 31, 2018, there were 32,862,090 common shares outstanding, and there were also outstanding warrants relating to 844,337 shares of common stock, stock options relating to 5,604,154 shares of common stock, 813,624 shares of Series A convertible preferred stock convertible into 813,624 shares of common stock (plus accrued dividends of $407,382 relating to an additional 148,403 common shares), and 2,666,667 shares of Series B convertible preferred stock convertible into 2,666,667 shares of common stock (plus accrued dividends of $262,856, relating to an

additional 175,237 common shares), all totaling 43,114,512 shares of common stock and all common stock equivalents, including accrued preferred stock dividends, outstanding at December 31, 2018.

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At December 31, 2017, there were 12,737,703 common shares outstanding, and there were also outstanding warrants relating to 1,210,905 shares of common stock, stock options relating to 3,976,884 shares of common stock, and 1,020,000 shares of Series A convertible preferred stock convertible into 1,020,000 shares of common stock (plus accrued dividends of $276,578, relating to an additional 100,753 common shares), all totaling 19,046,245 shares of common stock and common stock equivalents outstanding at December 31, 2017.

Common Stock Equity Offerings

ATM Offering - 2018

On March 30, 2018, the Company entered into an at-the-market issuance sales agreement ("New ATM") with B. Riley FBR, Inc. (the "Distribution Agent"), pursuant to which the Company could issue and sell shares of its common stock from time to time through the Distribution Agent as the Company's sales agent. Sales of the Company's common stock through the Distribution Agent were made by any method that is deemed to be an "at-the-market" equity offering as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, pursuant to the Company's effective shelf registration statement on Form S-3 (File No. 333-223674), the base prospectus filed as part of such registration statement and the prospectus supplement dated March 30, 2018, which registered the offer and sale of up to $50 million of common stock under the New ATM. Sales under the New ATM that were made during the year ended December 31, 2018 were sales of 8.7 million shares that totaled gross proceeds of $9.2 million and the remaining balance as of December 31, 2018 were $40.8 million. We have raised an approximate $1.9 million net proceeds from the sale of approximately 3.2 million shares under this prospectus supplement from January 1, 2019 to March 29, 2019. Effective March 29, 2019, the Company and the Distribution Agent terminated the New ATM agreement. See Note 12. Subsequent Events — ATM sales and Termination of New ATM Agreement.

On January 24, 2018, January 26, 2018, February 7, 2018, and March 2, 2018, the Company filed prospectus supplements registering an aggregate amount of approximately $22.6 million under the prior at-the-market ("ATM") agreement with B. Riley FBR, Inc. The Company received approximately $28.8 million of net proceeds from its ATM during the year ended December 31, 2018 under these above-mentioned prospectus supplements.

ATM Offering - 2017

On July 12, 2017, the Company entered into an ATM sales agreement with FBR Capital Markets & Co. and MLV & Co. LLC. The Company registered the sale of approximately $1.6 million under the ATM sales agreement on July 12, 2017 and sold all of such amount in the year ended December 31, 2017, through the issuance of approximately 1.4 million shares.

Preferred Stock Equity Offerings

Series B Preferred Stock - Securities Purchase Agreement

On January 30, 2018, the Company issued 2,666,667 shares of newly created Non-Voting Series B Convertible Preferred Stock (the “Series B Preferred Stock”) and associated warrants to purchase up to 666,664 shares of the Company’s common stock to the several purchasers for approximately $4.0 million or approximately $1.50 per share of Series B Preferred Stock and associated 0.25 of a warrant. Dividends accrue on the Series B Preferred Stock at the rate of 7% per year and will be paid in-kind through an increase in the liquidation preference per share. The liquidation preference, initially $1.50 per share of Series B Preferred Stock, is the base that is also used to determine the number of common shares into which the Series B Preferred Stock will convert as well as the calculation of the 7% dividend. Each share of Series B Preferred Stock is convertible at the option of the holder into such number of shares of the Company’s common stock equal to the liquidation preference divided by the conversion price of $1.50 per share subject to adjustments in the case of stock splits and stock dividends.

