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

FORM 10-K

(Mark One)

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

For the fiscal year ended **December 31, 2020**

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	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.001 par value	**LTBR**	**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 ☒

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 ☒

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 ☒ 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 ☒ No ☐

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

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

At June 30, 2020, 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, 2020) was $17,012,314.

At March 24, 2021 there were 6,570,110 shares of the registrant's common stock issued and outstanding.

Documents Incorporated by Reference

None

LIGHTBRIDGE CORPORATION

FORM 10-K
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2020

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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”, “aim”, “will”, or 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 and other steps to commercialization of Lightbridge Fuel™;
- any projections of sales, earnings, revenue, margins, or other financial items;
- any statements of the plans, strategies, and objectives of management for future operations and the timing and outcome of the development of our nuclear fuel technology;
- any statements regarding future economic conditions or performance;
- uncertainties related to conducting business in foreign countries;
- any statements about future financings and liquidity
- the Company’s anticipated financial resources and position; and
- all assumptions, expectations, predictions, intentions, or beliefs about future events and other statements that are not historical facts.

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 and the degree of market adoption of the Company’s product and service offerings;
- dependence on strategic partners;
- our ability to fund general corporate overhead and outside research and development costs;
- the demand for fuel for nuclear reactors, including small modular reactors, and our ability to attract new customers;
- our ability to manage the business effectively in a rapidly evolving market;
- our ability to employ and retain qualified employees and consultants that have experience in the nuclear industry;
- competition and competitive factors in the markets in which we compete, including from accident tolerant fuels;

- the availability of nuclear test reactors and the risks associated with unexpected changes in our nuclear fuel development timeline;
- the increased costs associated with metallization of our nuclear fuel;
- risks associated with the further spread and uncertainty of COVID-19, including the ultimate impact of COVID-19 on people, economies, our ability to access capital markets, the Company's financial position, results of operations or liquidity;
- public perception of nuclear energy generally;
- changes in laws, rules, and regulations governing our business;
- changes in the political environment;
- development and utilization of, and challenges to, our intellectual property;
- the risks associated with potential shareholder activism;
- potential and contingent liabilities; and
- the other risks identified in Item 1A. *Risk Factors* included herein.

Most of these factors are beyond our ability to predict or control and you should not put undue reliance on any forward-looking statement. 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 for any reason after the date of the filing of this report, to conform these statements to actual results or to changes in our expectations, except as required by law.

PART I

ITEM 1. BUSINESS

When used in this Annual Report on Form 10-K, the terms “Lightbridge”, the “Company”, “we”, “our”, and “us” refer to Lightbridge Corporation together with its wholly-owned subsidiaries Lightbridge International Holding LLC and Thorium Power Inc. Lightbridge’s principal executive offices are located at 11710 Plaza America Drive, Suite 2000, Reston, Virginia 20190 USA.

Overview

At Lightbridge we are developing the next generation of nuclear fuel to impact in a meaningful way the world’s climate and energy problems. Our nuclear fuel could significantly improve the economics, safety, and proliferation resistance of nuclear fuel in existing and new nuclear reactors, large and small, with a meaningful impact on addressing climate change, and air pollution, all while benefiting national security. 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 in the coming decades. We are developing our nuclear fuel to enable that to happen. In particular, we are focusing on the potential for large numbers of small modular reactors (SMRs) that we believe can benefit from our fuel with improved economics and load following when included on an electric grid with renewables. Today, there are approximately 440 operable power reactors worldwide, of which about 400 are operating. We expect slow net growth in this number as old reactors close and fewer new large reactors are built, due to the inherent challenges facing new build large reactors, including regulatory and political challenges, financings, and the ability for large reactors to be profitable without running constantly.

We believe our metallic fuel will offer 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 fuel. 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, or any traditional nuclear fuel.

Emerging nuclear technologies that many in the industry believe have the potential to generate massive amounts of power include SMRs, which are now in the development and licensing phases. We expect that Lightbridge Fuel™ can provide SMRs with all the benefits our technology brings to large reactors, with the benefits being more meaningful to the economic case for deployment of SMRs. Lightbridge Fuel™ is expected to generate more power in SMRs than traditional nuclear fuels, which will help decarbonize sectors that are now powered by fossil fuels. We also plan to explore using Lightbridge Fuel™ in new SMRs to produce hydrogen for liquid non-carbon fuels for use in other, hard-to-decarbonize sectors such as aviation and shipping. Our ongoing research and development (R&D) initiatives are entirely compatible with Lightbridge Fuel™ powering SMRs for multiple purposes. The first SMRs that could use our fuel are expected to begin operations in 2029.

We have built a significant portfolio of patents reflecting years of R&D, and we anticipate testing of our fuel through third party vendors and others, including the United States Department of Energy (DOE) national laboratories. Currently, we are in the process of transitioning most of our R&D activities to U.S. national laboratories, and have begun to negotiate contracts for additional future scopes of work.

Our Nuclear Fuel

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 use in currently operating and 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 will provide.

The fuel in a nuclear reactor generates heat energy. That heat is then converted through steam into electricity that is delivered to the transmission and distribution grid. 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 nearing the limit of its design and licensed 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 large and small; we are working to develop that new fuel.

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:

- 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 pressurized water reactors (PWRs), including SMRs; or

- 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 PWRs, including in Westinghouse-type four-loop PWR plants which are currently constrained to an 18-month operating cycle by oxide fuel enriched up to 5% in the isotope uranium-235, or increasing the power potentially up to 17% while retaining an 18-month operating cycle.

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 the case of implementing a power uprate. In addition to projected electricity production cost savings, we believe our technology can result in utilities or countries needing to deploy fewer new reactors to generate the same amount of electricity (in the 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 both increase the power output of those reactors as well as enable them to load follow with electric grid demands, which have become increasingly variable with large additions of intermittent renewable generation.

Nuclear Industry and Addressable Market

Overview of the Nuclear Power Industry

Presently, nuclear power provides approximately 4.5% of the world's total energy from all sources, including approximately 10% of the world's electricity. According to the World Nuclear Association, as of February 2021 there were approximately 440 operable nuclear power reactors worldwide, mostly light water reactors, with the most common types being PWRs, including Russian-designed water-water energetic reactors (VVERs), and boiling-water reactors (BWRs). Nuclear power provides a non-fossil fuel, low-carbon energy solution that can meet baseload electricity needs.

Of the world's existing reactors currently in operation, PWRs (including VVERs) account for more than 60% of the net operating capacity, with BWRs being the second most prevalent and accounting for approximately 14%. Of the nuclear reactors currently under construction, approximately 80% are PWRs (including VVERs) with a rated electric power output of 1,000 megawatts ("MWe") or greater.

Almost all of the new build reactor capacity currently under construction 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 a combination of gravity, natural convection, and/or resistance to high temperatures.

We initially focused our fuel design on existing U.S. PWRs because they represent a large market segment for which Lightbridge Fuel™ could provide significant economic and safety benefits through a power uprate up to 10% along with an operating cycle extension from 18 to 24 months, or a power uprate of 17% without extending the cycle length. We estimate that in order to produce all the clean energy that the world will need in 2050 (the seminal year for climate change according to the Intergovernmental Panel on Climate Change) using nuclear power, it would require the equivalent of about an additional 20,000 reactors with generating capacities of 1,000 megawatts of electricity each. Realistically, the industry will not grow from approximately 440 to over 20,000 of these reactors during this timeframe. We expect that the net worldwide growth in the number of large reactors between now and 2050 will be fewer than 200, with most new plants built by China and Russia, and hence difficult for Lightbridge Fuel™ to reach. Furthermore, nuclear power will not generate all of the clean energy by itself. Existing large reactors can present an additional market opportunity for Lightbridge Fuel™, but cannot by themselves move the needle on climate change.

In contrast, SMRs can be pivotal contributors to preventing further climate change, while providing the necessary energy capacity to meet global energy needs. Large reactors have considerable capital costs and must operate at full power 24/7 to be profitable. Due to their modular construction, SMRs are expected to have much lower capital costs per unit, thus making their deployment easier to finance by private and government sectors. Furthermore, one of the limiting factors relating to existing large reactors is their inability to load follow efficiently. Load following means increasing or decreasing power as other electricity sources, mostly wind and solar power, come on and off the electric grid. Natural gas plants are currently used to back up wind and solar generation since these plants can easily increase or decrease the energy they generate based on need. SMRs are expected to have the ability to reduce their power (i.e., by shutting down or reducing the power out of some units while running the other units at full power) while the wind is blowing, or the sun is shining. We believe that Lightbridge Fuel™ will allow SMRs greater flexibility in changing power levels, making it easier for SMRs to replace natural gas to load follow with renewables, helping to expand markets for renewables and SMRs together as countries seek to decarbonize energy generation. Other components of the reactor would also need to be designed to handle the changes in power, and we believe that it is feasible, with fuel capability being one of the current limiting factors to nuclear power plants balancing with wind and solar.

We expect that Lightbridge Fuel's™ most significant economic benefit will be to provide a 30% power uprate. However, the existing large reactors cannot realize that benefit because their systems are not designed to handle that much of an increase in power. The most additional power existing large PWRs could take from Lightbridge Fuel™ is estimated at approximately 17%. Only newly designed large reactors could benefit from the full 30% greater power available from Lightbridge Fuel™. While we believe that only a limited number of new, large reactors will be built, we expect that much larger numbers of SMRs will be deployed in the future.

Target Market for Lightbridge Fuel™

Our target market segments include water-cooled commercial power reactors, such as PWRs, BWRs, VVER reactors, CANDU heavy water reactors, water-cooled SMRs, as well as water-cooled research reactors. However, we are currently focused on prioritizing opportunities with SMRs in the near-term.

Nuclear Power as Clean and Low Carbon Emissions Energy Source

Nuclear power provides clean, reliable baseload electricity. According to the World Nuclear Association (WNA), nuclear power plants produce no greenhouse gas emissions during operation, and over the course of their lifecycles, produce 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, U.S. 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 or no-carbon liquid fuels. 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, for electricity generation and to produce hydrogen for liquid fuels.

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

The nuclear accident at the Fukushima Daiichi nuclear power plant in Japan following the strong earthquake and massive tsunami that occurred on March 11, 2011, increased public concerns related to nuclear power, resulting in a slowdown in, or in some cases, a complete halt to, new construction of nuclear power plants as well as the 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. 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 WNA. 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.

Anticipated Safety Benefits of Lightbridge Fuel™

The expected safety benefits of Lightbridge Fuel™ are as follows:

- Operates at lower operating temperatures than current conventional nuclear fuel, contributing to lower stored thermal energy in the fuel rods;
- Under design-basis accidents when there is a loss of coolant in the reactor, does not generate explosive hydrogen gas;
- Enhances structural integrity of the nuclear fuel rods;
- Has lighter and stiffer fuel assembly, which may contribute to improved seismic performance;
- May buy more time to restore active cooling in the reactor during Beyond Design-Basis (BDB) events.

Due to the significantly lower fuel operating temperature and higher thermal conductivity, our metallic nuclear fuel rods are also expected to provide major improvements to safety margins during certain off-normal events. The U.S. Nuclear Regulatory Commission (US-NRC) 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 a hydrogen explosion, which contributed to the damage at the Fukushima Daiichi nuclear power plant. Lightbridge Fuel™ is designed to prevent hydrogen gas generation in design-basis LOCA situations. This is a major safety benefit.

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:

- One-half of the amount of plutonium produced and remaining in the spent fuel as compared to conventional uranium dioxide fuels; and

- Lower Plutonium-239 fraction compared to uranium dioxide fuel; therefore, our spent fuel would be unsuitable as a source for weapon purposes.

The Company plans to conduct the initial testing and demonstration of its advanced metallic nuclear fuel in the United States.

Development of Lightbridge Fuel™

Recent Developments

- We were awarded a GAIN voucher by the U.S. Department of Energy (DOE) in 2019 for the experiment design for irradiation of material samples of Lightbridge metallic fuel in the Advanced Test Reactor (ATR) at Idaho National Laboratory (INL). On April 22, 2020, we entered into a Cooperative Research and Development Agreement (CRADA) with Battelle Energy Alliance, LLC (BEA), the DOE's operating contractor at INL. The project commenced in the second quarter of 2020 and was originally expected to be completed in the second quarter of 2021. However, because of project staffing issues at INL related to the laboratory's COVID-19 restrictions and U.S. export control matters, the project is currently expected to be completed by the end of the third quarter of 2021.

- Lightbridge is currently demonstrating in 2021 the manufacturing processes for the three-lobed variant of its uranium-zirconium (U-Zr) fuel technology for use in certain SMRs by producing several SMR-length prototype fuel rods with surrogate materials.

- We expanded our patent portfolio by successfully obtaining 30 new patents in 2020 and, as of the filing date an additional 2 patents in 2021, in the United States and other key foreign countries. The new patents will help safeguard the Company's intellectual property, which is an integral component of the Company's plans to monetize the Lightbridge Fuel™ technology.

Future Steps Toward the Development and Commercialization of Nuclear Fuel Assemblies

We anticipate near-term fuel development milestones for Lightbridge Fuel™ over the next 2-3 years will consist of the following:

- Manufacture three-lobe SMR-length surrogate rods. These rods will be used to optimize aspects of the manufacturing process, develop novel quality control processes for rod inspection, and perform initial corrosion testing of our extruded, metallurgically-bonded fuel rod technology.

- Complete the scope of work relating to the recent GAIN Voucher award in collaboration with INL;

- Enter into an agreement to manufacture our nuclear fuel material samples for test reactor irradiation;

- Demonstrate our manufacturing technology using depleted or natural uranium;

- Complete the design and manufacturing of a multi-lobe fuel rod with enriched uranium for irradiation experiments in a test reactor.

The long-term milestones towards development and commercialization of nuclear fuel assemblies include, among other things, irradiating nuclear material samples and prototype fuel rods in test reactors, conducting post-irradiation examination of irradiated material samples and/or prototype fuel rods, performing thermal-hydraulic experiments, performing seismic and other out-of-reactor experiments, designing a lead test assembly, entering into a lead test rod/assembly agreement(s) with a host reactor(s), demonstrating the production of lead test rods and/or lead test assemblies at a pilot-scale fuel fabrication facility and demonstrating the operation of lead test rods and/or lead test assemblies in commercial reactors. There are inherent uncertainties in the cost and outcomes of the many steps needed for successful deployment of our fuel in commercial nuclear reactors, which makes it difficult to predict the timing of the commercialization of our nuclear fuel technology with any accuracy. However, based on our best estimate and assuming adequate R&D funding levels, we expect to begin receiving purchase orders for initial reload batches from utilities in 15-20 years, with final qualification (i.e., deployment of fuel in the first reload batch) in a commercial reactor taking place approximately two years thereafter.

Please see Item 1A. *Risk Factors* in this Annual Report on Form 10-K for a discussion of certain risks that may delay or impair such developments including without limitation the availability of financing and the many risks inherent in developing a new type of nuclear fuel.

Impact of COVID-19 to our Business

The recent COVID-19 pandemic has impacted our business operations and results of operations for the year ended December 31, 2020, resulting in the reduction of our R&D expenses and an increase in our general and administrative expenses due to severance payments made to former employees, as described in more detail in Part II. Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*, of this Annual Report on Form 10-K. The future impacts of the COVID-19 pandemic on our financial position, results of operations and future liquidity and capital resources availability is unknown and uncertain.

In an effort to protect the health and safety of our employees, we took proactive, aggressive action from the earliest signs of the outbreak in China, including working from home and suspending employee travel. In an effort to contain COVID-19 or slow its spread, governments around the world have also enacted various measures, including orders to close all businesses not deemed "essential," isolate residents to their homes or places of residence, and practice social distancing when engaging in essential activities.

We will continue to actively monitor the COVID-19 situation and may take further actions altering our business operations that we determine are in the best interests of our employees and stakeholders, or as required by federal, state, or local authorities. It is not clear what the potential effects any such alterations or modifications may have on our financial position, results of operations or liquidity, including the effects on our employees and future prospects, including our R&D activities for the fiscal 2021 and beyond.

Future Potential Collaborations and Other Opportunities

In the ordinary course of business, we engage in periodic reviews of opportunities to invest in or acquire companies or units within companies to leverage operational synergies and establish new streams of revenue. We will be opportunistic in this regard, and may also partner or contract with entities that could be synergistic to our fuel business or present an attractive growth opportunity in a clean technology space.

Competition

Currently, competition with respect to the design of commercially viable nuclear fuel products is limited to conventional uranium dioxide 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 additional benefits. While we believe conventional uranium dioxide fuel may be capable of achieving power up-rates of up to 10% in existing PWRs or extending the fuel cycle length from 18 to 24 months, 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 dioxide fuel would raise the cost and reduce the efficiency 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.

In addition to conventional uranium dioxide fuel, potential competition to our metallic fuel technology can come from so-called Accident Tolerant Fuels (ATF). We regard ATF as part of a series of relatively small changes to conventional uranium dioxide fuel over time. ATF uses uranium dioxide with added substances and/or changes to the cladding tube. After the accident at the Fukushima Daiichi nuclear power plant in March 2011, the U.S. Congress directed the DOE to investigate every aspect of nuclear plant operation including the existing uranium dioxide fuel pellets contained in 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 seeking ATF demonstration programs in their operating reactors. For example, in February 2021, Framatome publicly announced completion of the initial 18-month cycle of lead test assembly (LTA) operation with its chromium-doped ATF design. Similar ATF concepts are being tested by Westinghouse, GE Nuclear, TVEL, and others.

When the DOE originally launched the ATF program, the program was focused solely on achieving enhanced safety benefits, such as extra "coping time" during severe accidents. Over the past year, many ATF vendors concluded that the unexpectedly small accident tolerance benefits their ATF fuel concepts offered (such as several extra hours of coping time during severe accidents rather than their original goal of approximately 72 hours) were not enough of an incentive for nuclear utilities to adopt ATF designs, which would cost more and have a reduced the efficiency relative to conventional uranium dioxide fuels. As a result, ATF vendors have begun exploring opportunities for extending the operating cycle length from 18 to 24 months in existing PWRs by going to higher enrichments (i.e., from approximately 5% to 7-8% enrichments) with ATF designs. If they are successful in extending the cycle length to 24 months in a cost-effective way, this could give sufficient economic incentive for nuclear utilities to switch to the ATF designs in the coming years. This recent shift in positioning by many ATF vendors represents a competitive threat to Lightbridge for use in existing large PWRs, as ATF vendors are now trying to encroach into a critical element of Lightbridge's value proposition, i.e., the ability of Lightbridge Fuel™ to extend the cycle length from 18 to 24 months in existing large PWRs. While it is not certain that the ATF vendors will be successful in this approach, if ATF could provide for two-year cycles, it could severely weaken or undermine our economic value proposition in existing large PWRs. That said, we believe Lightbridge Fuel™ remains the only advanced light-water reactor fuel in development that can provide power uprates, cycle length extensions, improved safety, and load following in a single product as desired by the utilities.

The above developments make prioritizing existing large PWRs less attractive than we had previously expected. Depending on the ultimate outcome of ATF technologies and government funding available to support advanced fuel technologies for existing large PWRs, this market segment could become more accessible again in the future. However, in the near-term, we believe that a realignment of our corporate initiatives with a focus on SMRs could lead to more beneficial, valuable, nearer-term opportunities for Lightbridge.