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Holders of the Series B Preferred Stock are also entitled to participating dividends whenever dividends in cash securities (other than shares of the Company's common stock paid on shares of common stock) or property are paid on common shares or shares of Series A Preferred Stock. The amount of the dividends will equal the amount to which the holder would be entitled if all shares of Series B Preferred Stock had been converted to common stock immediately prior to the record date.

The warrants had a per share of common stock exercise price of $1.875. The warrants were exercisable upon issuance and expired six months after issuance on July 30, 2018. Warrants were also issued to the investment bank who introduced these investors, which were subsequently transferred to the principal of the investment bank, entitling the holder to purchase 133,432 common shares in the Company at an exercise price of $1.50 per share, up to and including January 30, 2021. On February 6, 2017 the Company entered into an agreement with this investment bank. The agreement calls for monthly retainer payments of $15,000, which are credited against any transaction introductory fee earned by the investment bank. This agreement calls for a 7% transaction introductory fee and warrants equal to 5% of the total transaction amount, at a strike price equal to the offering price for a three-year term.

The holders of the Series B Preferred Stock have no voting rights. In addition, as long as the shares of Series A Preferred Stock are outstanding, the Company may not take certain actions without first having obtained the affirmative vote or waiver of the holders of a majority of the outstanding shares of Series B Preferred Stock. The Company has the option at any time after August 2, 2019 to redeem some or all of the outstanding Series B Preferred Stock for an amount in cash equal to the liquidation preference plus the amount of any accrued but unpaid dividends of the Series B Preferred Stock being redeemed. The holders of the Series B Preferred Stock do not have the ability to require the Company to redeem the Series B Preferred Stock.

The accumulated dividend (unpaid) at December 31, 2018 was approximately $0.3 million. The liquidation preference of the Series B Preferred Stock at December 31, 2018 was approximately $4.3 million, which includes the accumulated dividend.

The Company has the option of forcing the conversion of all or part of the Series B Preferred Stock if at any time the average closing price of the Company's common stock for a thirty-trading day period is greater than $5.4902 prior to August 2, 2019 or greater than $8.2353 at any time. The Company can only exercise this option if it also requires the conversion of the Series A Preferred Stock in the same proportion as it is requiring of the Series B Preferred Stock.

Of the $4 million proceeds, approximately $0.3 million was allocated to the warrants with the remaining $3.7 million allocated to the Series B Preferred Stock. The Series B Preferred Stock was initially convertible into 2,666,667 shares of common stock. The average of the high and low market prices of the common stock on January 30, 2018, the date of the closing of the sale of the preferred stock, was approximately $2.34 per share. At $2.34 per share the common stock into which the Series B Preferred Stock was initially convertible was valued at approximately $6.2 million. This

amount was compared to the $3.6 million of proceeds allocated to the Series B Preferred Stock to indicate that a BCF of approximately $2.6 million existed at the date of issuance, which was immediately accreted as a deemed dividend because the conversion rights were immediately effective. This deemed dividend is included on the statement of operations for the year ended December 31, 2018.

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Additionally, comparison of the $1.50 conversion price of the PIK dividends to the $2.34 commitment date fair value per share indicates that each PIK dividend will accrete $0.84 of BCF as an additional deemed dividend for every $1.50 of PIK dividend accrued. Total cumulative deemed dividend for this PIK dividend for the year- ended December 31, 2018 was approximately $0.1 million.

Pursuant to the Securities Purchase Agreement for the Series B Preferred Stock, the Company terminated our stock purchase agreement with Aspire Capital and this termination resulted in a write-off of our deferred financing costs asset of approximately $1 million.

Series A Preferred Stock - Securities Purchase Agreement

On August 2, 2016, the Company issued 1,020,000 shares of newly created Non-Voting Series A Convertible Preferred Stock (the "Series A Preferred Stock") to General International Holdings, Inc. for $2.8 million or approximately $2.75 per share. Dividends accrue on the Series A Preferred Stock at the rate of 7% per year and will be paid in-kind through an increase in the liquidation preference per share. The liquidation preference, initially $2.7451 per share of Series A Preferred Stock, is the base that is also used to determine the number of common shares into which the Series A Preferred Stock will convert as well as the calculation of the 7% dividend. Each share of Series A Preferred Stock is convertible at the option of the holder into such number of shares of the Company's common stock equal to the liquidation preference divided by the conversion price of $2.7451 per share subject to adjustments in the case of stock splits and stock dividends.