We believe the 30% power uprate our fuel could provide to a new SMR designed to accommodate the full power uprate could reduce the upfront capital investment per kilowatt and generate positive incremental profit margin for SMR plants. At the same time, due to fuel design constraints, we do not expect ATF technologies to achieve the same power uprate capability in SMRs. This could give Lightbridge strong competitive advantages over ATF in this market segment.

Nuclear power faces competition from other sources of electricity as well, including natural gas, which is currently the cheapest option for power generation in the U.S. and has resulted in some utilities abandoning nuclear initiatives. 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.

Raw Materials

We do not plan to utilize any raw materials directly in the conduct of our operations (except for potential purchases of certain raw materials in small quantities for testing and demonstration efforts). Fuel fabricators which will ultimately fabricate fuel products incorporating our nuclear fuel technology will acquire the 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. However, the availability of uranium metal enriched to 19.75% in the isotope uranium 235 is currently limited to small quantities sufficient only for research and testing purposes. Deployment of our fuel will necessitate increasing enrichment level from 5% to 19.75% at enrichment facilities, as well as deployment of de-conversion/metallization capability at a commercial scale, as well as the design and licensing of a shipping container capable of accommodating fuel assemblies with uranium metal enriched up to 19.75%. We expect that utilities will contract with nuclear fuel fabricators to order nuclear fuel assemblies, and then ship the completed nuclear fuel assemblies to the reactor sites.

Government Support/Approvals, Relationships with Critical Development Partners/Vendors and Other Government Regulation

Due to our long fuel development timelines (i.e., currently estimated at 15-20 years) and significant amount of R&D funding required to bring our next generation nuclear fuel technology to market (i.e., estimated at approximately $10 million per year in R&D funding, excluding corporate overhead), substantial U.S. government funding and political support will be essential to the success of our fuel development program. Without significant U.S. government funding and cost sharing contributions toward our fuel development activities, it will be unfeasible for the Company to fund this fuel development effort on its own.

President Biden's energy platform includes advanced nuclear as part of "critical clean energy technologies." While the executive branch team is still being assembled, we understand that the new administration will prioritize advanced nuclear technologies, including advanced fuels and SMRs, as part of its nuclear energy policy. President Biden has brought the U.S. back into the Paris Agreement on climate change, with the goal that the U.S. electricity sector be carbon neutral by 2035, just 14 years from now. We believe Lightbridge Fuel's™ coupling with SMRs can enhance the already strong case for SMRs and attract more private and government investment.

In addition to U.S. government funding, political support for our project is similarly important. The sales and marketing of our services and technology internationally may be subject to U.S. 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 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.

The testing, fabrication and use of nuclear fuels by 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 and Uncertainties

1. U.S. government funding support

Presently, our ability to fund our fuel development program at a level necessary to adhere to our projected fuel development timelines is severely limited due to internal funding constraints. As previously mentioned, to stay on track, we need to invest, on average, $10 million per year in R&D activities over the next 15-20 years. This is in addition to our corporate overhead and other fixed costs, such as in-house project management and R&D personnel. As a result, we believe seeking and securing significant U.S. government funding to support our fuel development program is essential for us to be successful in our fuel development and commercialization efforts. Prioritization of SMRs over existing large reactors, along with the significant government funding opportunities we expect to go toward SMRs in the coming years, may help accelerate our projected fuel development timelines by up to a few years for SMR applications.

2. Availability of suitable test loops in the ATR

After the Halden research reactor was shut down in 2018, we embarked on a global search for an alternative for loop irradiation testing of our metallic fuel rods. Ultimately, we settled on the ATR at INL and applied to DOE for and won a GAIN Voucher in December 2019 to kick off our initial collaboration with the U.S. national laboratory complex. Our initial understanding was that we would have access to a government-funded PWR water test loop in the ATR to generate sufficient data to support our LTA testing and eliminate the need for lead test rod (LTR) testing in a large commercial reactor.

However, while the ATR has enough space for four test loops where fuel rods can be irradiated, the reactor currently has only one such test loop, limiting how much fuel rod material that can be inserted into the reactor as well as its duration in the reactor. We believe that INL could add up to all three additional test loops, at a total design and construction cost of approximately $35 million, which we have determined to be an unmanageable cost for Lightbridge. We plan to work with the government and industry to have those test loops added without Lightbridge paying for them. We believe we have strong arguments for the government to pay most of the cost for the additional test loops.

If new test loops are not added to the ATR, loop irradiation testing in the ATR may not provide sufficient data to justify regulatory approval for LTA testing in a large commercial PWR in a commercially feasible timeframe. This would likely necessitate an extra fuel development step of LTR testing in a large commercial PWR in addition to the ATR loop testing before LTA testing could commence. As a result, our fuel development timelines would be extended to 15-20 years before securing our first orders for batch reloads in large commercial PWRs. Consequently, the projected fuel development costs would increase substantially, making it unfeasible for Lightbridge to fund this fuel development effort on our own.

3. Partnerships with fuel vendor and nuclear utility

The ability to design and fabricate the LTAs and engagement with a nuclear utility that is willing to accept our LTAs, is required to demonstrate our fuel in a commercial reactor. In the U.S., 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 nuclear utilities. With a shift in focus toward SMRs, we plan to build additional relationships with SMR reactor and fuel vendors, as well as existing and/or potential SMR utility customers.

4. Supply chain infrastructure for HALEU

Establishment of required supply chain infrastructure to support high-assay low-enriched uranium (HALEU) metallic fuel is a necessary step in the commercialization of our nuclear fuel. Existing commercial nuclear infrastructure, including conversion facilities, enrichment facilities, de-conversion 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% in the isotope uranium-235. 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 receive and handle our fuels. Those nuclear facilities will need to complete a regulatory licensing process and obtain regulatory approvals in order 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.

5. Need for experimental data on our metallic fuel

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 reactor conditions. 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 the ATR at INL as part of this effort and plan to work with the government and industry to have additional test loops constructed.

6. Need for development of new analytical models to support our metallic fuel

Existing analytical models may be inadequate to fully analyze our metallic fuel. 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.

7. Need for development and demonstration of qualified fabrication process for our metallic fuel rods

Demonstration of a fabrication process both for semi-scale irradiation fuel samples and subsequently for full-length (12-14 feet) metallic fuel rods for large PWR LTAs and shorter length for SMRs (~6 feet) is required. Past operating experience in icebreaker reactors with differently shaped fuel rods with a similar metallic fuel composition involved fabrication of metallic fuel rods up to 3 feet in length. Fabrication of full-length (approximately 3.5 to 4.5 meters) PWR metallic fuel rods for large PWRs has yet to be fully demonstrated. In 2019, we demonstrated co-extrusion of full-length rods using surrogate materials (i.e., rods which replaced the uranium component with a suitable analogue).

Settlement of Arbitration

On February 11, 2021, the Company entered into a settlement agreement (the "Settlement Agreement") with Framatome SAS and Framatome Inc. (together, "Framatome"), resolving the pending claims and counterclaims between the parties in arbitration and judicial proceedings related to the parties' inactive joint venture, Enfission, LLC. Under the terms of the Settlement Agreement, all joint venture agreements will be terminated and the joint venture will be dissolved and wound-up following satisfaction of the conditions set forth in the Settlement Agreement. Lightbridge will pay Framatome approximately $4.2 million for outstanding invoices for work performed by Framatome and other expenses incurred by Framatome. Enfission was dissolved on March 23, 2021. See Part I. Item 3. *Legal Proceedings*, for more information.

Our Intellectual Property

Our nuclear fuel technologies are protected by multiple U.S. and international patents. Set forth below are the patents which we consider material to our business based on our current plans. The expiration dates of these patents, unless it's a divisional patent filing, are generally 20 years from their application dates.

Country	Application Date	Issue Date	Title	Case Status
Fabrication Method Using The Casting Route				
Belgium	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Bulgaria	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Czech Republic	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Europe	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Hungary	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Finland	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
France	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Germany	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Spain	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Sweden	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Turkey	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
United Kingdom	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
China	May 11, 2011	March 27, 2018	FUEL ASSEMBLY	Granted
United States of America	February 20, 2018		FUEL ASSEMBLY	Pending
Korea	May 11, 2011	November 12, 2019	FUEL ASSEMBLY	Granted
Korea	November 12, 2019	October 7, 2020	FUEL ASSEMBLY	Granted
Fabrication Method Using The Powder Metallurgy Route				
Australia	May 11, 2011	July 2, 2015	FUEL ASSEMBLY	Granted
Belgium	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Bulgaria	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Bulgaria	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Canada	May 11, 2011		FUEL ASSEMBLY	Pending
Canada	May 11, 2011	April 28, 2020	FUEL ASSEMBLY	Granted
China	May 11, 2011	May 18, 2016	FUEL ASSEMBLY	Granted
China	May 11, 2011	March 27, 2018	FUEL ASSEMBLY	Granted
Czech Republic	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Czech Republic	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Europe	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Finland	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
France	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Germany	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Spain	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Sweden	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Turkey	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Europe	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Finland	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
France	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Germany	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Hungary	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Hungary	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
India	May 11, 2011		FUEL ASSEMBLY	Pending
Japan	May 11, 2011	September 9, 2016	FUEL ASSEMBLY	Granted
Sweden	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Turkey	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
United Kingdom	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
United Kingdom	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
United States of America	June 3, 2013	July 31, 2018	FUEL ASSEMBLY	Granted
United States of America	February 20, 2018		FUEL ASSEMBLY	Pending
All-Metal Fuel Assembly Design And A Mixed Grid Pattern of Metallic Fuel Rods				
United States of America	November 15, 2013	January 1, 2019	FUEL ASSEMBLY	Granted
Belgium	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
Bulgaria	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
Canada	May 1, 2014		FUEL ASSEMBLY	Pending
China	May 1, 2014	November 24, 2017	FUEL ASSEMBLY	Granted
Czech Republic	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Eurasian Patent Organization	May 1, 2014	October 31, 2019	FUEL ASSEMBLY	Granted
Eurasian Patent Organization	May 1, 2014	October 30, 2020	FUEL ASSEMBLY	Granted
Europe	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
Finland	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
France	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
Germany	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
Hungary	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
India	May 1, 2014		FUEL ASSEMBLY	Pending
Japan	May 1, 2014	July 13, 2018	FUEL ASSEMBLY	Granted
Korea	May 1, 2014		FUEL ASSEMBLY	Pending
Spain	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
Sweden	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
Turkey	May 1, 2014	January 31, 2018	FUEL ASSEMBLY	Granted
Australia	September 16, 2015	August 27, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Canada	September 16, 2015		NUCLEAR FUEL ASSEMBLY	Pending
China	September 16, 2015	April 2, 2019	NUCLEAR FUEL ASSEMBLY	Granted
Eurasian Patent Organization	September 16, 2015	December 13, 2019	NUCLEAR FUEL ASSEMBLY	Granted
Japan	September 16, 2015	June 17, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Europe	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Belgium	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Bulgaria	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted

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Country	Application Date	Issue Date	Title	Case Status
Czech Republic	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Germany	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Finland	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
France	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Hungary	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Spain	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Sweden	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Turkey	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
United Kingdom	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Japan	September 16, 2015		NUCLEAR FUEL ASSEMBLY	Pending
Korea	September 16, 2015		NUCLEAR FUEL ASSEMBLY	Pending
All-Metal Fuel Assembly Design (i.e., No Oxide Rods In The Outer Row)				
Canada	December 26, 2007	April 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	Granted
United States of America	December 22, 2008	February 14, 2012	NUCLEAR REACTOR (ALTERNATIVES), FUEL ASSEMBLY OF SEED-BLANKET SUBASSEMBLIES FOR NUCLEAR REACTOR (ALTERNATIVES), AND FUEL ELEMENT FOR FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
India	December 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	May 11, 2011	July 2, 2015	FUEL ASSEMBLY	Granted
United States of America	June 3, 2013	July 31, 2018	FUEL ASSEMBLY	Granted
United States of America	November 15, 2013	January 1, 2019	FUEL ASSEMBLY	Granted
Multi-Lobe Metallic Fuel Rod Design				
Australia	December 26, 2007	May 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	Granted
Australia	December 26, 2007	August 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	Granted

Country	Application Date	Issue Date	Title	Case Status
Belgium	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Bulgaria	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Canada	December 26, 2007	April 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	Granted
China	December 26, 2007	February 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	Granted
China	December 26, 2007	June 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	Granted
Czech Republic	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Europe	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Finland	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
France	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Germany	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Hungary	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
India	December 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
Japan	December 26, 2007	August 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	Granted

Country	Application Date	Issue Date	Title	Case Status
Japan	December 26, 2007	April 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	Granted
Korea	December 26, 2007	December 15, 2014	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Granted
Korea	December 26, 2007	April 20, 2015	NUCLEAR REACTOR (VARIANTS), FUEL ASSEMBLY CONSISTING OF DRIVER-BREEDING MODULES FOR A NUCLEAR REACTOR (VARIANTS) AND A FUEL CELL FOR A FUEL ASSEMBLY	Granted
Sweden	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Turkey	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
United Kingdom	December 26, 2007	May 18, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
United States of America	December 22, 2008	February 14, 2012	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Belgium	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Bulgaria	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Czech Republic	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Europe	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Finland	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
France	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Germany	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Hungary	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Spain	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Sweden	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
Turkey	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
United Kingdom	December 23, 2008	September 21, 2016	A FUEL ELEMENT, A FUEL ASSEMBLY AND A METHOD OF USING A FUEL ASSEMBLY	Granted
United States of America	March 14, 2011	February 18, 2014	NUCLEAR REACTOR (ALTERNATIVES), FUEL ASSEMBLY OF SEED-BLANKET SUBASSEMBLIES FOR NUCLEAR REACTOR (ALTERNATIVES), AND FUEL ELEMENT FOR FUEL ASSEMBLY	Granted
Australia	December 25, 2008	September 3, 2015	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Belgium	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Bulgaria	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Bulgaria	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Czech Republic	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted

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Country	Application Date	Issue Date	Title	Case Status
Canada	December 25, 2008	November 29, 2016	A LIGHT-WATER REACTOR FUEL ASSEMBLY AND A FUEL ELEMENT THEREOF	Granted
Canada	December 25, 2008	February 12, 2019	A LIGHT-WATER REACTOR FUEL ASSEMBLY AND FUEL ELEMENT THEREOF	Granted
China	December 25, 2008	June 29, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Czech Republic	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Europe	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Europe	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted

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Country	Application Date	Issue Date	Title	Case Status
Finland	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Finland	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
France	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
France	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Germany	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Germany	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Hungary	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Hungary	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted

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Country	Application Date	Issue Date	Title	Case Status
India	December 25, 2008		FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Pending
Japan	December 25, 2008	June 5, 2015	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Korea	December 25, 2008	August 18, 2015	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Spain	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Sweden	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Sweden	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Turkey	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Turkey	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
United Kingdom	December 25, 2008	April 13, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
United Kingdom	December 25, 2008	February 20, 2019	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
United States of America	December 25, 2008	May 31, 2016	FUEL ASSEMBLY FOR A LIGHT-WATER NUCLEAR REACTOR (EMBODIMENTS), LIGHT-WATER NUCLEAR REACTOR AND FUEL ELEMENT OF THE FUEL ASSEMBLY	Granted
Australia	May 11, 2011	July 2, 2015	FUEL ASSEMBLY	Granted
Australia	May 11, 2011	March 21, 2019	FUEL ASSEMBLY	Granted
Australia	May 11, 2011	January 21, 2021	FUEL ASSEMBLY	Granted
Belgium	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Bulgaria	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Bulgaria	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Canada	May 11, 2011		FUEL ASSEMBLY	Pending
China	May 11, 2011	May 18, 2016	FUEL ASSEMBLY	Granted
Czech Republic	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Czech Republic	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Europe	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Europe	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Finland	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Germany	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
France	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Spain	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Sweden	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Turkey	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
Finland	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
France	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Germany	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Hungary	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Hungary	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
India	May 11, 2011		FUEL ASSEMBLY	Pending
Japan	May 11, 2011	September 9, 2016	FUEL ASSEMBLY	Granted
Japan	May 11, 2011	April 13, 2018	FUEL ASSEMBLY	Granted
Japan	May 11, 2011	September 9, 2016	FUEL ASSEMBLY	Granted
Korea	May 11, 2011	November 12, 2019	FUEL ASSEMBLY	Granted
Sweden	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
Turkey	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
United Kingdom	May 11, 2011	October 25, 2017	FUEL ASSEMBLY	Granted
United Kingdom	May 11, 2011	April 6, 2016	FUEL ASSEMBLY	Granted
United States of America	June 3, 2013	July 31, 2018	FUEL ASSEMBLY	Granted
United States of America	February 20, 2018		FUEL ASSEMBLY	Pending
Korea	November 12, 2019	October 7, 2020	FUEL ASSEMBLY	Granted
United States of America	November 15, 2013	January 1, 2019	FUEL ASSEMBLY	Granted
Australia	May 1, 2014	October 11, 2018	FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Canada	May 1, 2014		FUEL ASSEMBLY	Pending
Australia	May 1, 2014	May 7, 2020	FUEL ASSEMBLY	Granted
Eurasian Patent Organization	May 1, 2014	October 31, 2019	FUEL ASSEMBLY	Granted
India	May 1, 2014		FUEL ASSEMBLY	Pending
Japan	May 1, 2014	July 13, 2018	FUEL ASSEMBLY	Granted
Korea	May 1, 2014		FUEL ASSEMBLY	Pending
Australia	December 5, 2019	January 14, 2021	FUEL ASSEMBLY	Granted
Australia	September 16, 2015		NUCLEAR FUEL ASSEMBLY	Pending
Canada	September 16, 2015		NUCLEAR FUEL ASSEMBLY	Pending
China	September 16, 2015	April 2, 2019	NUCLEAR FUEL ASSEMBLY	Granted
China	September 16, 2015		NUCLEAR FUEL ASSEMBLY	Pending
Eurasian Patent Organization	September 16, 2015	December 13, 2019	NUCLEAR FUEL ASSEMBLY	Granted
Eurasian Patent Organization	September 16, 2015		NUCLEAR FUEL ASSEMBLY	Pending
Europe	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Belgium	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Bulgaria	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Czech Republic	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Germany	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Spain	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted

Country	Application Date	Issue Date	Title	Case Status
Finland	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
France	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Hungary	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Sweden	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Turkey	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
United Kingdom	September 16, 2015	February 19, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Japan	September 16, 2015	June 17, 2020	NUCLEAR FUEL ASSEMBLY	Granted
Korea	September 16, 2015		NUCLEAR FUEL ASSEMBLY	Pending
United States of America	September 16, 2015	January 29, 2019	FUEL ASSEMBLY	Granted
United States of America	January 7, 2019		FUEL ASSEMBLY	Pending
Belgium	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
Bulgaria	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
Czech Republic	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
Europe	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted

Country	Application Date	Issue Date	Title	Case Status
Germany	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR	Granted
Hungary	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
Finland	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
France	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
Spain	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
Sweden	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
Turkey	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
United Kingdom	December 25, 2008	September 9, 2020	A FUEL ASSEMBLY FOR A LIGHT WATER NUCLEAR REACTOR	Granted
Europe	December 25, 2008		A FUEL ASSEMBLY FOR A LGHT-WATER NUCLEAR REACTOR	Pending
United States of America	December 28, 2018		FUEL ASSEMBIY	Pending

In addition to our patent portfolio, we also own trademarks to Lightbridge and Thorium Power corporate names and the Lightbridge logo.

Human Capital

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 communications. 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, 2020, we had seven full-time employees. We utilize a network of independent contractors available for deployment for specialized assignments. The Company's human resource professional is a resource available for all its employees regarding the development of their careers and training. Lightbridge also has physical and mental health programs that are available to its employees. We believe that our relationship with our employees and contractors is satisfactory.

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

Our business faces significant risks. You should carefully consider all the information set forth in this annual report and in our other filings with the SEC, including the following risk factors which we face, and which are faced by our industry. Our business, financial condition, and results of operations could be materially and adversely affected by any of these risks. In that event, the trading price of our ordinary shares would likely decline, and you might lose all or part of your investment. This report also contains forward-looking statements that involve risks and uncertainties. Our results could materially differ from those anticipated in these forward-looking statements, as a result of certain factors including the risks described below and elsewhere in this report and our other SEC filings. See also "Forward-Looking Statements".

Risks Related to Our Business

Substantial doubt exists as to our ability to continue as a going concern.

As described in Note 1 of our accompanying consolidated financial statements, we have concluded that substantial doubt exists as to the Company's ability to continue as a going concern. This means that there is substantial doubt that we can continue as an ongoing business for the next twelve months. Our financial statements have been prepared assuming we will continue as a going concern. We have experienced substantial and recurring losses from operations, which has created an accumulated retained earnings deficit of $129.1 million as of December 31, 2020.

At December 31, 2020, the Company had approximately $21.5 million in cash and had a working capital surplus of approximately $17.1 million. The Company's net cash used in operating activities during the year ended December 31, 2020 was approximately $8.6 million, and current projections indicate that the Company will have continued negative cash flows for the foreseeable future. Net losses incurred for the years ended December 31, 2020 and 2019 amounted to approximately $(14.4) million, $(10.7) million, respectively.

Our ability to successfully raise sufficient funds, primarily through the sale of equity securities, is uncertain and subject to general market conditions, the market for our common stock and other risks. There can be no assurances as to the availability or terms upon which needed capital might be available to the Company. These factors, among others, raise substantial doubt about our ability to continue as a going concern for the next twelve months. If we are unable to meet our financial obligations, we could be forced to delay, reduce, or cease our operations, including substantially decrease or suspend our R&D activities, or otherwise impede our ongoing business efforts, which could have a material adverse effect on our business, operating results, financial condition, and long-term prospects, and, investors may lose their entire investment in the Company. Our financial statements do not include any adjustments that might result from the outcome of this uncertainty.

We will need to raise significant additional capital in the future to expand our operations and continue our R&D activities and we may be unable to raise such funds when needed on acceptable terms. Any capital raises may cause significant dilution to our shareholders.

As of December 31, 2020, we had $21.5 million in cash and equivalents. We will need to raise significant additional capital (up to several hundred million dollars) in order to continue our R&D activities and fund our operations through commercialization of our nuclear fuel technology. Our current plan is to maximize external funding from third party sources, including the DOE, 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 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.

When 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.

We will have virtually no common shares available for issuance to raise capital to fund our general corporate overhead or cover our outside R&D costs associated with our R&D activities or pursuing other opportunities, unless the number of authorized shares of common stock is increased.

Currently, we have approximately 8.3 million authorized shares of common stock. As of March 24, 2021, we had approximately 6.6 million shares of common stock outstanding. After taking into account the 0.6 million shares reserved for issuance upon the exercise of outstanding options and warrants, 0.2 million reserved for RSU issuances and 0.4 million reserved for the conversion of preferred stock and payment of preferred stock accrued dividends, we have approximately 0.5 million shares available for future issuance. For all practical purposes, the 8.3 million authorized shares of our common stock have been fully utilized, restricting our ability to issue any more shares. In May 2021 at the annual shareholder meeting, we will solicit the approval of our shareholders to amend our articles of incorporation to increase the number of authorized shares of common stock to 13,500,000; however, we might not receive the requisite shareholder approval. If the number of authorized shares of common stock is not increased, we will have virtually no shares available for issuance to raise capital to fund our general corporate overhead or cover our outside R&D activities associated with developing our fuel. Any delays in securing this approval, or the failure to secure shareholder approval to amend our articles of incorporation to increase the number of authorized shares of common, may prevent us from executing a capital raising transaction, which may force us to cease our operations and liquidate the Company.

We are dependent upon significant U.S. government funding and political support for nuclear power in order to complete our fuel development efforts and commercialize our nuclear fuel technology.

Our recently extended projected fuel development timeline (15-20 years) is dependent upon significant funding from the U.S. government to not only support our ongoing R&D efforts, but to provide confidence to our investors and reduce the need to raise funds through the issuance of additional dilutive equity securities. Government funding of R&D is subject to the political process, which is inherently unpredictable and highly competitive. The funding of government programs is dependent on budgetary limitations, congressional appropriations and administrative allotment of funds, all of which are uncertain and may be affected by changes in U.S. government policies resulting from various political developments. If political support for the prioritization of the development of nuclear energy decreases, including by reason of the new presidential administration, it may affect our ability to secure government funding which would adversely affect our business, fuel development timeline, financial condition, and results of operations.

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 shortfall in R&D funding levels or a delay in achieving fuel development milestones, or uncertainty in regulatory licensing timelines could result in significant delays and cost overruns. 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. However, our best estimate at this time is that our metallic fuel development program is expected to take 15-20 years and cost several hundred million U.S. dollars before we can secure our initial commercial order for a batch reload. 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; availability of metallic high assay low enriched uranium (HALEU), 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 expected benefits from our nuclear fuel technology may be delayed or never realized.

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

Although our preliminary economic model concludes that our fuel technology may provide a significant payback to utilities, it is based upon a number of assumptions that may not prove to be accurate. If our 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 could lose or fail to develop customers. For example, if ATF fuel is successful in extending the cycle length from 18 to 24 months in existing PWRs, it could severely weaken or undermine the anticipated economic value of our fuel for large PWRs.

Separately, our economic model for SMRs is in the development stage and its viability is subject to favorable wholesale power prices in the markets in which our fuel may be used, the necessary upfront capital investment to enable a 30% power uprate in future SMRs using our fuel and the future costs of uranium metallization and fabrication of our fuel rods and fuel assemblies at commercial scale, all of which are inherently unpredictable.

A failure of our current and future economic models, or a failure to find a strategic alternative, such as a potential business combination partner, would adversely affect our business, financial condition, and results of operations and may result in the failure of the Company.

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 research, development, and demonstration will be required in test facilities. We had 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 operational in 1958, was shut down in June 2018 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 LTA operation in a commercial reactor but pursuing such alternatives to the Halden research reactor may significantly 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 significantly delayed, perhaps indefinitely, which would adversely affect our business, financial condition, and results of operations.

Our current R&D plan includes the use of research reactors made available by the U.S. government and the DOE, including but not limited to the ATR at INL. These reactors are limited in terms of technical capabilities, operating cycles, and prior reservations for similar research and development services. While the ATR has enough space for four loops where fuel rods can be irradiated, the reactor currently has only one such loop, limiting how much fuel rod material that can be inserted into the reactor as well as its duration in the reactor. If new loops are not added to the ATR, loop irradiation testing in the ATR may not provide sufficient data to justify regulatory approval for LTA testing in a large commercial PWR in a commercially feasible timeframe. This would likely necessitate an extra fuel development step of LTR testing in a large commercial PWR in addition to the ATR loop testing before LTA testing could commence.

Funding for any improvement of capabilities or continued operations of these reactors is subject to the priorities of the US government, as well as the appropriation of funding by the US Congress, and cannot be predicted or assured. Changes in these factors are outside of the Company’s control and could cause significant delays and/or cost increases in our R&D programs.

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 order to achieve commercialization. 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, resulting in an improved ability to cool the fuel. However, this proposed shape may also result in non-uniform distribution of heat flux that may have an adverse impact on the critical heat flux and limit power uprate capabilities of our metallic fuel. 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 sufficiently 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, a longer operating cycle, or other anticipated performance and safety benefits. 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.

Existing commercial nuclear infrastructure in many countries is limited to uranium material in dioxide form with enrichments limited to 5%. Our fuel will be in a metallic form and will be enriched to higher levels, which will 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% of the isotope Uranium 235. 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 complete 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 significant 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%, de-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, or permanent disposal of spent metallic fuel at a high-level repository, or may not make the necessary modifications at all. 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 dioxide is formed into small pellets which are stacked and sealed inside metallic tubes. Our co-extrusion fabrication technology involves co-extrusion of a composite 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 for large reactors and shorter length for SMRs has yet to be sufficiently demonstrated for our uranium-zirconium fuel. There is a risk that the fuel fabrication process utilized to date to our metallic fuel rods may not be feasibly adapted to the fabrication of full-length metallic fuel rods usable in commercial reactors.

The cost of production of our fuel could be prohibitively expensive.

In order for our metallic fuel to succeed, we will need to be able to produce our fuel at a price that is economically viable. We have received estimates that production of our fuel could be achieved at a commercial scale for approximately $5,000 to $10,000 per kilogram using known metallization/de-conversion technologies. To bring the cost of production further down, we estimate that it would require a new government-funded research and development program that could take 15-20 years and cost several billion dollars. There can be no assurance that we will be able to produce our fuel at a price that is economically feasible or that future research efforts will lower the cost of production. If we are unable to produce our fuel at a price that is economically viable, the market for our fuel may never develop and our current business model will fail.

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-NRC, 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-NRC and its counterparts around the world that could cause fuel development program delays and delays in commercialization. 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 which necessitates additional, unplanned analytical and/or experimental work which could cause program schedule delays and require more research and development funding.

Successful execution of our business model is dependent upon public support for nuclear power and overcoming public opposition to nuclear energy.

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 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. Furthermore, nuclear fuel fabrication and the use of new nuclear fuels in reactors must be licensed by the US-NRC 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.

Our nuclear fuel fabrication 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 HALEU in metallic form, enriched between 5% and 19.75% in the isotope uranium-235 (U-235), with presently no commercial supply of HALEU available in the U.S. Currently HALEU can only be sourced in limited quantities from the DOE.

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.

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 our fuel technology.

In addition, the U.S. federal government and many states 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 indirect 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 by a potential worldwide economic downturn caused by the COVID-19 outbreak or future pandemics.

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.

The recent outbreak of Covid-19 in the United States and globally has resulted in the United States and other countries halting or sharply curtailing the movement of people, goods and services. All of this has caused extended shutdowns of businesses and the prolonged economic impact remains uncertain. At this point, we have experienced and may continue to experience a reduction of our research and development expenses and an increase in our general and administrative expenses. Other than such changes, we believe the conditions will have not a material adverse effect on our business, but given the rapidly changing developments we cannot accurately predict what effects these conditions will have on our financial position, results of operations and liquidity, including our research and development activities, which will depend on, among other factors, the ultimate geographic spread of the virus, the duration of the outbreak and travel restrictions and business closures imposed by the United States and various other governments. Covid-19 may have a material adverse effect on our ability to obtain financing, which is needed to generate sufficient cash flows to conduct our businesses activities in the future.

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 customer 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.

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

The sales and marketing of our technology internationally may be subject to U.S. export control regulations and the export control laws of other countries. Governmental authorizations may be required before we can export our technology. If authorizations are required and not granted, our international business 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.

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. These nuclear fuel designs include, but are not limited to, the ATF currently being developed and tested by several U.S. and international nuclear fuel suppliers, with the support of the DOE, which could undermine our fuel's economic value proposition if ATF is proven to extend the operating cycle length from 18 to 24 months. 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.

If the 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 U.S. 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.

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 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-U.S. courts are sometimes less willing than U.S. 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.

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.

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.

Risks Related to the Ownership of Our Common Stock

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

Approximately 3.4 million shares of our Series A and Series B preferred stock were issued and outstanding at December 31, 2020. 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;
- quarterly variations in operating results;
- actual or anticipated variations in our results of operations or those of our competitors;
- failure to obtain or maintain analyst coverage of our common stock, changes in earnings estimates or recommendations by securities analysts, or our failure to achieve analyst earnings estimates;
- future sales of our common stock or other securities by us or our stockholders;
- general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors; and
- the risks discussed elsewhere in this Annual Report on Form 10-K.

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.

If we fail to maintain 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.

Shareholder activism could cause us to incur significant expense, hinder execution of our business strategy and impact our stock price.

Shareholder activism, which can take many forms and arise in a variety of situations, could result in substantial costs and divert management and our board’s attention and resources from our business. Additionally, such shareholder activism could give rise to perceived uncertainties as to our future, adversely affect our relationships with our employees or service providers and make it more difficult to attract and retain qualified personnel. Also, we may be required to incur significant fees and other expenses related to activist shareholder matters, including for third-party advisors. Our stock price could be subject to significant fluctuation or otherwise be adversely affected by the events, risks and uncertainties of any shareholder activism.

We have identified a material weakness in our internal control over financial reporting.

Management, including our Chief Executive Officer and our Chief Financial Officer, assessed the effectiveness of our internal control over financial reporting as of December 31, 2020 and concluded that we did not maintain effective internal control over financial reporting. Specifically, management identified a material weakness relating to the amortization of patent costs—see Part II. Item 9A, *Controls and Procedures*, below. While certain actions have been taken to implement a remediation plan to address this material weakness and to enhance our internal control over financial reporting, if this material weakness is not remediated, it could adversely affect our ability to report our financial condition and results of operations in a timely and accurate manner, which could negatively affect investor confidence in our Company, and, as a result, the value of our common stock could be adversely affected.

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, 2021. We are obligated to pay approximately $10,000 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.

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 under Litigation in Note 7. 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.

Settlement of Arbitration and Delaware Action

These legal actions are fully described in Note 7 to the accompanying consolidated financial statements. On February 11, 2021, the Company entered into a Settlement Agreement with Framatome SAS and Framatome Inc., resolving the pending claims and counterclaims between the parties in arbitration and judicial proceedings related to the parties' inactive joint venture, Enfission, LLC.

Under the terms of the Settlement Agreement, all joint venture agreements will be terminated and the joint venture will be dissolved and wound-up following satisfaction of the conditions set forth in the Settlement Agreement. Lightbridge will pay Framatome in March 2021 approximately $4.2 million (USD $1.8 million and €2 million) for outstanding invoices for work performed by Framatome and other expenses incurred by Framatome. Framatome will destroy all documents and content related to Lightbridge's intellectual property. Lightbridge has an obligation to destroy all documents and content related to Framatome's intellectual property. Both parties have agreed to destroy all of the foreground information generated on behalf of Enfission. The Settlement Agreement secures the parties' pre-existing intellectual property rights. There will be no restrictions on Lightbridge's ability to engage in research and development activities or commercial discussions with other entities going forward. All terms in the Settlement Agreement were met by both parties and the settlement payment was made by Lightbridge on March 15, 2021. Enfission was dissolved on March 23, 2021. The Company will withdraw its petition for judicial dissolution of Enfission on file with the Court of Chancery of the State of Delaware.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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, 2021, our common stock was held by approximately 74 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, 6200 S. Quebec Street, Greenwood Village, CO 80111. 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, 2020 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 Part II. Item 8. *Financial Statements and Supplementary Data*, of this report. This discussion contains forward-looking statements that are based on our management's current expectations, estimates, and projections for our business, which are subject to a number of risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of many factors, including those set forth under "Forward-Looking Statements" and Part I. Item 1A. *Risk Factors*. This MD&A consists of the following sections:

- Overview of Our Business and Recent Developments — a general overview of our business and updates;

- 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 are material to an understanding of our business as a whole, we present the discussion in the MD&A on a consolidated basis; and

- Liquidity, Capital Resources, and Financial Position — an analysis of our cash flows, and an overview of our financial position.

- Critical Accounting Policies, and Estimates — a discussion of accounting policies that require critical judgments and estimates;

Overview of Our Business and Recent Developments

Our Business

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

Our Company's goal is to impact in a meaningful way the world's climate and energy problems. We are developing and plan to 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 an early-stage technology company in the product development phase and are pre-revenue. Our ongoing operations are currently being financed primarily by raising new equity capital.

The U.S. Department of Energy (DOE), Office of Nuclear Energy has established the Gateway for Accelerated Innovation in Nuclear (GAIN) program to provide the nuclear community with access to the technical, regulatory, and financial support necessary to move new or advanced nuclear technologies toward commercialization, while ensuring the continued safe, reliable, and economic operation of the existing nuclear reactor fleet.

We were awarded a GAIN voucher in 2019 for the experiment design for irradiation of material samples of Lightbridge metallic fuel in the Advanced Test Reactor (ATR) at Idaho National Laboratory (INL). On April 22, 2020, we entered into a Cooperative Research and Development Agreement (CRADA) with Battelle Energy Alliance, LLC (BEA), the DOE's operating contractor at INL (see Recent Developments section below). The project commenced in the second quarter of 2020 and was originally expected to be completed in the second quarter of 2021. However, because of project staffing issues at INL related to the laboratory's COVID-19 restrictions and U.S. export control matters, the project is currently expected to be completed by the end of the third quarter of 2021.

Our metallic fuel can be used in different types of water-cooled commercial power reactors, such as pressurized water reactors (PWRs), boiling water reactors (BWRs), Russian designed water-water energetic reactors (VVERs), CANDU heavy water reactors, water-cooled small modular reactors (SMRs), as well as water-cooled research reactors.

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

We currently expect to invest a total of $1.0 million to $1.5 million in the research and development of our nuclear fuel over the next 12 to 15 months.

We have incurred net losses and negative cash flows from operations and expect this to continue for the foreseeable future. In 2021, we will continue to evaluate spending to reduce expenses with the overall goal of commercializing our fuel with the lowest R&D cost, in order to maximize our shareholders' value. Our only source of funding in 2020 was our at-the-market (ATM) financing arrangement with Stifel, Nicolaus & Company. We are not currently utilizing this ATM facility but the ATM facility is expected to be a significant source of working capital for the Company sometime later in 2021. There is no assurance that an ATM financing arrangement will be available to us in the future. Please see Note 10. Stockholders' Equity and Stock-Based Compensation of the Notes to the Consolidated 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 ATM and prior financings.

Fuel Development Strategy

Lightbridge originally focused on existing U.S. PWRs because they represented a large market segment for which Lightbridge Fuel™ could provide significant economic and safety benefits through a power uprate up to 10% along with an operating cycle extension from 18 to 24 months or a power uprate of 17% without extending the cycle length. However, with technological advances towards SMRs, the escalating costs associated with new build reactors, along with the need to operate these large reactors at a constant 24/7 pace to approach profitability, we estimate that these older types of large reactors will decrease in utilization going forward. In fact, we expect the net worldwide growth in the number of large reactors between now and 2050 to be fewer than 200, compared with the approximately 440 operable reactors worldwide.