Holders of the Series A Preferred Stock are also entitled to participating dividends whenever dividends in cash securities (other than shares of the Company's common stock) or property are paid on common shares. The amount of the dividends is the amount to which the holder would be entitled if all shares of Series A Preferred Stock had been converted to common stock immediately prior to the record date.

On September 30, 2018 the holders of the Series A Preferred Shares were issued 729 common shares in payment of the dividend for the month of April 2018. On the same date, the holders of the Series A Preferred Shares converted 95,116 preferred shares into 110,530 common shares. The accumulated dividend (unpaid) at December 31, 2018 and 2017 was approximately $0.4 million and $0.3 million dollars, respectively. On April 30, 2018, the holders of the Series A Preferred Shares converted 111,260 preferred shares into 124,882 common shares. The Series A Preferred Shares outstanding at December 31, 2018 was 813,624 shares with a liquidation preference of approximately $2.6 million.

The Company has the option of forcing the conversion of the Series A Preferred Stock if the trading price for the Company's common stock is more than two times the applicable conversion price (approximately $2.75 per share) before the third anniversary of the issuance of the Series A Preferred Stock, or if the trading price is more than three times the applicable conversion price following the third anniversary of issuance. The Company may also redeem the Series A Preferred Stock following the third anniversary of the issuance.

The Series A Preferred Stock was initially convertible into 1,020,000 shares of common stock. The average of the high and low market prices of the common stock on August 6, 2016, the date of the closing of the sale of the Series A Preferred Stock, was approximately $3.315 per share. At $3.315 per share the common stock into which the Series A Preferred Stock was initially convertible was valued at approximately $3.4 million. This amount was compared to the $2.8 million of proceeds of the Series A Preferred Stock to indicate that a BCF of approximately $0.6 million existed at the date of issuance in 2016, which was immediately accreted as a deemed dividend because the conversion rights were immediately effective.

Additionally, comparison of the $2.7451 conversion price of the PIK dividends to the $3.315 commitment date fair value per share indicates that each PIK dividend will accrete $0.5699 of BCF as an additional deemed dividend for every $2.7451 of PIK dividend accrued. The total deemed dividends for this PIK dividend for the year ended December 31, 2018 was approximately $41,000.

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The holders of the Series A Preferred Stock have no voting rights. In addition, as long as 255,000 shares of Series A Preferred Stock are outstanding, the Company may not take certain actions without first having obtained the affirmative vote or waiver of the holders of a majority of the outstanding shares of Series A Preferred Stock. The Company has the option at any time after August 2, 2019 to redeem some or all of the outstanding Series A Preferred Stock for an amount in cash equal to the liquidation preference plus the amount of any accrued but unpaid dividends of the Series A Preferred Stock being redeemed. The holders of the Series A Preferred Stock do not have the ability to require the Company to redeem the Series A Preferred Stock. The liquidation preference of the Series A Preferred Stock at December 31, 2018 and 2017 was approximately $2.6 million and $3.1 million, respectively.