Emerging nuclear technologies that many in the industry believe have the potential to generate massive amounts of power include the SMRs now in the development and licensing phase. We expect that Lightbridge Fuel™ may provide SMRs all the benefits our technology brings to large reactors, but the benefits may be more meaningful to the economic case for deploying SMRs. Lightbridge Fuel™ is expected to generate more power in SMRs than traditional nuclear fuels, which will help decarbonize sectors that are now powered by electricity. We also plan to explore using Lightbridge Fuel™ in new SMRs to produce hydrogen for liquid non-carbon fuels for use in other, hard-to-decarbonize sectors such as aviation and shipping. Our ongoing research and development (R&D) initiatives are entirely compatible with Lightbridge Fuel™ powering SMRs for multiple purposes.

We believe we are seeing an overall shift in focus by government and the private sector from large PWRs to SMRs and other advanced reactor technologies. As a result, we intend to increase our focus on opportunities that are likely to attract financing, both currently and in the future. The first SMRs that could use our fuel are expected to begin operations in 2029.

Our fuel development strategy, which focuses on SMRs, includes several major development activities or key steps. In certain cases, it may be possible to conduct development work relating to multiple key steps in parallel, resulting in some overlap in timelines between two or more such major development activities. For example, the core of an SMR can serve as a testbed for Lightbridge Fuel™, without the necessity of new test loops in the ATR, as discussed below. Additional government funding expected to be directed towards the development of SMRs has the potential to reduce the amount of funding Lightbridge would need to raise on its own for its fuel development efforts. We anticipate that the improved competitive position of Lightbridge Fuel™ versus Accident Tolerant Fuels (ATF) in the SMR market segment, with government support, would generate sustainable economic benefits, including the 30% power uprates achieved with Lightbridge Fuel™.

For a typical power system, base load power is usually about 35-40 percent of the maximum load during the year. Demand spikes are handled by intermediate and then peak power plants. Base load power plants include coal and nuclear facilities due to low fuel costs and steady power production. In some regions, geothermal and hydro can also be used as base load power. Intermediate plants include natural gas, and some peak plants run on light oil. We see the push for clean energy, particularly renewables, changing this structure fairly rapidly. The existing plant structure is being replaced by wind and solar power backed up by other power, usually natural gas, when the sun is not shining or the wind is not blowing. To replace the carbon-emitting natural gas plants with something non-emitting and economical, to balance with renewables, is one of the greatest challenges in decarbonizing the energy supply. We are designing Lightbridge Fuel™ for use in SMRs to combine with renewables globally to decarbonize the energy supply, with SMRs providing base load power with high interoperability with intermittent renewables. We believe that a 30% power uprate from Lightbridge Fuel™ will uniquely provide a lower levelized cost of electricity and a faster ramp rate than uranium dioxide fuel (including ATF) and will allow SMRs to replace natural gas plants to balance with renewables. We believe Lightbridge Fuel™ in SMRs will align with the energy and climate strategy of the U.S. and other governments. We do not expect that economical grid-level battery storage or large-scale carbon capture will be available at large enough scale to help with climate change. We believe that large-scale SMR production in factories and shipyards can meet a significant portion of the global energy supply. The world is currently on a path towards having most of its energy in 2050 produced by fossil fuels without carbon capture. We believe our fuel in SMRs combined with renewables on the grid can change that future energy mix.

Below is a brief description of each key fuel development step leading up to a lead test assembly (LTA) operation in an SMR.

a.Fuel Fabrication

Development of the fabrication processes for Lightbridge Fuel is expected to be performed utilizing existing facilities and equipment within the DOE national laboratory complex. Discussions have begun with the INL and Pacific Northwest National Laboratory to perform the process development activities and establish the capability to manufacture development quantities of fuel rods for loop irradiation testing, and possibly a limited lead test assembly. These discussions are currently on-going.

Fabrication of multiple LTAs and batch reload quantities of fuel will require a dedicated pilot-scale fuel fabrication facility. We estimate the major scopes of work to establish a manufacturing capability for LTAs would take 5 years to complete, with batch reload capability achieved within 8 years from the start of pilot-scale fuel fabrication facility design and construction work. These estimates assume sufficient funding availability and that the project receives prioritization by the DOE.

b.Nuclear Material/Coupon Sample Irradiation Test

Lightbridge's irradiation testing program includes coupon irradiation of material samples of its uranium-zirconium fuel alloy which will allow characterization of the underlying thermophysical behavior of the fuel alloy. The design of this program is currently underway, and it is expected to yield results in approximately four years. The data obtained from this program will be a fundamental component of Lightbridge's accelerated fuel qualification approach described below as it will be used to inform and develop the physics-based models and simulations of the fuel rod behaviors.

c.Loop Irradiation Testing

The purpose of the loop irradiation testing of Lightbridge's metallic fuel rod is to demonstrate the performance and behavior of the fuel rod under prototypic commercial reactor operating conditions typical of PWRs at a power level and burnup accumulation higher than the fuel would experience in normal operation in a commercial power plant. This will provide a physical demonstration of the capabilities of the fuel rod in order to ensure reactor safety. Such a test is expected to provide information of sufficient detail to validate the performance of individual fuel rods such that their behavior in normal operating conditions of a regulated nuclear power plant would be sufficiently well understood to request a license amendment from the U.S. Nuclear Regulatory Commission (US-NRC) for operation of a lead test assembly.

Execution of such a loop irradiation test is expected to be performed in the ATR at INL. The ATR currently has limited irradiation loop test facilities and the performance of the above-mentioned test for Lightbridge fuel would require installation of a new test loop with increased heat removal capability to enable the desired test conditions. Preliminary discussions with INL personnel have indicated that installation of such a loop would take approximately three years (one year for design and safety evaluation and two years for installation and startup). We assume an additional year of time is required, making the loop available in four years.

The performance of the irradiation test is expected to take three years of in-reactor time plus an additional one year for post-irradiation examination (PIE), wherein analysis of the fuel rod performance and behavior is performed.

These estimates result in a total time for completion of the loop irradiation test of 7-8 years.

d.Preparation for Lead Test Assembly Operation

Insertion of an LTA with Lightbridge's fuel rods in a nuclear power plant requires the power plant owner to obtain approval from the US-NRC based on a safety evaluation and justification that the LTA will not be detrimental to the plant's licensed operations. This justification must address numerous technical areas (e.g. nuclear design, mechanical design, thermal hydraulic design, materials science, reactor operations, etc.) and include considerations of the performance of the LTA itself as well as its interaction with other fuel assemblies in the reactor core which may be impacted by the presence of the LTA. The safety evaluation must result in confirmation that the plant's ability to ensure plant worker and public safety is not compromised due to the operation of the LTA. This safety justification will require cooperation between Lightbridge, the original fuel manufacturer, and the power plant owner.

With historical approaches, the development and qualification of a nuclear fuel system can take 20-30 years as the approach has been driven largely by a cycle of physical testing and design changes based on the results of those physical tests. Computer modeling and simulation has increasingly been used in support of fuel qualification efforts, but the cyclical approach continues to be the default methodology.

In order to shorten the timeframe for fuel qualification, advanced nuclear fuel developers are now taking an approach that leverages significant improvements in computational capability in a methodology referred to as Accelerated Fuel Qualification (AFQ). The AFQ approach combines physics-informed modeling and simulation coupled with targeted physical testing such that the overall fuel qualification effort is reduced in terms of cost and time, with a goal of fuel qualification taking 10-15 years. Lightbridge intends to leverage the AFQ methodology to qualify its advanced fuels.

Along with leveraging the AFQ approach, Lightbridge's U-Zr fuel technology has the benefits of being previously demonstrated in operating icebreaker reactors and several aspects of the performance of the fuel have been demonstrated. This enables Lightbridge to begin designing an LTA, and developing the necessary computer models of the fuel behavior, prior to obtaining the results of the loop irradiation testing of the fuel rod.

Along with the irradiation testing and computer simulations, some physical testing of the fuel assembly design will be required. Lightbridge anticipates that such 'out-of-pile' testing to justify the LTA performance will take no more than four years.

It is expected that the LTA design effort, development of computer modeling and simulation capabilities, and performance of the LTA safety justification will take 8 years. The US-NRC review and approval of the license amendment for LTA insertion is expected to require two years after the license amendment is submitted.

Based on these activities and time estimates, Lightbridge expects to have an LTA of its fuel ready for insertion in a commercial reactor in the early 2030s.

The above fuel development strategy is based on the following key assumptions:

- Funding requirements are always met with U.S. government providing most of the necessary fuel development costs;
- Time estimates for irradiation loop design and construction at ATR can be achieved by the national laboratory complex;
- Partnership with nuclear power plant and fuel manufacturer for LTA demonstration purposes is achieved in a timely manner and does not delay the assumed start of work;
- Accelerated fuel qualification methodology developed for Lightbridge Fuel™ is accepted by the US-NRC as sufficient for the safety justification of the LTAs;
- Execution of out-of-reactor fuel development activities can be performed in parallel with LTA design;
- Facilities and personnel for completion of the fuel development work are available when necessary and do not delay the execution of;
- By implementation of accelerated burn-up techniques, the irradiation loop at ATR is capable of 50% reduction in irradiation time compared to operating commercial reactor fuel cycle; and
- The pilot fabrication facility will be capable of manufacturing up to one batch reload per year.

Recent Developments

GAIN Voucher

On December 20, 2019 we announced an award voucher from the DOE's GAIN program to support development of Lightbridge Fuel™ in collaboration with INL. On April 22, 2020, we entered into a CRADA with BEA, the operating contractor of INL, in collaboration with DOE. Signing the CRADA was the last step in the contracting process to formalize the voucher award from the DOE GAIN program. The scope of the project includes experiment design for irradiation of Lightbridge metallic fuel material samples in the ATR at INL. The project commenced in the second quarter of 2020 and was originally expected to be completed in the second quarter of 2021. However, because of project staffing issues at INL related to the laboratory's COVID-19 restrictions and U.S. Export Control matters, the project is currently expected to be completed by the end of the third quarter of 2021. The total project value is approximately $846,000, with three-quarters of this amount funded by DOE for the scope performed by INL.

Awarded Second Funding Voucher Award from the DOE from the GAIN Program

On March 25, 2021, we were awarded a voucher from the DOE's GAIN program to support development of Lightbridge Fuel™ in collaboration with the Pacific Northwest National Laboratory (PNNL). The scope of the project is to demonstrate Lightbridge's nuclear fuel casting process using depleted uranium, a key step in the manufacture of Lightbridge Fuel™. The project is anticipated to commence in the first half of 2021. The total project value is approximately $664,000, with three-quarters of this amount funded by DOE for the scope performed by PNNL. This is the DOE's second GAIN voucher awarded to Lightbridge in support of the development of its advanced fuel technologies.

Lightbridge is currently demonstrating in 2021 the manufacturing processes for the three-lobed variant of its uranium-zirconium (U-Zr) fuel technology for use in certain SMRs by producing several SMR-length surrogate rods.

We expanded our patent portfolio by successfully obtaining 30 new patents in 2020 and, as of the filing date an additional 2 patents in 2021, in the United States and other key foreign countries. The new patents will help safeguard the Company's intellectual property.

Operations Review

Consolidated Results of Operations

During the fourth quarter for the year ended December 31, 2020, we identified an error related to the amortization of our capitalized patent costs. Consequently, the Company corrected this error by revising the December 31, 2019 financial table numbers shown below. Please see Note 2. Revision and Correction of an Immaterial Error in Previously Issued Financial Statements of the Notes to the Consolidated 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 revision of the December 31, 2019 financial statements.

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

	Years Ended December 31,		Increase (Decrease)	Increase (Decrease)
	2020	2019 (revised)	Change $	Change %
Operating Expenses				
General and administrative	$ 8,312,583	$ 5,787,092	$ 2,525,491	44%
Research and development expenses	$ 891,626	$ 2,676,156	$ (1,784,530)	(67)%
Legal settlement costs	$ 4,200,000	—	$ 4,200,000	—
Patent write-off and impairment loss	$ 1,169,644	$ —	$ 1,169,644	—
Total Operating Expenses	$ 14,573,853	$ 8,463,248	$ 6,110,605	72%
Other Operating Income and (Loss)				
Grant income	$ 72,709	$ —	$ 72,709	—
Other income from joint venture	$ —	$ 715,126	$ (715,126)	(100)%
Equity in loss from joint venture	$ —	$ (3,321,737)	$ 3,321,737	(100)%
Total Other Operating Income (Loss)	$ 72,709	$ (2,606,611)	$ 2,679,320	103%
Total Operating Loss	$ (14,501,144)	$(11,069,859)	$ 3,431,285	31%
Other Income	$ 83,878	$ 393,112	$ (309,234)	(79)%
Net loss before Income Taxes	$ (14,417,266)	$(10,676,747)	$ 3,740,519	35%
Income taxes	$ —	$ —	$ —	—
Net Loss	$ (14,417,266)	$(10,676,747)	$ 3,740,519	35%

Operating Expenses

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 legal, audit, strategic advisory services, and outsourcing services.

Total general and administrative expenses increased by approximately $2.5 million for the year ended December 31, 2020, as compared to the year ended December 31, 2019. These increases included an increase in professional fees relating to the Framatome arbitration of approximately $1.7 million, primarily due to legal fees, court filing fees, professional and expert fees. It also included an increase in total employee compensation and employee benefits of approximately $1.2 million, which consisted of an increase in bonuses of $0.4 million and an increase in employee payroll expenses of $0.6 million and a decrease of $0.2 million in management and administrative service fees charged to Enfission, LLC (“Enfission”). In addition, there were severance payments made of approximately $0.2 million, for employee layoffs partially due to the uncertainty of COVID-19 on our future business operations and the cessation of the Enfission joint venture, as discussed above. Lastly, there were increases in insurance expense of $0.1 million. These increases were offset by a decrease in travel, promotional and various administrative expenses of approximately $0.4 million partially due to COVID-19 and a decrease in stock-based compensation of approximately $0.3 million, due to the decrease in stock option expense for prior stock option awards that have become fully vested in prior reporting periods.

Total stock-based compensation included in general and administrative expenses was approximately $0.1 million and $0.4 million for the year ended December 31, 2020 and 2019, respectively.

See Note 10. Stockholders' Equity and Stock-Based Compensation of the Notes to our Consolidated Financial Statements included in Part II. Item 8. *Financial Statements and Supplementary Data*, of this Annual Report on Form 10-K for more information regarding our stock-based compensation.

Research and Development

R&D 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 R&D expenses decreased by approximately $1.8 million for the year ended December 31, 2020, as compared to the year ended December 31, 2019, due to the transitioning from R&D work relating to Enfission to developing a new fuel development strategy with the DOE's National Laboratories.

There was a decrease in employee compensation and employee benefits working on research projects of approximately $0.9 million, which costs included a decrease in allocated bonuses and payroll expenses of approximately $1.1 million, offset by a decrease in management and administrative service fees charged to Enfission of approximately $0.2 million. In addition, there was a decrease in professional fees of approximately $0.2 million, a decrease in consulting fees of approximately $0.3 million, and a decrease in stock-based compensation of approximately $0.4 million due to the decrease in stock option expense for prior stock option awards.

Total stock-based compensation included in R&D expenses was approximately $0 and $0.4 million for the year ended December 31, 2020 and 2019, respectively.

Due to the nature of our R&D expenditures, cost and schedule estimates are inherently uncertain and can vary significantly as new information and the outcome of these R&D activities become available. During the fiscal year of 2020, we had a significant decrease in R&D expense compared to 2019, also partially due to the uncertainty of COVID-19 on our future business operations, resulting in budgetary constraints due primarily to current market conditions and the uncertainty of future liquidity and capital resources available to us to conduct our future R&D activities.

Legal settlement costs

On February 11, 2021, the Company entered into a settlement agreement with our former JV partner in Enfission and agreed to pay approximately $4.2 million in legal settlement costs (see Note 12. Subsequent Events in the accompanying consolidated financial statements). This amount was recorded in operating expenses as legal settlement costs for the year ended December 31, 2020.

Patent write-off and impairment loss

As a result of recent triggering events that required an impairment provision of the total carrying value of our patent costs, we recorded a total impairment loss and patent write-off of $1.2 million in the fourth quarter of 2020, which included $0.1 million in patent write-offs. There was no impairment of our patents in 2019.

Other Operating Loss

Total other operating loss decreased by approximately $2.7 million for the year ended December 31, 2020, as compared to the year ended December 31, 2019. This change was due to a net decrease in the equity loss from the Enfission joint venture of $2.6 million and an increase in grant income from the GAIN voucher of approximately $0.1 million for the year ended December 31, 2020. Grant income is recorded on a gross method with the grant income shown as other operating income and the related costs as a charge to research and development expenses. There was no grant income in 2019.

During the year ended December 31, 2020, the Company did not provide additional equity contributions or share in any loss in Enfission. The Company had not separately guaranteed any obligations of Enfission at December 31, 2020 and December 31, 2019 and is not obligated under the joint venture operating agreement to fund its deficit capital account balance in Enfission to pay for any liabilities incurred by Enfission and therefore did not record its share of loss in Enfission for the year ended December 31, 2020.

Other Income

There was a decrease in other income of approximately $0.3 million due to a decrease 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, 2020, as compared to the year ended December 31, 2019.

Provision for Income Taxes

On March 27, 2020, the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) was enacted in response to the COVID-19 pandemic. The CARES Act, among other things, permits net operating loss (NOL) carryovers and carrybacks to offset 100% of taxable income for taxable years beginning before 2021. In addition, the CARES Act allows NOLs incurred in 2018, 2019, and 2020 to be carried back to each of the five preceding taxable years to generate a refund of previously paid income taxes. The Company has evaluated the impact of the CARES Act and does not expect that the NOL carryback provision of the CARES Act will result in a material cash benefit. We incurred a pre-tax net loss for both 2020 and 2019. We reviewed all sources of income for purposes of recognizing the deferred tax assets and concluded a full valuation allowance for 2020 and 2019 was necessary. Therefore, we did not have a provision for taxes for both years ended December 31, 2020 and 2019.

See Note 9. Income Taxes of the Notes to our Consolidated 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 income taxes.

Liquidity, Capital Resources and Financial Position

Liquidity Outlook

While the Company's cash balance at December 31, 2020 exceeds its currently budgeted expenditures through the first quarter of 2022, there are inherent uncertainties in forecasting future expenditures, especially forecasting for uncertainties such as future R&D costs and how COVID-19 may affect future costs and operations. We reduced our 2020 operating budgets for discretionary spending, including revising our R&D strategy which reduced our R&D costs in 2020 during this transitionary period of planning future R&D work with the United States national labs. While the impact and duration of COVID-19 on our business activities in the future is currently uncertain, the situation required us to reduce our operating budgets and R&D activities during 2020.

At December 31, 2020, we had cash and cash equivalents of approximately $21.5 million, as compared to approximately $18.0 million at December 31, 2019, an increase of approximately $3.5 million. The cash inflow of approximately $12.3 million resulted from net proceeds from the sale of common stock during the year ended December 31, 2020. This cash inflow was offset by net cash used in operating activities of approximately $8.6 million and $0.2 million used in investing activities associated with incurring patent legal and filing costs.

We have approximately $16 million of working capital as of the date of this filing, which includes the $4.2 million settlement payment made to Framatome. We currently project a negative cash flow from our current operations averaging approximately $0.8 million per month for our general and administrative and R&D expenses, for total expected expenditures of approximately $9 million to $10 million for the next 12 to 15 months. We believe that our current working capital exceeds our budgeted expenditures through the first quarter of 2022. However, there are inherent uncertainties in forecasting future required R&D expenditures, as we are currently working on establishing our first fuel development agreements with the DOE's National Laboratories. Once many of these agreements are finalized and the future R&D costs are known, we expect to forecast a significantly higher level of future required R&D expenses and higher negative monthly cash flows from operations.

If sufficient funding becomes available to us, our R&D activities may significantly increase in the future. This funding is needed to continue our fuel development project and to achieve our future R&D milestones. COVID-19 may also affect costs and future operations by potentially delaying our work at the DOE's National Laboratories. The actual amount of cash we will need to operate is subject to many factors, including, but not limited to, the timing, design and conduct of the R&D work at the DOE's National Laboratories for our fuel along with cost to commercialize our nuclear fuel. Accordingly, there is high potential for budget variances in the current cost projections and fuel development timelines of our current planned operations over the fuel development period. Currently, we will seek shareholder approval in May 2021 to increase the number of authorized common shares, which is needed in order for us to finance our future R&D and corporate activities through future equity financing.

We will also need to receive substantial U.S. government support throughout our nuclear fuel R&D period in order to fund our R&D efforts in the future. If we are unable to obtain this government funding that meets our future R&D cash requirements, we will need to seek other funding, if available. This will result in dilution to our existing stockholders. If we can raise additional funds through the issuance of preferred stock, other equity or convertible securities, these securities could have rights or preferences senior to those of our common stock and could contain covenants that restrict our operations in the future. There can be no assurance that we will be able to obtain additional equity or debt financing on terms acceptable to us, if at all.

Considering the above-mentioned uncertainties and lack of financial resources to fund our current and long-term fuel development costs and corporate overhead expenses, substantial doubt exists about the Company's ability to continue as a going concern for the 12 months following the date of this filing. We have the ability to delay or reduce certain operating expenses, including R&D expenses in the next 12 to 15 months, which could reduce our cash flow shortfall. However, this delay would also extend our projected fuel development timeline discussed above.

The current primary sources of cash available to us for the next 12 months are potential funding from equity issuances, including potential future ATM financing and U.S. government support. The Company has an effective shelf registration statement on Form S-3 (File No. 333-223674) filed on March 15, 2018, and declared effective March 23, 2018, and expired on March 23, 2021. Due to the offering limitations currently applicable under General Instruction I.B.6. of Form S-3 and the market valuation of our current public float, we may be limited on the amount of funding available under a new shelf registration statement that we will file in March 2021. We have no debt or lines of credit and we have financed our operations to date through our prior years' consulting revenue margins and the sale of our preferred stock and common stock. Management believes that public or private equity investments may be available in the future, however adverse market conditions in our common stock price and trading volume, as well as other factors like COVID-19 could substantially impair our ability to raise capital in the future and to continue the nuclear fuel development project.

Short-Term and Long-Term Liquidity Sources

As discussed above, we will seek new financing bringing us additional sources of capital, depending on the capital market conditions of our common stock and us obtaining shareholder approval to increase the current number of authorized common shares, over the next 12 months. There can be no assurance that 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 or debt investment from third party investors in Lightbridge; and
- Strategic investment and U.S. government funding to support the remaining R&D activities required to continue the development of our fuel products and move them to a commercial stage.

In support of our long-term business with respect to our fuel technology business, we endeavor to create strategic alliances with other parties during the next three years, to support the remaining R&D activities 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.

See Note 10. Stockholders' Equity and Stock-Based Compensation of the Notes to the Consolidated 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, 2020 and 2019:

Cash Flow

	Year Ended December 31,	
	2020	**2019**
	(rounded in millions)	
Net cash used in operating activities	$ (8.6)	$ (6.7)
Net cash used in investing activities	$ (0.2)	$ (3.8)
Net cash provided by financing activities	$ 12.4	$ 3.8
Net cash inflow (outflow)	$ 3.6	$ (6.7)

Operating Activities

Our primary uses of cash from our operating activities include employee compensation and related costs, payments for professional and consulting fees and other fees relating to the arbitration matter with Framatome. The increase in our cash used in operating activities in 2020 of approximately $1.9 million was primarily due to the net increase in these and other costs and the change in working capital items as explained below.

Cash used in operating activities for the year ended December 31, 2020 consisted of a net loss of approximately $14.4 million and adjustments to our net loss for non-cash expense items totaling approximately $1.4 million, consisting of non-cash adjustments for stock-based compensation of approximately $0.1 million, the total impairment loss and write-off of patent costs of approximately $1.2 million and amortization of patent costs of approximately $0.1 million. Total cash provided by operating working capital totaled approximately $4.4 million, which was primarily due to a net increase in accrued legal settlement costs and other accrued liabilities of $4.1 million, a decrease of $0.4 million in other receivables from the Enfission joint venture, offset by and an increase in prepaid expense and other assets of $0.1 million.

Investing Activities

Net cash used in our investing activities for the year ended December 31, 2020, as compared to net cash used in our investing activities in 2019, decreased by approximately $3.6 million. The decrease was due primarily to the reduced investment in the Enfission joint venture of approximately $3.6 million. The spending for patent application costs was approximately the same for the years ended December 31, 2020 and 2019. These patent applications are filed for new developments resulting from our R&D activities. We anticipate patent costs to continue in the future periods due to the continuing R&D work we are planning to perform on our all-metal fuel design at the DOE's National Laboratories. We anticipate future patent costs to be expensed in future periods, which is due to the uncertainties in the current fuel development timelines and the patents being commercialized. Future patent costs will become part of cash flows used in operating activities in future reporting periods.

Financing Activities

Net cash provided by our financing activities for the year ended December 31, 2020, as compared to net cash provided by our financing activities for the year ended December 31, 2019 increased by approximately $8.6 million. The increase was primarily due to an increase in the net proceeds from the issuance of our common stock, which resulted from the sale of approximately 3.3 million shares of common stock for net proceeds of $12.4 million for the year ended December 31, 2020.

Critical Accounting Policies and Estimates

Impairment of Capitalized Patent Costs

When there are events or changes in circumstances, we assess whether there are any indicators that the value of capitalized patent costs may be impaired. The patent asset's value is impaired if both the estimate of future undiscounted cash flows to be generated by the patents and the fair value of the patents are less than the carrying value of the patent costs. The determination of undiscounted cash flows requires significant estimates and judgments by management. In management's estimate of cash flows, it considers factors such as expected revenues, operating expenses, R&D expenses, timing of commercialization, government grants and the undiscounted future cash flows analysis, which is based upon management's best estimate of the likelihood of the alternative courses of action. Subsequent changes in estimated undiscounted cash flows arising from changes in anticipated actions could affect the determination of whether an impairment exists and whether the effects could have a material impact on the Company's operations. To the extent an impairment has occurred, by comparing the future projected undiscounted cash flows to the carrying amount of the patent asset, the impairment loss is then measured as the excess of the carrying amount of the property over the fair value of the asset. In determining fair value, both the income approach and the cost approach are used to measure the impairment loss.

The Company is required to make subjective assessments as to whether there are impairments in the value of its capitalized patent costs. These assessments have a direct impact on the Company's estimates of the projected future cash flows, market conditions change, its evaluation of the impairment charges may be different, and such differences could be material to the Company's consolidated financial statements.

We identified impairment indicators in the fourth quarter of 2020 (see Note 5 of the accompanying consolidated financial statements for an explanation of these impairment indicators). We performed a recoverability test of the capitalized patents costs using an undiscounted cash flow method. The Company, after performing the recoverability test showing total negative cash flows, then determined the fair value of the patent costs using both the income approach and the cost approach methods. The fair value of our patent costs, under both these valuation methods, was $0. As a result, the Company recognized a total impairment charge of $1.1 million for the year ending at December 31, 2020. For further discussion on the impairment charge of the patent costs see Note 5 to the Consolidated Financial Statements.

Grant Income

The Company has concluded that its government grant is not within the scope of the FASB Accounting Standards Codification ("ASC") Topic 606 as it does not meet the definition of a contract with a customer. Additionally, the Company has concluded that the grant meets the definition of a contribution and are non-reciprocal transactions, and has also determined that Subtopic 958-605, Not-for-Profit-Entities-Revenue Recognition does not apply, as the Company is a business entity and the grant is with governmental agencies.

In the absence of applicable guidance under United States Generally Accepted Accounting Principles ("US GAAP"), the Company management has developed a policy to recognize grant income at the time the related costs are incurred and the right to payment is realized.

The Company believes this policy is consistent with the overarching premise in ASC Topic 606, to ensure that revenue recognition reflects the transfer of promised goods or services to customers in an amount that reflects the consideration that we expect to be entitled to in exchange for those goods or services, even though there is no exchange as defined in ASC Topic 606. Additionally, the Company has determined that the recognition of grant income as costs are incurred and amounts become realizable is analogous to the concept of transfer of control of a service over time under ASC Topic 606.

Further, the Company believes that showing grant income on a gross method, with the grant income shown as other operating income and the related costs as a charge to research and development expense, rather than depicting the grant income as a reduction of research and development expense, is a more meaningful presentation.

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 consolidated 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 in connection with our employees is based on the employee model of ASC 718. Under ASC 718 an 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." The stock-based compensation expense for our consultants is accounted for under ASU 2018-07, which allows us to account for options issued to consultants in the same manner as they are issued to our employees. 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;
- the expected life of the option;
- risk free interest rates; and
- expected dividend yield.

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 U.S. 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;
- volatility;
- dividend yield;
- risk-free interest rate; and
- forfeiture rates.

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.

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.

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 for both Lightbridge and the outcome of the joint venture arbitration.

Recent Accounting Standards and Pronouncements

Refer to Note 1. Basis of Presentation, Summary of Significant Accounting Policies, and Nature of Operations of the Notes to our Consolidated Financial Statements in Part II. Item 8. *Financial Statements and Supplementary Data*, of this Form 10-K 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, 2020 and 2019 begins on page 85 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, the Company's management, with the participation of the Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), carried out an evaluation of the effectiveness of the Company's disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act). Based upon that evaluation, the then CEO and CFO concluded as of the end of the period covered by this report, our disclosure controls and procedures are not effective, because of a material weakness in our internal control over financial reporting related to the accounting for capitalized patent costs as described below.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f).

All internal control systems, no matter how well designed, have inherent limitations including the possibility of human error and the circumvention or overriding of controls. Further, because of changes in conditions, the effectiveness of internal controls may vary over time. 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. Accordingly, even those systems determined to be effective can provide us only with reasonable assurance with respect to financial statement preparation and presentation.

Our internal control system was designed to provide reasonable assurance to our management and Board regarding the preparation and fair presentation of published financial statements. Management evaluated the effectiveness of our internal control over financial reporting using the criteria set forth by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission in Internal Control — Integrated Framework in 2013. Management, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of our internal control over financial reporting as of December 31, 2020 and concluded that it was not effective, due to the existence of a material weakness, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP.

The revision of the Company's consolidated financial statements for the year ended December 31, 2019 relating to the amortization of our capitalized patent costs referenced in Note 2, Revision and Correction of an Immaterial Error in Previously Issued Financial Statements. Based on this assessment, management has identified a material weakness in the Company's internal control over financial reporting related to the identification of the proper accounting policy (ASC Topic 350) regarding recording the amortization of our patents. As a result, our CEO and CFO concluded that our internal control over financial reporting was not effective as of December 31, 2020 as a result of this material weakness.

Remediation Plan

Management is in the process of evaluating changes that are necessary to its control environment in order to remediate this material weakness. We plan to devote significant effort and resources to the remediation and improvement of our internal control over financial reporting. While we have processes to identify and intelligently apply developments in accounting, we plan to enhance these processes to better evaluate our research and understanding of the nuances of increasingly complex accounting standards. Our initial plans at this time include providing enhanced access to accounting literature, research materials and documents and increased communication among our personnel and third-party professionals with whom we consult regarding accounting applications. The elements of our remediation plan can only be accomplished over time and we can offer no assurance that these initiatives will ultimately have the intended effects.

Changes in Internal Control over Financial Reporting

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

ITEM 9B. OTHER INFORMATION

None

PART III

Item 10. Directors and Executive Officers of the Registrant

Directors and Executive Officers

Set forth below are the names of our current directors, all of whom are standing for reelection, and our executive officers, their ages, all positions and offices that they hold with us, the period during which they have served as such, and their business experience during at least the last five years.

Name	Age	Position with Lightbridge	Director Since
Seth Grae	57	President and CEO	April 2006
Thomas Graham, Jr.	87	Chairman	April 2006
Victor E. Alessi	81	Director	August 2006
Daniel B. Magraw	74	Director	October 2006
Kathleen Kennedy Townsend	69	Director	October 2013
Larry Goldman	64	Chief Financial Officer and Corporate Secretary	—
Andrey Mushakov	44	Executive Vice President, Nuclear Operations	—

Name	Position with Lightbridge and Principal Occupations
Seth Grae	Mr. Grae was named the President and Chief Executive Officer of the Company on March 17, 2006 and, effective April 2, 2006, became a director of the Company. Mr. Grae has led Lightbridge's business efforts to develop and deploy advanced nuclear fuel technologies and to provide comprehensive advisory services based on safety, non-proliferation, and transparency for emerging commercial nuclear power programs. Mr. Grae is a member of the Civil Nuclear Energy Advisory Committee to the U.S. Secretary of Commerce and the board of directors of the Nuclear Energy Institute and the Virginia Nuclear Energy Consortium. He is a member of the Nuclear Security Working Group, the Nuclear Energy and National Security Coalition, the Working Group on Climate, Nuclear, and Security Affairs of the Council on Strategic Risks, and is a member the Dean's Advisory Council at the Washington College of Law at American University. Mr. Grae has served as Vice Chair of the Governing Board of the Bulletin of the Atomic Scientists, as Co-Chair of the American Bar Association's Arms Control and Disarmament Committee, and as a member of the Board of Directors of the Lawyers Alliance for World Security. He earned a B.A. (cum laude) from Brandeis University; an M.B.A. and an L.L.M. in international law (with honors) from Georgetown University; and a J.D. from American University.
Thomas Graham, Jr.	Ambassador Graham became a director of the Company on April 2, 2006, was made Executive Chairman of the Board and Corporate Secretary on April 4, 2006 and is now Chairman of the Board effective May 1, 2020. Ambassador Graham served as a member of the board of directors of Thorium Power, Inc., from 1997 until the merger with the Company. He is one of the world's leading experts on nuclear non-proliferation and has served as a senior U.S. diplomat involved in the negotiation of every major international arms control and non-proliferation agreement involving the United States during the period from 1970 to 1997, including the Strategic Arms Limitations Talks (the Interim Agreement on Strategic Offensive Arms and the Anti-Ballistic Missile Treaty and the SALT II Treaty), the Strategic Arms Reduction Talks (START Treaty), the Intermediate Nuclear Forces Treaty, the Nuclear Non-Proliferation Treaty Extension, the Conventional Armed Forces in Europe Treaty, and the Comprehensive Test Ban Treaty. In 1993, Ambassador Graham served as the Acting Director of the U.S. Arms Control and Disarmament Agency ("ACDA"), and for seven months in 1994 served as the Acting Deputy Director. From 1994 through 1997, he served as the Special Representative of the President of the United States for Arms Control, Non-Proliferation and Disarmament with the rank of Ambassador, and in this capacity successfully led U.S. government efforts to achieve the permanent extension of the Nuclear Non-Proliferation Treaty in 1995. He also served for 15 years as the general counsel of ACDA. Ambassador Graham worked on the negotiation of the Chemical Weapons Convention and the Biological Weapons Convention. He drafted the implementing legislation for the Biological Weapons Convention and managed the Senate approval of the ratification of the Geneva Protocol banning the use in war of chemical and biological weapons. Mr. Graham served as a member of the International Advisory Board for the nuclear program of the United Arab Emirates from 2009 through its termination in October 2017. He is also Chairman of the Board of CanAlaska Uranium Ltd. of Vancouver, Canada (TSX: CVV), a uranium exploration company. In 2019, he was selected as Co-chair of the Nuclear Energy and National Security Coalition, a subsidiary of the Atlantic Council and was elected to the Editorial Board of the Marine Corps University Press.

	Ambassador Graham received an A.B. in 1955 from Princeton University and a J.D. in 1961 from Harvard Law School. He is a member of the Kentucky, the District of Columbia, and the New York Bar Associations and is a member of the Council on Foreign Relations. He chaired the Committee on Arms Control and Disarmament of the American Bar Association from 1986-1994. Ambassador Graham received the Trainor Award for Distinction in Diplomacy from Georgetown University in 1995 and the World Order Under Law award from the International Law Section of the American Bar Association in 2007. He has taught at a number of universities as an adjunct professor including the University of Virginia Law School, Georgetown University Law Center, Georgetown University School of Foreign Service, the University of Washington, the University of Tennessee, Stanford University, and Oregon State University. He has published twelve books including non-fiction books, such as *Disarmament Sketches* in 2002, *Spy Satellites* in 2007, *The Alternate Route: Nuclear Weapon Free Zones* and *Seeing the Light, the Case for Nuclear Power in the 21st Century* in 2017, and *Unending Crisis* in 2012, as well as two novels, *Sapphire, A Tale of the Cold War* in 2014 and *On Tyranny and Crisis* in 2020.
Victor E. Alessi	Dr. Alessi became a director of the Company on August 23, 2006. Dr. Alessi, who holds a Ph.D. in nuclear physics, is President Emeritus of the United States Industry Coalition (“USIC”), an organization dedicated to facilitating the commercialization of technologies of the New Independent States (“NIS”) of the former Soviet Union through cooperation with its members. He has held such position since August 1, 2006. Prior to becoming President Emeritus, Dr. Alessi held the positions of CEO and President of USIC since 1999. Previously, he was President of DynMeridian, a subsidiary of DynCorp, specializing in arms control, non-proliferation, and international security affairs. Before joining DynMeridian in early 1996, Dr. Alessi was the Executive Assistant to the Director, U.S. Arms Control and Disarmament Agency (“ACDA”). At ACDA he resolved inter-bureau disputes and advised the director on all arms control and non-proliferation issues. Dr. Alessi served as Director of the Office of Arms Control and Nonproliferation in the Department of Energy (“DOE”) prior to his work at ACDA, overseeing all DOE arms control and non-proliferation activities. As a senior DOE representative, Dr. Alessi participated in U.S. efforts that led to the successful conclusion of the Intermediate Nuclear Forces (“INF”), Conventional Forces in Europe, Threshold Test Ban, Peaceful Nuclear Explosions, Open Skies, Strategic Arms Reductions Talks Treaties, and the Chemical Weapons Convention. In this role, he was instrumental in implementing the U.S. unilateral nuclear initiative in 1991 and was a member of the U.S. delegation discussing nuclear disarmament with Russia and other states of the former Soviet Union. He was in charge of DOE’s support to the U.N. Special Commission on Iraq, to the Nunn-Lugar Initiative, and represented DOE in discussions on the Comprehensive Test Ban (“CTB”) with the other nuclear weapons states before the CTB negotiations began in Geneva in 1994. Dr. Alessi served as the U.S. board member to the International Science and Technology Center in Moscow since its founding in 1992 until 2011, and as a member of the Board of Directors of Valley Forge Composite Technologies, Inc. from 2008 until 2013. He is also the former U.S. board member to the Science and Technology Center in Ukraine. Dr. Alessi is a 1963 graduate of Fordham University, where he also earned a licentiate in Philosophy (“Ph.L.”) in 1964. He studied nuclear physics at Georgetown University, receiving his M.S. in 1968 and Ph.D. in 1969.