Warrants

Outstanding Warrants	**December 31, 2018**	**December 31, 2017**
Issued to Investors on October 25, 2013, entitling the holders to purchase 250,000 common shares in the Company at an exercise price of $11.50 per common share up to and including April 24, 2021. In 2016, 59,450 of these warrants were exchanged for common stock, and all remaining warrant holders agreed to new warrant terms, which excluded any potential net cash settlement provisions in exchange for a reduced exercise price of $6.25 per share.	163,986	163,986
Issued to Investors on November 17, 2014, entitling the holders to purchase 546,919 common shares in the Company at an exercise price of $11.55 per common share up to and including May 16, 2022. On June 30, 2016, the warrant holders agreed to new warrant terms, which excluded any potential net cash settlement provisions in order to classify them as equity in exchange for a reduced exercise price of $6.25 per share.	546,919	546,919
Issued to an investor on August 10, 2016, entitling the holders to purchase 500,000 common shares in the Company at an exercise price of price of $0.01 per share, up to and including December 31, 2019. These warrants were exercised in January 2018.	—	500,000
Issued to an investment bank and subsequently transferred to a principal of the investment bank regarding the Series B Preferred Stock investment on January 30, 2018, entitling the holder to purchase 133,432 common shares in the Company at an exercise price of $1.50 per share, up to and including January 30, 2021.	133,432	—
Total	844,337	1,210,905

Stock-based Compensation – Stock Options

2015 Equity Incentive Plan

On March 25, 2015, the Compensation Committee and Board of Directors approved the Lightbridge Corporation 2015 Equity Incentive Plan (the "Plan") to authorize grants of (a) Incentive Stock Options, (b) Non-qualified Stock Options, (c) Stock Appreciation Rights, (d) Restricted Awards, (e) Performance Share Awards, and (f) Performance Compensation Awards to the employees, consultants, and directors of the Company. The Plan initially authorized a total of 600,000 shares to be available for grant under the Plan, of which the amount was increased to 1,400,000 shares in May 2016 and 2,900,000 shares in May 2017. The Company held its 2018 Annual Meeting of Stockholders on May 4, 2018. At that Annual Meeting, the Company's stockholders approved an amendment to the Plan to increase the number of shares authorized for issuance thereunder by 3,400,000 shares, resulting in total shares now available under the Plan to 6,300,000 shares.

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Total stock options outstanding at December 31, 2018 and 2017, under the 2006 Stock Plan and 2015 Equity Incentive Plan were 5,604,154 and 3,976,884 of which 3,935,138 and 2,434,148 of these options were vested at December 31, 2018 and 2017, respectively.

The components of stock-based compensation expense included in the Company's consolidated statements of operations for the years ended December 31, 2018 and 2017 are as follows (rounded in thousands):

	Year ended December 31,	
	2018	**2017**
Research and development expenses	$ 965,617	$ 504,913
General and administrative expenses	1,414,288	688,393
Total stock-based compensation expense	$ 2,379,905	$ 1,193,306

Non-Qualified Stock Option Grants and Short-Term Incentive Stock Options

On August 30, 2017, the Compensation Committee of the Board of Directors granted 31,425 non-qualified stock options with a strike price of $1.08 per share, which was the closing price of the Company's stock on the grant date to a consultant of the Company, under the 2015 Equity Incentive Plan. These options have a 10-year contractual term, with a grant date fair market value of approximately $0.80 per option. These options vest annually in equal amounts over a three-year period.

On October 26, 2017, the Compensation Committee of the Board of Directors granted 523,319 short-term incentive stock options and non-qualified stock options under the 2015 Equity Incentive Plan to employees and consultants of the Company. All of these stock options vested immediately, with a strike price of $1.05 per share, which was the closing price of the Company's stock on October 26, 2017. These options have a 10-year contractual term, with a fair market value of approximately $0.73 per option with an expected term of 5 years.

Long-Term Non-Qualified Option Grants

In August 2018 the Compensation Committee of the Board of Directors granted long-term non-qualified stock options relating to 1,752,791 shares to employees, consultants, and directors of the Company. These stock options have a strike price of $0.90. Out of this total, approximately 1,540,263 stock options were issued to employees and

consultants. These non-qualified stock options contain service, performance and market conditions of which one must be achieved in order for the options to vest. The service condition vests one-third annually over a 3-year period with accelerated vesting of these options occurring upon applicable performance or market conditions being satisfied by certain milestone dates. Accelerated vesting of these option grants to employees and consultants would occur upon achievement of either of the following performance and market-based milestones:

1. The Company’s closing stock price is above $3 per share for 10 consecutive trading days by December 31, 2019.

2. The Company secures at least $5 million of funding from the Department of Energy by June 30, 2019.

The remaining approximately 212,528 stock options were service based options issued to the directors of the Company that vest over a one-year period on the anniversary date of the grant. All options granted have a 10-year contractual term.