Daniel B. Magraw	Mr. Magraw became a director of the Company on October 23, 2006. Mr. Magraw is a leading expert on international environmental law and policy, as well as on international human rights. Mr. Magraw is a Senior Fellow and Professorial Lecturer at the Foreign Policy Institute at Johns Hopkins School of Advanced International Studies and President Emeritus of the Center for International Environmental Law ("CIEL"). He is also a member of the Advisory Committee to the Law Library of Congress and serves as a consultant to the United Nations. Mr. Magraw was the President and CEO of CIEL from 2002-2010. From 1992-2001, he was Director of the International Environmental Law Office of the U.S. Environmental Protection Agency, during which time he also served at the White House (2000-2001) and as Acting Assistant Administrator of the EPA's Office of International Activities. He was a member of the Trade and Environment Policy Advisory Committee to the Office of the U.S. Trade Representative ("TEPAC") from 2002-2010, chaired the American Bar Association ("ABA") Section of International Law's Task Force on Carta de Foresta, was a member of the U.S. Department of State Study Group on International Business Transactions, and was chair of the 15,000-member Section of International Law and Practice of the ABA. He practiced international law, constitutional law, and bankruptcy law at Covington & Burling in Washington, DC from 1978-1983. Mr. Magraw is a widely published author in the field of international law and has received many awards. He graduated from Harvard University with High Honors in Economics, where he was student body president, and from the University of California, Berkeley Law School, where he was editor-in-chief of the law review. While working as an economist for the Peace Corps in India from 1968 to 1972, Mr. Magraw helped develop and managed the largest and most successful cooperative of its type (wholesale, retail, furniture manufacturing, and food processing) in India. In 1996, Mr. Magraw became a member of the Board of Directors of Thorium Power, Inc., which is now a wholly-owned subsidiary of the Company.

Kathleen Kennedy Townsend	Ms. Townsend became a director of the Company in October 2013. Ms. Townsend has a long history of accomplishment in the public arena, and for the last decade in the private sector. She has been a Managing Director at the Rock Creek Group, an investment management company and is now Senior Advisor. Ms. Townsend is also the Director of Retirement Security, Retirement Security for All, and serves on the Board of Directors for the Pension Rights Center (a nonprofit consumer advocacy organization), CanAlaska Uranium Ltd. (TSX: CVV) (a Canadian uranium exploration company), and Lakson Investments Ltd. As the State of Maryland's first woman Lt. Governor, Ms. Townsend was in charge of a multimillion-dollar budget and had oversight of major cabinet departments, including Economic Development and Transportation, State Police, Public Safety, and Correction and Juvenile Justice. Prior to being elected Lt. Governor, Ms. Townsend served as Deputy Assistant Attorney General of the United States. In that role, she led the planning to put 100,000 police officers into the community and began the Police Corps, a program to give college scholarships to young people who pledge to work as police officers for four years after graduation. Prior to serving at the Department of Justice, Ms. Townsend spent seven years as the founder and director of the Maryland Student Service Alliance, where she led the fight to make Maryland the first-and only-state to make service a graduation requirement. She has been appointed Special Advisor at the Department of State, and a Research Professor at the McCourt School of Public Policy at Georgetown University, where she focuses on retirement security. She is a Woodrow Wilson Fellow. She taught foreign policy at the University of Pennsylvania and the University of Maryland, Baltimore County and has been a visiting Fellow at the Kennedy School of Government at Harvard. In the mid-1980s, she founded the Robert F. Kennedy Human Rights Award. She chaired the Center for Popular Democracy, which builds the strength and capacity of democratic organizations. Ms. Townsend is also a member of the Council of Foreign Relations and the Inter-American Dialogue. For the last eight years she has been Vice-Chair of the Future of Science conference held in Venice Italy and for the last four years Vice-Chair of Science for Peace held in Milan. Ms. Townsend has chaired the Institute of Human Virology founded by Dr. Robert Gallo, which treats over 700,000 patients in Africa as part of the PEPFAR program, has chaired the Robert Kennedy Memorial and has been on the Board of Directors of the John F. Kennedy Library Foundation. Previously, she served on a number of boards including the Export-Import Bank, Johns Hopkins School of Advanced International Studies, the Wilderness Society, the Points of Light Foundation, the National Catholic Reporter and the Institute for Women's Policy Research, and the Baltimore Urban League. An honors graduate of Harvard University, Ms. Townsend received her law degree from the University of New Mexico, where she was a member of the law review. She has received fourteen honorary degrees. A member of the bar in Maryland, Connecticut, and Massachusetts, she is also a certified broker-dealer. Ms. Townsend's book, *Failing America's Faithful: How Today's Churches Mixed God with Politics and Lost Their Way* was published by Warner Books in March 2007.

Larry Goldman	Mr. Goldman, a certified public accountant, was appointed the Chief Financial Officer of the Company on September 1, 2018 and was made Corporate Secretary on May 1, 2020. Prior to his appointment, Mr. Goldman had been working with Lightbridge as a consultant since 2006 and served as the Company's Chief Accounting Officer since 2015. From 1985 to 2004, Mr. Goldman was an Audit Assurance Partner for Livingston Wachtell & Co., LLP, a New York City CPA firm, with over 20 years' experience in assurance, tax and advisory services. Since September 2004, Mr. Goldman had also provided consulting services to numerous public companies on various financial projects and has government contracting accounting experience. Mr. Goldman has an M.S. degree in Taxation from Pace University and Bachelor's degree in Business Administration with a concentration in Accounting. Mr. Goldman is a member of the New York State Society of CPAs and the American Institute of Certified Public Accountants, where he had served on the SEC Practice Committee and a Management Consulting Committee. He has also been published in the New York CPA Journal.
Andrey Mushakov	Dr. Mushakov oversees the nuclear fuel technology division of Lightbridge Corporation and is an expert in cost modeling and the economics of the nuclear fuel cycle. He has been with Lightbridge since 2000, and in 2018 was named executive vice president for nuclear operations. In 2009, Dr. Mushakov led Lightbridge's efforts to establish its Russian Branch Office in Moscow and oversaw its successful operation from 2009 to 2014 when Lightbridge made a decision to move its critical path fuel development and demonstration activities out of Russia due to increased political risk. In 2014-2015, Dr. Mushakov spearheaded an effort within Lightbridge to establish cooperation agreements with Canadian Nuclear Laboratories in Canada, BWXT in the United States, and the Institute for Energy Technology in Norway. More recently, he oversaw a successful effort that resulted in a voucher award from the U.S. Department of Energy's (DOE) Gateway for Accelerated Innovation in Nuclear (GAIN) program to support development of Lightbridge fuel in collaboration with Idaho National Laboratory (INL). The scope of the project includes experiment design for irradiation of Lightbridge metallic fuel material samples in the Advanced Test Reactor (ATR) at INL. Dr. Mushakov has been a featured speaker at international conferences and panels on nuclear fuel technology, including the Wharton Energy Conference and the World Nuclear Fuel Cycle Conference. He earned a Ph.D. in economics from St. Petersburg State University of Economics and Finance, an M.S. degree in management from Hult International Business School, and a B.S. degree in banking and finance from the Financial University under the Government of the Russian Federation.

Corporate Governance

Our current corporate governance practices and policies are designed to promote stockholder value. We are committed to the highest standards of corporate ethics and diligent compliance with financial accounting and reporting rules. Our Board provides independent leadership in the exercise of its responsibilities. Our management oversees a system of internal controls and compliance with corporate policies and applicable laws and regulations, and our employees operate in a climate of responsibility, candor, and integrity.

Corporate Governance Guidelines

We and our Board are committed to high standards of corporate governance as an important component in building and maintaining stockholder value. To this end, we regularly review our corporate governance policies and practices to ensure that they are consistent with the high standards of other companies. We also closely monitor guidance issued or proposed by the SEC, as well as the emerging best practices of other companies. The current corporate governance guidelines are available on the Company's website www.ltbridge.com. Printed copies of our corporate governance guidelines may be obtained, without charge, by contacting the Corporate Secretary, Lightbridge Corporation, 11710 Plaza America Drive, Suite 2000, Reston, VA 20190 USA.

The Board and Committees of the Board

The Company is governed by the Board that currently consists of five members: Seth Grae, Thomas Graham, Victor Alessi, Kathleen Kennedy Townsend and Daniel Magraw. The Board has established four Committees: the Audit Committee, the Compensation Committee, the Governance and Nominating Committee and the Executive Committee. Each of the Audit Committee, Compensation Committee and Governance and Nominating Committee are comprised entirely of independent directors. From time to time, the Board may establish other committees. The Board met five times in 2020. The Board has adopted a written charter for each of its committees which are available on the Company's website www.ltbridge.com. Printed copies of these charters may be obtained, without charge, by contacting the Corporate Secretary, Lightbridge Corporation, 11710 Plaza America Drive, Suite 2000, Reston, VA 20190 USA. Each director attended at least 75% of all meetings of the Board of Directors and each committee on which he or she served during 2020. Pursuant to the Company's corporate governance guidelines, directors are encouraged to attend annual meeting of stockholders, and two directors attended the Company's 2020 annual meeting.

Governance Structure

The Company has chosen to separate the roles of the Chairman of the Board and the Chief Executive Officer. We have chosen to implement such a governance structure to allow our Chief Executive Officer the ability to focus the majority of his time and efforts on the day-to-day operations of the Company. We believe that this governance structure has served the Company's stockholders well over the years.

The Board's Role in Risk Oversight

The Board oversees that the assets of the Company are properly safeguarded, that the appropriate financial and other controls are maintained, and that the Company's business is conducted wisely and in compliance with applicable laws and regulations and proper governance. Included in these responsibilities is the Board's oversight of the various risks facing the Company. In this regard, the Board seeks to understand and oversee critical business risks. The Board does not view risk in isolation. Risks are considered in virtually every business decision and as part of the Company's business strategy. The Board recognizes that it is neither possible nor prudent to eliminate all risk. Indeed, purposeful and appropriate risk-taking is essential for the Company to be competitive on a global basis and to achieve its objectives.

While the Board oversees risk management, Company management is charged with managing risk. The Company has robust internal processes and a strong internal control environment to identify and manage risks and to communicate with the Board. The Board and the Audit Committee monitor and evaluate the effectiveness of the internal controls and the risk management program at least annually. Management communicates routinely with the Board, Board committees and individual directors on the significant risks identified and how they are being managed. Directors are free to, and indeed often do, communicate directly with senior management.

The Board implements its risk oversight function both as a whole and through committees. Much of the work is delegated to various committees, which meet regularly and report back to the full Board. All committees play significant roles in carrying out the risk oversight function. In particular:

- The Audit Committee oversees risks related to the Company's financial statements, the financial reporting process, accounting and legal matters. The Audit Committee oversees the internal audit function and the Company's ethics programs, including the Code of Business Conduct and Ethics. The Audit Committee members meet separately with representatives of the independent auditing firm.

- The Compensation Committee evaluates the risks and rewards associated with the Company's compensation philosophy and programs. The Compensation Committee reviews and approves compensation programs with features that mitigate risk without diminishing the incentive nature of the compensation. Management discusses with the Compensation Committee the procedures that have been put in place to identify and mitigate potential risks in compensation.

Audit Committee

Our Audit Committee consists of Mr. Alessi, Mr. Magraw and Ms. Townsend, each of whom is "independent" as that term is defined under the Nasdaq listing standards. The Audit Committee oversees our accounting and financial reporting processes and the audits of the financial statements of the Company. Ms. Townsend is chair of the Audit Committee and an audit committee financial expert as that term is defined by the applicable SEC rules. The Audit Committee is responsible for, among other things:

- selecting our independent auditors and pre-approving all auditing and non-auditing services permitted to be performed by our independent auditors;

- reviewing with our independent auditors any audit problems or difficulties and management's response;

- reviewing and approving all proposed related party transactions, as defined in Item 404 of Regulation S-K;

- discussing the annual audited financial statements with management and our independent auditors;

- reviewing major issues as to the adequacy of our internal controls and any special audit steps adopted in light of significant internal control deficiencies;

- annually reviewing and reassessing the adequacy of our Audit Committee charter;

- meeting separately and periodically with management and our internal and independent auditors;

- reporting regularly to the full Board; and
- such other matters that are specifically delegated to our Audit Committee by our Board from time to time.

The Audit Committee met five times during 2020.

Compensation Committee

Our Compensation Committee consists of Mr. Alessi, Mr. Magraw and Ms. Townsend, each of whom is "independent" as that term is defined under the Nasdaq listing standards. Our Compensation Committee assists the Board in reviewing and approving the compensation structure of our directors and executive officers, including all forms of compensation to be provided to our directors and executive officers. The Compensation Committee is responsible for, among other things:

- approving and overseeing the compensation package for our executive officers;
- reviewing and making recommendations to the Board with respect to the compensation of our directors;
- reviewing and approving corporate goals and objectives relevant to the compensation of our Chief Executive Officer, evaluating the performance of our Chief Executive Officer in light of those goals and objectives, and setting the compensation level of our Chief Executive Officer based on this evaluation; and
- reviewing periodically and making recommendations to the Board regarding any long-term incentive compensation or equity plans, programs or similar arrangements, annual bonuses, employee pension and welfare benefit plans.

Under its charter, the Compensation Committee has sole authority to retain and terminate outside counsel, compensation consultants retained to assist the Compensation Committee in determining the compensation of the Chief Executive Officer or senior executive officers, or other experts or consultants, as it deems appropriate, including sole authority to approve the firms' fees and other retention terms. The Compensation Committee may also form and delegate authority to subcommittees and may delegate authority to one or more designated members of the Compensation Committee. The Compensation Committee may from time to time seek recommendations from the executive officers of the Company regarding matters under the purview of the Compensation Committee, though the authority to act on such recommendations rests solely with the Compensation Committee.

The Compensation Committee met five times during 2020.

Governance and Nominating Committee

Our Governance and Nominating Committee consists of Mr. Alessi, Mr. Magraw and Ms. Townsend, each of whom is "independent" as that term is defined under the Nasdaq listing standards. The Governance and Nominating Committee assists the Board of Directors in identifying individuals qualified to become our directors and in determining the composition of the Board and its committees. The Governance and Nominating Committee is responsible for, among other things:

- identifying and recommending to the Board nominees for election or re-election to the Board, or for appointment to fill any vacancy;

- reviewing annually with the Board the current composition of the Board in light of the characteristics of independence, age, skills, diversity, experience and availability of service to us;

- identifying and recommending to the Board the directors to serve as members of the Board's committees; and

- monitoring compliance with our Code of Business Conduct and Ethics.

Our Governance and Nominating Committee does not have a specific policy with regard to the consideration of candidates recommended by stockholders; however, any nominees proposed by our stockholders will be considered on the same basis as nominees proposed by the Board. If you or another stockholder want to submit a candidate for consideration to the Board, you may submit your proposal to our Corporate Secretary:

- by sending a written request by mail to:

  Lightbridge Corporation
  11710 Plaza America Drive, Suite 2000
  Reston, VA 20190
  Attention: Corporate Secretary

- by calling our Corporate Secretary at 571-730-1200.

The Governance and Nominating Committee met five times during 2020.

Executive Committee

Our Executive Committee consists of Messrs. Alessi, Grae and Graham. The Executive Committee of the Company exercises the power of the Board between regular meetings of the Board and when timing is critical. The Executive Committee also assists the Board in fulfilling its oversight responsibility with respect to management-level staff, outside service providers, third-party vendors and sensitive information potentially subject to export controls. The Executive Committee did not meet during 2020.

Code of Ethics

The Board has adopted a Code of Business Conduct and Ethics that applies to the Company's directors, officers and employees. A copy of this policy is available via our website at https://www.ltbridge.com/investors/corporate-governance/governance-documents.

Printed copies of our Code of Business Conduct and Ethics may be obtained, without charge, by contacting the Corporate Secretary, Lightbridge Corporation, 11710 Plaza America Drive, Suite 2000, Reston, VA 20190 USA. During the fiscal year ended December 31, 2020, there were no waivers of our Code of Business Conduct and Ethics.

Stockholder Communication with the Board of Directors

Stockholders may communicate with the Board, including non-management directors, by sending a letter to our Board, c/o Corporate Secretary, Lightbridge Corporation, 11710 Plaza America Drive, Suite 2000, Reston, VA 20190 USA, for submission to the Board or committee or to any specific director to whom the correspondence is directed. Stockholders communicating through this means should include with the correspondence evidence, such as documentation from a brokerage firm, that the sender is a current record or beneficial stockholder of the Company. All communications received as set forth above will be opened by the Corporate Secretary or his designee for the sole purpose of determining whether the contents contain a message to one or more of our directors. Any contents that are not advertising materials, promotions of a product or service, patently offensive materials or matters deemed, using reasonable judgment, inappropriate for the Board will be forwarded promptly to the chairman of the Board, the appropriate committee, or the specific director, as applicable.

Delinquent Section 16(a) Reports

Section 16(a) of the Exchange Act requires the Company's directors, executive officers and greater-than-10% stockholders to file forms with the SEC to report their ownership of Lightbridge shares and any changes in ownership. We have reviewed all forms filed electronically with the SEC. Based on that review and on written information given to us by our executive officers and directors, we believe that all of our directors and executive officers filed the required reports on a timely basis under Section 16(a) during 2020, except for Seth Grae, Andrey Mushakov and Larry Goldman, who on December 10, 2020 filed Forms 4 addressing restricted stock unit grants for which Forms 4 were due October 30, 2020.

Item 11. Executive Compensation

2020 Summary Compensation Table

The following table sets forth information concerning all cash and non-cash compensation awarded to, earned by or paid to our NEOs for services rendered in all capacities during the noted periods.

Name	Year	Salary ($)	Bonus ($)	Option Awards[1] ($)	Stock Awards[2] ($)	All Other Compensation[3] ($)	Total ($)
Seth Grae	2020	489,673	244,654	—	213,855	26,000	974,182
CEO, President and Director	2019	475,411	146,171	41,770	—	25,000	688,352
Andrey Mushakov	2020	305,407	152,589	—	142,570	19,500	620,566
Executive Vice President, Nuclear Operations	2019	296,511	91,166	26,051	—	19,000	432,728
Larry Goldman	2020	282,545	141,167	—	142,570	26,000	592,282
CFO and Corporate Secretary	2019	274,315	84,342	24,103	—	25,000	407,760

(1) For a discussion of the assumptions and methodologies used in calculating the grant date fair value of the stock option awards, please see Note 10 to the Company's consolidated financial statements in the Company's Annual Report on Form 10-K for the year ended December 31, 2020.

(2) Restricted stock units vest ratably over three years.

(3) Consists of the Company's 401(k) matching contributions.

Outstanding Equity Awards at Fiscal Year End

The following table sets forth all outstanding equity awards to our named executive officers as of December 31, 2020.

	Option Awards				Stock Awards	
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date	Equity incentive plan awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)	Equity incentive plan awards: Market Value of Unearned Shares, Units or Other Rights That Have Not Vested ($)
Seth Grae	711	—	331.80	3/19/2021		
	6,303	—	75.60	4/8/2025		
	772	—	75.60	8/12/2025		
	17,430	—	55.20	11/20/2025		
	18,199	—	18.48	11/9/2026		
	40,233	—	12.60	10/26/2027		
	18,811	9,405(1)	10.80	8/6/2028		
	16,146	—	3.82	12/2/2029		
					79,500	213,855(2)
Andrey Mushakov	154	—	325.20	4/11/2021		
	3,069	—	75.60	4/8/2025		
	650	—	75.60	8/12/2025		
	10,067	—	55.20	11/20/2025		
	11,351	—	18.48	11/9/2026		
	25,093	—	12.60	10/26/2027		
	11,732	5,866(1)	10.80	8/6/2028		
	10,070	—	3.82	12/2/2029		
					53,000	142,570(2)
Larry Goldman	1,104	—	75.60	4/8/2025		
	231	—	75.60	8/12/2025		
	5,449	—	55.20	11/20/2025		
	4,469	—	18.48	11/9/2026		
	13,785	—	12.60	10/26/2027		
	10,854	5,427(1)	10.80	8/6/2028		
	9,317	—	3.82	12/2/2029		
					53,000	142,570(2)

(1) Vest on August 8th of 2021.

(2) Vest ratably on October 28, 2021, October 28, 2022 and October 28, 2023.

Potential Payments upon Termination or Change in Control

Employment Agreements

Please see above under "—Employment Agreements" for a description of potential payments to each of Mr. Grae, Dr. Mushakov and Mr. Goldman pursuant to their employment agreements. Each of Mr. Grae, Dr. Mushakov, and Mr. Goldman will also be entitled to continued benefits under the Company's medical, dental and vision plans for a period of up to twelve months upon termination outside of a change of control and for a period of up to eighteen months upon termination within 24 months following a change of control.

Equity Incentive Plans

Under the Company's 2006 Stock Plan, 2015 Equity Incentive Plan, each as amended, and the 2020 Omnibus Incentive Plan the Board or the Compensation Committee may accelerate the vesting of awards outstanding thereunder upon a change in control of the Company. The Board or the Compensation Committee may also provide for the payment of the cash value of the awards in connection with a change in control under circumstances specified in the Plans.

Securities Authorized for Issuance under Equity Compensation Plans

The following table sets forth certain information about the securities authorized for issuance under our 2020 Omnibus Incentive Plan, 2015 Equity Incentive Plan, as amended, and 2006 Stock Plan, as amended, as of December 31, 2020.

	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted average exercise price of outstanding options, warrants and rights[(1)] (b)	Number of securities Remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	759,647	20.23	118,639
Equity compensation plans not approved by security holders	—	—	—
Total	759,647	20.23	118,639

(1) The weighted-average exercise price is calculated based solely on the exercise prices of the outstanding stock options and does not reflect shares that will be issued upon the vesting of outstanding restricted stock units.

Director Compensation

The following table sets forth certain information concerning the compensation paid to our directors for services rendered to us during fiscal 2020. Mr. Grae was not compensated for his service as a director in 2020. Ms. Townsend is paid $50,000, and Mr. Alessi and Mr. Magraw are each paid $45,000 annually, and Mr. Graham, who serves as Chairman of the Board, is paid $60,000 annually. Directors are reimbursed for out-of-pocket expenses incurred as a result of their participation on our Board.

In addition, the directors were awarded 5,300 shares of stock each in October 2020, which shares are expected to be issued in March 2021.

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)	Stock Awards ($)	All Other Compensation ($)	Total ($)
Victor Alessi	45,000	—	14,257	—	59,257
Thomas Graham, Jr.	40,000	—	14,257	—	54,257
Daniel Magraw	45,000	—	14,257	—	59,257
Kathleen Kennedy Townsend	50,000	—	14,257	—	64,257

(1) For a discussion of the assumptions and methodologies used in calculating the grant date fair value of the stock option awards, please see Note 10 to the Company's consolidated financial statements in the Company's Annual Report on Form 10-K for the year ended December 31, 2020.

As of December 31, 2020, the Company's directors other than Mr. Grae held the following stock options:

- For each of Messrs. Alessi, Graham and Magraw, stock options to purchase 11,388 shares of common stock.
- For Ms. Townsend, stock options to purchase 11,875 shares of common stock.

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

The following tables set forth information known to us with respect to the beneficial ownership of our common stock as of March 15, 2021 for: (i) each person known by us to beneficially own more than 5% of our voting securities, (ii) each named executive officer, (iii) each of our directors and nominees, and (iv) all of our current executive officers and directors as a group. The address of each executive officer, director and nominee is care of Lightbridge Corporation, 11710 Plaza America Drive, Suite 2000, Reston, VA 20190 USA. Except as explained in the footnotes to the following table, each person listed, and the members of the group, had sole voting power and sole investment power with respect to the shares shown. None of the shares are subject to pledge.

Name	Common Stock Held Directly	Stock Options[(1)]	Total Beneficial Ownership	Percent of Common Stock
Seth Grae	22,241(3)	117,894	140,135	2.1%
Larry Goldman	5,935	45,209	51,144	*
Andrey Mushakov	8,938	72,032	80,970	1.2%
Victor Alessi	5,576	11,388	16,964	*
Thomas Graham, Jr.	8,277(4)	11,388	19,665	*
Daniel Magraw	6,148	11,388	17,536	*
Kathleen Kennedy Townsend	5,405	11,875	17,280	*
Current Directors and Executive Officers as a Group (seven people)	62,520	281,174	343,694	5.0%

* Denotes less than 1% of the outstanding shares of common stock.
(1) Consists of shares that may be acquired under stock options that are currently exercisable or will become exercisable within 60 days of March 15, 2021.

(2) Includes 4,167 shares of common stock held by Mr. Grae’s spouse.

(3) Includes 334 shares of common stock held by Mr. Graham’s spouse.

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

Transactions with Related Persons

None of our directors, director nominees, executive officers, 5% stockholders, or immediate family members of such persons has been involved in any transactions with us which are required to be disclosed pursuant to Item 404 of Regulation S-K.

Independent Directors

In considering and making decisions as to the independence of each of the directors of the Company, the Board considered transactions and relationships between the Company (and its subsidiaries) and each director (and each member of such director's immediate family and any entity with which the director or family member has an affiliation such that the director or family member may have a material indirect interest in a transaction or relationship with such entity). The Board has determined that Mr. Alessi, Mr. Magraw and Ms. Townsend are independent as defined in applicable SEC and Nasdaq rules and regulations, and that each constitutes an "Independent Director" as defined in Nasdaq Listing Rule 5605. Such members constitute a majority of the entire Board.

Item 14. Principal Accountant Fees and Services

Independent Registered Public Accounting Firm's Fees

The following table sets forth the fees billed to us by BDO during the fiscal years ended December 31, 2020 and 2019.

	2020	2019
Audit Fees	$ 156,159	$ 157,485
Audit Related Fees	46,072	17,177
Tax Fees	16,375	17,062
All Other Fees	—	—
Total	$ 218,966	$ 191,724

Audit Fees consist of the aggregate fees billed for professional services rendered for the audit of our annual financial statements and the reviews of the financial statements included in our Forms 10-Q and for any other services that were normally provided by BDO in connection with our statutory and regulatory filings or engagements.

Audit Related Fees consist of the aggregate fees billed for professional services rendered for assurance and related services that were reasonably related to the performance of the audit or review of our financial statements and were not otherwise included in Audit Fees.

Tax Fees consist of the aggregate fees billed for professional services rendered for tax compliance, tax advice and tax planning. Included in such Tax Fees are fees for preparation of our tax returns and consultancy and advice on other tax planning matters.

All Other Fees consist of the aggregate fees billed for products and services provided by BDO and not otherwise included in Audit Fees, Audit Related Fees or Tax Fees. Included in such Other Fees are fees for services rendered in connection with any private and public offerings conducted during such periods.

Our Audit Committee has considered whether the provision of the non-audit services described above is compatible with maintaining auditor independence and determined that such services are appropriate. Before auditors are engaged to provide us audit or non-audit services, such engagement is (without exception, required to be) approved by the Audit Committee of our Board.

Pre-Approval Policies and Procedures

Under the Sarbanes-Oxley Act of 2002, all audit and non-audit services performed by our auditors must be approved in advance by our Board to assure that such services do not impair the auditors' independence from us. In accordance with its policies and procedures, our Board pre-approved the service performed by the Company's independent registered public account firm, BDO, for our consolidated financial statements as of and for the year ended December 31, 2020.

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, 2020 and 2019
- Consolidated Statements of Operations for the Years Ended December 31, 2020 and 2019
- Consolidated Statements of Cash Flows for the Years Ended December 31, 2020 and 2019
- Consolidated Statements of Changes in Stockholders' Equity for the Years Ended December 31, 2020 and 2019
- Notes to Consolidated Financial Statements
- Report of BDO USA, LLP dated March 25, 2021 on the Company's financial statements filed as a part hereof for the fiscal years ended December 31, 2020 and 2019. 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
3.1	Articles of Incorporation of the Company, as amended (incorporated by reference to Exhibit 3.1 to the Form 10-Q filed by the Company on November 5, 2019).
3.2	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).
3.3	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).
3.4	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).
3.5	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).
4.3	Description of Securities (incorporated by reference to Exhibit 4.3 to the Form 10-K filed by the Company on March 18, 2020).
4.4	Specimen Certificate for Company's Common Stock (incorporated by reference to Exhibit 4.1 to the Company's registration statement on Form S-3 filed on April 1, 2013, File No. 333-187659).

10.1	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).
10.2	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).
10.3**	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).
10.4**	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).
10.5**	Form of Incentive Stock Option Agreement for Employees under the 2015 Equity Incentive Plan (incorporated by reference to Exhibit 99.2to the Company's Registration Statement on Form S-8, File No. 333-218796, filed on June 16, 2017).
10.6**	Form of Non-Qualified Stock Option Agreement for Employees under the 2015 Equity Incentive Plan (incorporated by reference to Exhibit99.3 to the Company's Registration Statement on Form S-8, File No. 333-218796, filed on June 16, 2017).
10.7**	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)
10.8**	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).
10.9**	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).
10.10**	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).
10.11**	Lightbridge Corporation 2020 Omnibus Incentive Plan (incorporated by reference to Appendix A to the definitive proxy statement filed on July 27, 2020).
10.12*	Form of Non-Statutory Stock Option Agreement for Employees under the 2020 Omnibus Incentive Plan
10.13*	Form of Restricted Stock Unit Award Agreement for Employees under the 2020 Omnibus Incentive Plan.
10.14*	Form of Restricted Stock Unit Award Agreement for Non-Employee Directors under the 2020 Omnibus Incentive Plan.
10.15**	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).
10.16**	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).
10.17**	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).
10.18**	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).
10.19**	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).
10.20**	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).

10.21**	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).
10.22**	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.
24.1*	Power of Attorney (Included on the signature page hereto).
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.
101*	The following materials from Lightbridge Corporation's Annual Report on Form 10-K for the year ended December 31, 2020, 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.

* 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).

Item 16. Form 10–K Summary

None.

LIGHTBRIDGE CORPORATION
DECEMBER 31, 2020 and 2019

TABLE OF CONTENTS

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, 2020 and 2019, the related consolidated statements of operations, changes in stockholders' equity, and cash flows for 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, 2020 and 2019, and the results of its operations and its cash flows for each of the years then ended, in conformity with accounting principles generally accepted in the United States of America.

Going Concern Uncertainty

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company has suffered recurring losses from operations, negative cash flows from operations, has an accumulated deficit of approximately $129.2 million as of December 31, 2020 and the Company expects to incur further net losses in the development of its business. These conditions raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

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.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Capitalized Patent Costs Impairment Assessment

As described in Notes 1 and 5 to the consolidated financial statements, the Company tests the recoverability of the capitalized patent costs whenever events or changes in circumstances indicate that the amounts may not be recoverable. During the year ended December 31, 2020, the Company identified impairment indicators, which resulted in the Company recording an impairment charge of approximately $1.1 million related to its capitalized

patent costs. Significant management judgment is involved in determining if impairment indicators exist, assessing recoverability and measuring fair value of capitalized patent costs.

We identified the impairment assessment of capitalized patent costs as a critical audit matter because of the significant estimates and assumptions used to estimate future expected revenues, earnings, operating expenses, research and development expenses, timing of commercialization, and discount rates applied in order to determine fair value. Auditing these elements required especially challenging auditor judgment and significant audit effort, including the need for specialized knowledge and skill.

The primary procedures we performed to address this critical audit matter included:

- Evaluating management's assessment of potential impairment indicators, including changes in research and development activities and timing of commercialization.

- Evaluating management's assumptions, including future revenues, operating expenses, research and development expenses, timing of commercialization used in performing the recoverability test.

- Utilizing personnel with specialized knowledge and skills in valuation to perform testing of management's discounted cash flow methodology, including reviewing the internally projected results to ensure the selected costs of capital adequately captures the conditions present in the projections and assessing other complex assumptions incorporated into the valuation models.

/s/ BDO USA, LLP

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

Philadelphia, Pennsylvania
March 25, 2021

LIGHTBRIDGE CORPORATION
CONSOLIDATED BALANCE SHEETS

	December 31, 2020	December 31, 2019 (Revised)
ASSETS		
Current Assets		
Cash and cash equivalents	$ 21,531,665	$ 17,958,989
Other receivable from joint venture	—	400,000
Prepaid expenses and other current assets	172,460	47,371
Total Current Assets	21,704,125	18,406,360
Other Assets		
Patents and trademarks, net	85,562	1,144,888
Total Assets	$ 21,789,687	$ 19,551,248
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Accounts payable and accrued liabilities	$ 382,130	$ 350,299
Accrued legal settlement costs	4,200,000	—
Total Current Liabilities	4,582,130	350,299
Commitments and contingencies - Note 7		
Stockholders' Equity		
Preferred stock, $0.001 par value, 10,000,000 authorized shares		
Convertible Series A preferred shares, 699,878 shares and 757,770 shares issued and outstanding at December 31, 2020 and 2019, respectively (liquidation preference $2,613,025 and $2,636,764 at December 31, 2020 and 2019, respectively)	699	757
Convertible Series B preferred shares, 2,666,667 shares issued and outstanding at December 31, 2020 and 2019 (liquidation preference $4,897,517 and $4,569,180 at December 31, 2020 and 2019, respectively)	2,667	2,667
Common stock, $0.001 par value, 8,333,333 authorized, 6,567,110 shares and 3,252,371 shares issued and outstanding at December 31, 2020 and 2019, respectively	6,567	3,252
Additional paid-in capital	146,353,232	133,932,615
Accumulated deficit	(129,155,608)	(114,738,342)
Total Stockholders' Equity	17,207,557	19,200,949
Total Liabilities and Stockholders' Equity	$ 21,789,687	$ 19,551,248

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

LIGHTBRIDGE CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,	
	2020	**2019** (Revised)
Revenue	$ —	$ —
Operating Expenses		
General and administrative	8,312,583	5,787,092
Research and development	891,626	2,676,156
Legal settlement costs	4,200,000	—
Patent write-off and impairment loss	1,169,644	—
Total Operating Expenses	14,573,853	8,463,248
Other Operating Income and (Loss)		
Grant income	72,709	—
Other income from joint venture	—	715,126
Equity in loss from joint venture	—	(3,321,737)
Total Other Operating Income and (Loss)	72,709	(2,606,611)
Total Operating Loss	$(14,501,144)	$(11,069,859)
Other Income		
Interest income	83,878	393,112
Total Other Income	83,878	393,112
Net Loss Before Income Taxes	(14,417,266)	(10,676,747)
Income Taxes	—	—
Net Loss	$(14,417,266)	$(10,676,747)
Accumulated Preferred Stock Dividend	(512,953)	(490,117)
Deemed additional dividend on preferred stock dividend due to the beneficial conversion feature	(222,196)	(209,698)
Net Loss Attributable to Common Shareholders	$(15,152,415)	$(11,376,562)
Net Loss Per Common Share		
Basic and Diluted	$ (3.59)	$ (3.66)
Weighted Average Number of Common Shares Outstanding	4,216,568	3,107,580

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

LIGHTBRIDGE CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,	
	2020	**2019** (Revised)
Operating Activities		
Net Loss	$(14,417,266)	$(10,676,747)
Adjustments to reconcile net loss from operations to net cash used in operating activities:		
Common stock issued for services and stock-based compensation	70,341	822,820
Patent write-off and impairment loss	1,169,645	—
Amortization of patents	100,117	89,623
Equity in loss from joint venture	—	3,321,737
Changes in operating working capital items		
Other receivable from joint venture	400,000	(306,747)
Prepaid expenses and other current assets	(125,089)	(10,626)
Accounts payable and accrued liabilities	31,831	92,243
Accrued legal settlement costs	4,200,000	—
Net Cash Used in Operating Activities	(8,570,421)	(6,667,697)
Investing Activities		
Investment in joint venture	—	(3,540,000)
Patents and trademarks	(210,436)	(221,063)
Net Cash Used in Investing Activities	(210,436)	(3,761,063)
Financing Activities		
Net proceeds from the issuance of common stock and exercise of stock options	12,353,533	3,750,454
Net Cash Provided by Financing Activities	12,353,533	3,750,454
Net Increase (Decrease) in Cash and Cash Equivalents	3,572,676	(6,678,306)
Cash and Cash Equivalents, Beginning of Year	17,958,989	24,637,295
Cash and Cash Equivalents, End of Year	$ 21,531,665	$ 17,958,989
Supplemental Disclosure of Cash Flow Information		
Cash paid during the year:		
Interest paid	$ —	$ —
Income taxes paid	$ —	$ —
Non-Cash Financing Activities:		
Accumulated preferred stock dividend	$ 735,149	$ 699,815
Conversion of Series A convertible preferred stock and payment of paid-in-kind dividends to common stock	$ 49,885	$ 187,890
Common stock issued for services	$ 17,000	$ —

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

LIGHTBRIDGE CORPORATION
CONSOLIDATED STATEMENT OF CHANGES IN STOCKHOLDERS' EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2020 AND 2019

	Series A Preferred Stock		Series B Preferred Stock		Common Stock		Additional Paid-in	Accumulated	Total
	Shares	Amount	Shares	Amount	Shares	Amount	Capital	Deficit	Equity
Balance - December 31, 2018 – revised	813,624	$ 813	2,666,667	$ 2,667	2,738,508	$ 2,738	$129,359,799	$(104,061,595)	$ 25,304,422
Conversion of Preferred Stock to Common Stock	(55,854)	(56)	—	—	5,800	6	50	—	—
Common stock issued - registered offerings - net of offering costs	—	—	—	—	508,063	508	3,749,946	—	3,750,454
Stock-based compensation	—	—	—	—	—	—	822,820	—	822,820
Net loss - revised	—	—	—	—	—	—	—	(10,676,747)	(10,676,747)
Balance - December 31, 2019 – revised	757,770	$ 757	2,666,667	$ 2,667	3,252,371	$ 3,252	$133,932,615	$(114,738,342)	$ 19,200,949
Conversion of Preferred Stock to Common Stock	(57,892)	(58)	—	—	6,327	6	52	—	—
Common stock issued - registered offerings - net of offering costs and exercise of options	—	—	—	—	3,304,412	3,305	12,350,228	—	12,353,533
Common stock issued for services	—	—	—	—	4,000	4	16,996	—	17,000
Stock-based compensation	—	—	—	—	—	—	53,341		53,341
Net loss	—	—	—	—	—	—	—	(14,417,266)	(14,417,266)
Balance - December 31, 2020	699,878	$ 699	2,666,667	$ 2,667	6,567,110	$ 6,567	$146,353,232	$(129,155,608)	$ 17,207,557

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

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. The Company is a nuclear fuel technology company developing and commercializing next generation nuclear fuel technology.