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In accordance with ASC 718, awards with service, market and performance conditions for the employees and consultants were assigned a fair value of $0.69 per share and the awards with service conditions for the directors of the Company were assigned a fair value of $0.70 per share (total value of $1.2 million). The value was determined using a Monte Carlo simulation. The following assumptions were used in the Monte Carlo simulation model:

Expected volatility	90%
Risk free interest rate	2.84%
Dividend yield rate	0%
Weighted average years	9.8 months
Closing price per share – common stock	$ 0.88

The weighted average years remaining of expected life was itself calculated based on a Monte Carlo simulation under which it was assumed that the options would be exercised, if vested, when the stock reached a price of $4.50, otherwise they would be exercised at expiration, if in the money. The Company determined that it was not probable that the outcome of the above performance-based milestone (i.e., DOE funding) would be met prior to the annual vesting dates. In accordance with ASC 718-10-55-104 the Company then based the amortization period for the compensation expense on the shorter of the explicit service periods or the “derived service period” based solely on the market condition.

On October 26, 2017 the Compensation Committee of the Board of Directors granted 1,299,533 long-term non-qualified stock options to employees, consultants and directors of the Company. Out of this total, approximately 1,120,322 stock options were issued to employees and consultants containing both performance-based and market-based vesting provisions. These performance-based and market-based stock options vest only upon the applicable performance conditions or market conditions being satisfied by certain milestone dates, based on either a graded vesting schedule for each performance-based milestone or an accelerated 100% vesting for one performance-based milestone and one market-based milestone, as discussed below. The graded vesting schedule is based on the achievement of performance-based milestones related to the formation of the joint venture with Framatome and the development milestones for the fuel. Accelerated vesting of all these option grants would occur upon achievement of one or both of the following performance-based and market-based milestones:

1. The Company’s closing stock price is above $3 per share by December 31, 2018; or
2. The Company secures at least a $2 million investment from a commercial nuclear industry entity other than Framatome by December 31, 2019.

Accelerated vesting occurred on January 25, 2018 when the Company’s stock price closed above $3 per share and therefore met the market-based milestone for 100% vesting of these option grants, as set forth in these stock option agreements.

The remaining 179,211 stock options were issued to the directors of the Company and vest over a one-year period on the anniversary date of the grant. These stock options have a strike price of $1.05 per share, which was the closing price of the Company’s stock on October 26, 2017. All options granted have a 10-year contractual term.

In May 2018, shareholder approval was received on contingent grants and approximately 0.7 million of such long-term non-qualified stock options were issued under the 2015 Equity Stock Plan.

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Stock option transactions of the employees, directors, and consultants are summarized as follows for the year ended December 31, 2018:

	Options Outstanding	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value
Beginning of the year	3,976,884	$ 3.58	$ 2.49
Granted	1,784,455	0.90	0.70
Exercised			
Forfeited	(143,980)	1.10	0.83
Expired	(13,205)	30.60	21.13
End of the year	5,604,154	$ 2.72	$ 1.96
Options exercisable	3,935,138	$ 3.50	$ 2.49

Stock option transactions of the employees, directors, and consultants are summarized as follows for the year ended December 31, 2017:

	Options Outstanding	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value
Beginning of the year	2,172,581	$ 6.70	$ 4.83
Granted	1,854,277	1.05	0.77
Exercised	—	—	—
Forfeited	—	—	—
Expired	(49,974)	45.53	38.70
End of the year	3,976,884	$ 3.58	$ 2.49
Options exercisable	2,434,148	$ 4.84	$ 3.36

A summary of the status of the Company’s non-vested options as of December 31, 2018 and 2017, and changes during the years ended December 31, 2018 and 2017, is presented below:

	Shares	Weighted-Average Fair Value Grant Date	Weighted Average Exercise Price
Non-vested – December 31, 2016	450,476	$ 3.60	$ 5.40
Granted	1,854,277	0.77	1.05
Vested	(762,017)	1.67	2.54
Forfeited	—	—	—
Non-vested – December 31, 2017	1,542,736	$ 1.10	$ 1.58
Granted	1,784,455	0.70	0.90
Vested	(1,514,195)	$ 1.27	$ 1.58
Forfeited	(143,980)	0.83	1.10
Non-vested – December 31, 2018	1,669,016	$ 0.54	$ 0.91

i) A total of 101,351 non-qualified 10-year options have been issued, and are outstanding, to advisory board members at exercise prices of $1.05 to $28.05 per share.

ii) A total of 5,016,846 incentive stock options and non-qualified 5-10-year options have been issued, and are outstanding, to the directors, officers, and employees at exercise prices of $0.9 to $43.25 per share. From this total, 1,409,248 options are outstanding to the Chief Executive Officer, who is also a director, with remaining contractual lives of 0.3 years to 9.6 years. All other options issued to directors, officers, and employees have a remaining contractual life ranging from 0.3 years to 9.6 years.

iii) A total of 485,957 non-qualified 3-10-year options have been issued, and are outstanding, to consultants at exercise prices of $0.9 to $43.25 per share.

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As of December 31, 2018, there was approximately $0.8 million of total unrecognized compensation cost related to non-vested share-based compensation arrangements granted under the plans. That cost is expected to be recognized over a weighted-average period of approximately 0.54 years. For stock options outstanding at December 31, 2018, the intrinsic value was approximately $0. For stock options outstanding at December 31, 2017, the intrinsic value was approximately $0.3 million.

The following table provides certain information with respect to the above-referenced stock options that were outstanding and exercisable at December 31, 2018:

	Stock Options Outstanding			Stock Options Vested		
Exercise Prices	Weighted Average Remaining Contractual Life -Years	Number of Awards	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life -Years	Number of Awards	Weighted Average Exercise Price
$ 0.90-$1.04	9.60	1,616,402	$ 0.90	—	0	$ —
$ 1.05-$2.00	8.57	2,560,330	$ 1.18	8.56	2,507,716	$ 1.18
$ 2.01-$6.00	6.86	813,583	$ 4.59	6.86	813,583	$ 4.59
$ 6.01-$20.00	4.16	501,334	$ 7.48	4.16	501,334	$ 7.48
$ 20.01-$43.25	0.72	112,505	$ 29.46	0.72	112,505	$ 29.46
Total	8.07	5,604,154	$ 2.72	7.42	3,935,138	$ 3.50

The following table provides certain information with respect to the above-referenced stock options that were outstanding and exercisable at December 31, 2017:

	Stock Options Outstanding			Stock Options Vested		
Exercise Prices	Weighted Average Remaining Contractual Life -Years	Number of Awards	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life -Years	Number of Awards	Weighted Average Exercise Price
$ 1.05-$2.00	9.56	2,528,666	$ 1.18	9.28	1,197,708	$ 1.33
$ 2.01-$6.00	7.86	821,174	$ 4.59	7.86	651,429	$ 4.58
$ 6.01-$20.00	5.12	505,694	$ 7.47	4.93	463,661	$ 7.58
$ 20.01-$45.00	1.66	118,016	$ 29.85	1.66	118,016	$ 29.85
$ 45.01-$72.00	0.18	3,334	$ 50.25	0.18	3,334	$ 50.25
Total	8.40	3,976,884	$ 3.58	7.70	2,434,148	$ 4.84

Weighted average assumptions used in the Black Scholes option-pricing model for the years ended December 31, 2018 and 2017, were as follows:

	Year ended December 31, 2018	Year ended December 31, 2017
Average risk-free interest rate	2.79%	2.15%
Average expected life- years	6.0	5.67
Expected volatility	90.11%	87.24%
Expected dividends	0.0%	0.0%

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In accordance with ASC 718, the market-based and performance-based long-term non-qualified option grants awards issued in 2017 were assigned a fair value of $0.80 per option share (total value of $0.9 million) on the date of grant using a Monte Carlo simulation. The following assumptions were used in the Monte Carlo simulation model:

Expected volatility	87.5% to 91%
Risk free interest rate	2.24% to 2.42
Dividend yield rate	0%
Weighted average remaining expected life	4.2 years
Closing price per share – common stock	$ 1.05

Note 10. Business Segment Results

In the year ended December 31, 2017, the Company had two principal business segments, (1) the technology business and (2) the consulting services business. These business segments were determined based on the nature of the operations and the services offered. Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief decision-makers of the Company, in deciding how to allocate resources and in assessing performance. The Chief Executive Officer and Chief Financial Officer have been identified as the chief operating decision makers. The chief operating decision makers direct the allocation of resources to operating segments based on the profitability, the cash flows, and the business plans of each respective segment. Corporate expenses pertain to certain costs that are not allocated to the reportable segments, primarily consisting of unallocated corporate overhead costs, including administrative functions.

As of January 1, 2018, the Company no longer had a consulting business segment and there was no consulting income for the year ended December 31, 2018 as the Company focused its efforts on the technology business segment and commercialization of the metallic nuclear fuel. Because of this for the year ended December 31, 2018, the Company had only one business segment, the technology business, and therefore is not required to report its financial results on a business segment basis.

The business segment results for the year ended December 31, 2017 was as follows:

	Consulting	Technology	Corporate and Eliminations	Total
Revenue	$ 175,446	$ —	$ —	$ 175,446
Segment profit (loss) - pre-tax	$ (78,513)	$ (2,282,938)	$ (4,743,446)	$ (7,104,897)
Total assets	$ 10,400	$ 1,367,692	$ 5,567,901	$ 6,945,993

Interest expense	$ —	$ —	16,095	$ 16,095

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Note 11. Related Party Transactions

The Company invested approximately $5.6 million in Enfission from Enfission's date of inception on January 24, 2018 to December 31, 2018. The Company entered into a management and administrative services agreement with Enfission on January 25, 2018 whereby the Company provides four of its personnel to Enfission, at a rate of $100,000 per person per year, for a total charge to Enfission of $400,000 in 2018. This $400,000 amount charged to Enfission was recorded as a $200,000 reduction of general and administrative expenses and a $200,000 reduction of research and development expenses.

The Company also provided research and development consulting services and management services to Enfission. The total consulting services was $1.1 million for the year ended December 31, 2018, recorded under the caption "Other income from joint venture" in the accompanying consolidated statement of operations. As of December 31, 2018, the total receivable due from Enfission was approximately $0.1 million, which represents consulting fees Lightbridge charged to Enfission and reimbursable expenses paid by Lightbridge on Enfission's behalf.

Note 12. Subsequent Events

Investment in Enfission

In January 2019, the Company invested $1.4 million in Enfission as an additional equity contribution.

ATM sales and Termination of New ATM agreement

Sales under the ATM that were made from January 1, 2019 to March 29, 2019 were approximately 3.2 million shares that totaled net proceeds of approximately $1.9 million. Effective March 29, 2019, the Company and the Distribution Agent terminated the New ATM agreement.

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SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

LIGHTBRIDGE CORPORATION

Date: March 29, 2019

By: */s/ Seth Grae*
Seth Grae
Chief Executive Officer,
President and Director

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Seth Grae and Larry Goldman, jointly and severally, his or her attorney-in-fact, with the power of substitution, for him or her in any and all capacities, to sign any amendments to this Annual Report on Form 10-K and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his or her substitute or substitutes, may do or cause to be done by virtue hereof.

In accordance with the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities on March 29, 2019.

Signature	**Title**
/s/ Seth Grae Seth Grae	Chief Executive Officer, President and Director (Principal Executive Officer)
/s/ Larry Goldman Larry Goldman	Chief Financial Officer, and Treasurer (Principal Financial and Accounting Officer)
/s/ Thomas Graham, Jr. Thomas Graham, Jr.	Director
/s/ Victor Alessi	Director

Victor Alessi

/s/ Kathleen Kennedy Townsend Kathleen Kennedy Townsend	Director
/s/ Daniel Magraw Daniel B. Magraw	Director