Basis of presentation

Going Concern, Liquidity and Management's Plan

While the Company's cash at December 31, 2020 exceeds its currently budgeted expenditures through the first quarter of 2022, there are inherent uncertainties in forecasting future expenditures, especially forecasting for uncertainties such as future R&D costs and how COVID-19 may affect future costs and operations. Also, the cash requirements of the Company's future planned operations to commercialize its nuclear fuel, including any additional expenditures that may result from unexpected developments, requires it to raise significant additional capital including receiving government support. The Company will need to seek its shareholders' approval in 2021 to increase the number of its authorized common shares for future equity financings, in order for the Company to continue to fund its future operations. Taking into account these uncertainties as well as the updated projected fuel development timeline of 15-20 years to commercialization, projected operational costs to keep the fuel development project on schedule and the various risks of developing and commercializing its nuclear fuel, these factors raise substantial doubt about the Company's ability to continue as a going concern for the 12 months following the date of this filing. To the extent any uncertainties reduce the Company's liquidity for the next 12 months, the Company will consider, if available, additional debt or equity raises and delaying certain expenditures, including delaying research and development expenses, until sufficient capital becomes available.

At December 31, 2020, the Company had approximately $21.5 million in cash and had a working capital surplus of approximately $17.1 million. The Company's net cash used in operating activities for the year ended December 31, 2020 was approximately $8.6 million, and current projections indicate that the Company will have continued negative cash flows from operations until the commercialization of its nuclear fuel. Net losses incurred for the years ended December 31, 2020 and 2019 amounted to approximately $(14.4) million, $(10.7) million, respectively. As of December 31, 2020, the Company has an accumulated deficit of approximately $129.2 million, representative of recurring losses since inception. The Company has incurred recurring losses since inception and it will continue to incur losses because it is in the early development stage of commercializing its nuclear fuel.

The Company's plans to fund future operations including: (1) raising additional capital through future equity issuances or convertible debt financings; (2) additional funding through new relationships to help fund future research and development costs; and (3) other sources of capital. The Company may issue securities, including common stock, preferred stock, and stock purchase contracts through private placement transactions or registered public offerings, pursuant to future registration statements. The current Form S-3 was filed with the SEC on March 15, 2018 and declared effective on March 23, 2018, and will expire on March 23, 2021. There can be no assurance as to the future availability of filing a Form S-3 or raising future equity capital or terms upon which financing and capital might become available. If the Company is unable to raise additional capital on terms acceptable to the Company and on a timely basis, the Company will be required to wind-down its operations. To the extent additional capital is raised through the sale of equity or convertible debt securities, such securities may be sold at a discount from the market price of the Company's common stock. The issuance of these securities could also result in significant dilution to the Company's stockholders, depending on the terms of the transaction. The Company's future liquidity needs to develop its nuclear fuel are long-term, and the ability to address those needs, and the ability to raise capital will largely be determined by the success of the development of its nuclear fuel, key nuclear development and government regulatory events, and its business decisions in the future.

Equity Method Investment – Enfission, LLC

In January 2018, Lightbridge and Framatome Inc., a subsidiary of Framatome SAS (formerly part of AREVA SAS) (collectively "Framatome"), 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. 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 determined that its investment in Enfission 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 or loss utilizing the hypothetical liquidation book value ("HLBV") method, based on the change in each JV member's claim on the net assets of the JV under 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 evaluates 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 not likely to 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.

Enfission was inactive for the year ended December 31, 2020 and at December 31, 2019. No amounts related to the equity method investment in Enfission have been recorded on the consolidated balance sheets or the consolidated statements of operations for the year ended December 31, 2020 and a $3.3 million loss on this equity method investment was recorded on the consolidated statements of operations for the year ended December 31, 2019.

Basis of Consolidation

These consolidated financial statements include the accounts of Lightbridge, a Nevada corporation, and the Company's wholly-owned subsidiaries, TPI, a Delaware corporation, and Lightbridge International Holding LLC, a Delaware limited liability company. These wholly-owned subsidiaries are inactive. All significant intercompany transactions and balances have been eliminated in consolidation.

The Company owns a 50% interest in Enfission; accounted for using the equity method of accounting (see Note 4. 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 does not have sufficient funds to finance its operations. 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. Enfission's operations was inactive for the year ended December 31, 2020 and at December 31, 2019. Enfission was dissolved on March 23, 2021. The Company will withdraw its petition for judicial dissolution of Enfission on file with the Court of Chancery of the State of Delaware.

Segment Reporting

ASC Topic 280, "Segment Reporting," requires use of the "management approach" model for segment reporting. The management approach model is based on the way a company's management organizes segments within the company for making operating decisions and assessing performance. We report our results in a single reportable segment, which reflects how our chief operating decision maker allocates resources considering our core data which is managed centrally on a company-wide basis, and evaluates our financial results. Because we have a single reportable segment, all required financial segment information can be found directly in the Consolidated Financial Statements. We evaluate the performance of our reporting segment based on operating expenses and will evaluate additional segment disclosure requirements as it expands its operation.

Use of Estimates and Assumptions

The preparation of consolidated 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 assumptions. The most significant estimates relate to its patent impairment evaluation and undiscounted and discounted cash flow projections used for the impairment testing of its patents, valuation of stock grants and stock options, the valuation allowance on deferred tax assets, and 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 consolidated 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 will need additional funding by way of a combination of strategic alliances, government grants, further offerings of equity securities, or an offering of debt securities in order to support its future research and development activities required to further enhance and complete the development of its fuel products to a proof of concept and a commercial stage.

The Company participates in a government-regulated industry. The operating results are affected by a wide variety of factors including decreases in the use or public favor of nuclear power, the ability of the Company's technology to safeguard the production of nuclear power, the ability to receive the required approval from the nuclear regulatory commission for utilities to use its fuel and the ability to safeguard the Company's patents and intellectual property from competitors. Due to these factors, the Company may experience substantial period-to-period fluctuations in its future operating results. Potentially, a loss of key officer, key management, and other personnel could impair its ability to successfully execute its business strategy, particularly when these individuals have acquired specialized knowledge and skills with respect to nuclear power and how it relates to the Company's nuclear fuel.

There can be no assurance that the Company will be able to successfully continue to conduct its operations if there is a lack of financial resources in the future to continue its fuel development, and a failure to do so would have a material adverse effect on the Company's future 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, contingent liabilities, potential competition with other nuclear fuel developers, including those entities developing accident tolerant fuels, changes in government regulations, support for nuclear power, changes in accounting and taxation standards, inability to achieve overall long-term goals, future impairment charges to its assets, and global or regional catastrophic events. The Company may also be subject to various additional political, economic, and other uncertainties.

On January 30, 2020, the World Health Organization ("WHO") announced a global health emergency because of a new strain of coronavirus originating in Wuhan, China (the "COVID-19 outbreak") and the risk to the international community as the virus spreads globally beyond its point of origin. In March 2020, the WHO classified the COVID-19 outbreak a pandemic, based on increase in exposure globally. The current spread of COVID-19 that is impacting global economic activity and market conditions could lead to adverse changes in the Company's ability to conduct research and development activities with the United States national labs and others. The COVID-19 pandemic has impacted business operations and results of operations for 2020, resulting in the reduction of research and development expenses and increase in general and administrative expenses due to severance payments to former employees. While the Company continues to monitor the impact of COVID-19 on its business, the Company is unable to accurately predict the ultimate impact on the results of operations, financial condition and liquidity that COVID-19 will have due to various uncertainties, including the geographic spread of the virus, the severity of the disease, the duration of the outbreak, and actions that may be taken by governmental authorities and other third-parties.

On March 27, 2020, President Trump signed into law the "Coronavirus Aid, Relief, and Economic Security (CARES) Act." The CARES Act, among other things, includes provisions relating to refundable payroll tax credits, deferment of employer social security payment, net operating loss carryback period, alternative minimum tax credit refund, modification to the net interest deduction limitation, increased limitations on qualified charitable contributions, and technical corrections to tax depreciation method for qualified improvement property. It also appropriated funds for the SBA Paycheck Protection Program loans that are forgivable in certain situations to promote continued employment, as well as Economic Injury Disaster Loans to provide liquidity to small businesses harmed by COVID-19. Management decided not to apply for these funds. The CARES Act did not have an impact on our results of operations, financial condition and liquidity.

Cash and Cash Equivalents

The Company may at times invest its excess cash in interest bearing accounts and US Treasury Bills. It classifies all highly liquid investments with original 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 two prominent financial institutions in 2020 and 2019. The Company buys and holds short-term US Treasury Bills from Treasury Direct to maturity. US Treasury Bills totaled approximately $13.0 million and $9.0 million at December 31, 2020 and 2019, respectively. The remaining $8.5 million and $9.0 million at December 31, 2020 and 2019, respectively, are on deposit with one notable financial institution. Total cash and cash equivalents held, as reported on the accompanying consolidated balance sheets, totaled approximately $21.5 million and $18.0 million at December 31, 2020 and 2019, respectively.

Grant Income

The Company has concluded that its government grant is not within the scope of ASC Topic 606 as it does not meet the definition of a contract with a customer. Additionally, the Company has concluded that the grant meets the definition of a contribution and are non-reciprocal transactions, and has also determined that Subtopic 958-605, Not-for-Profit-Entities-Revenue Recognition does not apply, as the Company is a business entity and the grant is with governmental agencies.

In the absence of applicable guidance under US GAAP, the Company management has developed a policy to recognize grant income at the time the related costs are incurred and the right to payment is realized.

The Company believes this policy is consistent with the overarching premise in ASC Topic 606, to ensure that revenue recognition reflects the transfer of promised goods or services to customers in an amount that reflects the consideration that we expect to be entitled to in exchange for those goods or services, even though there is no exchange as defined in ASC Topic 606. Additionally, the Company has determined that the recognition of grant income as costs are incurred and amounts become realizable is analogous to the concept of transfer of control of a service over time under ASC Topic 606.

Further, the Company believes that showing grant income on a gross method, with the grant income shown as other operating income and the related costs as a charge to research and development expense, rather than depicting the grant income as a reduction of research and development expense, is a more meaningful presentation.

The Company recognized grant income of approximately $0.1 million for the year ended December 31, 2020. There was no grant income recognized in 2019.

Patents and Trademarks Costs

Patents

Patents are stated on the accompanying consolidated balance sheets at cost. Costs, such as filing fees with patent granting agencies and legal fees directly relating to those filings, incurred to file patent applications are capitalized when the Company believes that there is a high likelihood that the patent will be issued and there will be future economic benefit associated with the patent. These costs are amortized from the date of the patent application on a straight-line basis over the estimated useful life of 20 years, which is the legal life of the patent. All costs associated with abandoned patent applications are expensed. The Company expenses patent annuity fees as these fees are maintenance fees required by the patent office at certain points in time after a patent is granted in order to keep the patent legal rights in force. During the years ended December 31, 2020 and 2019, these patent annuity fees were insignificant.

As of December 31, 2020, and 2019, the carrying value of the patents was $0 and approximately $1.0 million, respectively. Amortization expense for the years ended December 31, 2020 and 2019, was approximately $0.1 million, respectively. The Company anticipates future patent costs to be expensed in future periods, which is due to the uncertainties in the current fuel development timelines and the patents being commercialized.

Trademarks

Costs for filing and legal fees for trademark applications are capitalized. Trademarks are considered intangible assets with an indefinite useful life and therefore should not be amortized. The Company performed an impairment test in the fourth quarter of 2020 and 2019 and no impairment of the trademarks was identified. As of December 31, 2020 and 2019, the carrying value of trademarks was approximately $0.1 million.

Impairment of long-lived assets - Patents

The Company reviews the carrying value of its capitalized patent costs for impairment whenever events or changes in circumstances indicate that their carrying value may not be recoverable. Undiscounted cash flows are compared to the carrying value of the asset to determine if the assets are recoverable. If the asset fails the recoverability test, the Company determines the fair value of the asset using discounted cash flows to measure any impairment loss. The determination of anticipated undiscounted cash flows is inherently subjective, requiring significant management assumptions and estimates related to future revenues, operating expense, research and development expenses and timing of commercialization. During the years ended December 31, 2020 and 2019, the Company has recorded an impairment loss on its patents of approximately $1.1 million and $0, respectively. See Note 5, for additional information about impairment charges recorded for the year ended December 31, 2020.

Research, Development and Related Expenses

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

Leases

In 2019, the Company adopted ASU 2016-02, Leases (Topic 842), which requires recognition of most lease arrangements on the balance sheet. The Company recognizes operating lease right of use assets and liabilities at commencement date based on the present value of the future minimum lease payments over the lease term. Leases with an initial term of 12 months or less are not recorded on the consolidated balance sheet in accordance with the short-term lease recognition exemption. The Company applies the practical expedient to non-separate and non-lease components for all leases that qualify. Lease expense is recognized on a straight-line basis over the lease term. The Company has only one lease for office rent and the lease is for a term of 12 months without renewal options. See Note 7 for additional information.

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.

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 explicit 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 were 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. Beginning with the adoption of ASU 2018-07 options granted to our consultants are accounted for in the same manner as options issued to employees.

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

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 over the requisite service period 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. 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.

Recently Adopted Accounting Pronouncements

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 is 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. The Company adopted ASU 2018-13 commencing in the first quarter of fiscal 2020 and this ASU did not have a material impact on the Company's fair value disclosures in the Company's consolidated financial statements.

Recent Accounting Pronouncements – To Be Adopted

In August 2020, the FASB issued *ASU No. 2020-06, Debt-Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging-Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*. ASU 2020-06 will simplify the accounting for convertible instruments by reducing the number of accounting models for convertible debt instruments and convertible preferred stock. Limiting the accounting models will result in fewer embedded conversion features being separately recognized from the host contract as compared with current GAAP. Convertible instruments that continue to be subject to separation models are (1) those with embedded conversion features that are not clearly and closely related to the host contract, that meet the definition of a derivative, and that do not qualify for a scope exception from derivative accounting and (2) convertible debt instruments issued with substantial premiums for which the premiums are recorded as paid-in capital. ASU 2020-06 also amends the guidance for the derivatives scope exception for contracts in an entity's own equity to reduce form-over-substance-based accounting conclusions. ASU 2020-06 will be effective July 1, 2024, for the Company. Early adoption is permitted, but no earlier than July 1, 2021, including interim periods within that year. Management is currently evaluating the effect of the adoption of ASU 2020-06 on the consolidated financial statements and footnote disclosures.

ASU 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes, simplifies the accounting for income taxes by removing certain exceptions to the general principles in Topic 740. The ASU also clarifies and amends existing guidance to improve consistent application. For public business entities, the amendments in this ASU are effective for fiscal years beginning after December 15, 2020, and interim periods within those fiscal years. For all other entities, the amendments are effective for fiscal years beginning after December 15, 2021, and interim periods within fiscal years beginning after December 15, 2022. Early adoption is permitted. The amendments in the ASU have various transition requirements Management is currently evaluating the effect of the adoption of ASU 2019-12 on its consolidated financial statements and footnote disclosures.

Note 2. Revision and Correction of an Immaterial Error in Previously Issued Financial Statements

During the year ended December 31, 2020, we identified an error related to the amortization of our capitalized patent costs. In our prior financial statements through September 30, 2020, we did not record any amortization expense relating to our capitalized patent costs since we deemed them as not being placed in service. Subsequently, we concluded that the patents have provided us with an economic benefit (i.e. legal protection rights) and accordingly should have amortized our capitalized patents costs starting from the patents' application dates, over a 20-year period, which is generally the legal life of each new patent filing. This revision in accounting policy results in an amortization of the capitalized patent costs, as shown below for the year ended December 31, 2019.

In accordance with ASC 250, *Accounting Changes and Error Corrections*, we evaluated the materiality of the errors from quantitative and qualitative perspectives and concluded that this error was immaterial to the Company's prior interim unaudited financial statements and annual audited financial statements. Since this error correction to record the amortization of patent costs was deemed immaterial, no amendments to previously filed interim periodic financial reports or annual financial reports are required. Consequently, the Company corrected this error by revising the December 31, 2019 consolidated financial statements included herein and shown below. This misstatement had no net impact on the Company's consolidated statements of cash flows. The effect of this correction of this error on our previously filed audited consolidated financial statements prior to 2019 was to adjust the beginning accumulated deficit balance, as of January 1, 2019, by approximately $0.6 million and to adjust the annual audited financial statements as of and for the year ended December 31, 2019 is as follows:

	Year Ended December 31, 2019		
	As Previously Reported	Adjustment	As Revised
Consolidated Statement of Operations Data:			
General and Administrative – Patent Amortization	$ 5,697,469	89,623	$ 5,787,092
Total Operating Expenses	8,373,625	89,623	8,463,248
Loss from operations before income taxes	(10,587,124)	(89,623)	(10,676,747)
Net loss	(10,587,124)	(89,623)	(10,676,747)
Net loss attributable to common shareholders	(11,286,939)	(89,623)	(11,376,562)
Net loss per share, basic and diluted	(3.63)	(0.03)	(3.66)
Number of weighted shares	3,107,580	—	3,107,580

	As of December 31, 2019		
	As Previously Reported	Adjustment	As Revised
Consolidated Balance Sheet Data:			
Patents and trademarks, net	$ 1,798,484	(653,596)	$ 1,144,888
Total Assets	20,204,844	(653,596)	19,551,248
Accumulated deficit	(114,084,746)	(653,596)	(114,738,342)
Total stockholders' equity	19,854,545	(653,596)	19,200,949

	Year Ended December 31, 2019		
	As Previously Reported	Adjustment	As Revised
Consolidated Cash Flows Operating Activities Data:			
Net loss	$(10,587,124)	(89,623)	$(10,676,747)
Amortization of Patents	—	89,623	89,623

The correction of these immaterial errors totaled approximately $61,000 and $90,000 for the nine months ended September 30, 2020 and for the year-ended December 31, 2019, respectively. The effect of this correction on the Company's prior interim quarterly unaudited financial statements for 2020 and 2019 was immaterial.

Note 3. 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 and convertible preferred shares (see Note 10. Stockholders' Equity and Stock-Based Compensation).

The treasury stock method is used in calculating diluted EPS for potentially dilutive stock options and share purchase warrants, which assumes that any proceeds received from the exercise of in-the-money stock options and share purchase warrants, would be used to purchase common shares at the average market price for the period, unless including the effects of these potentially dilutive securities would be anti-dilutive.

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):

	2020	2019
Basic		Revised
Numerator:		
Net loss attributable to common stockholders	$ (15.2)	$ (11.4)
Denominator:		
Weighted-average common shares outstanding	4,216,568	3,107,580
Basic net loss per share	$ (3.59)	$ (3.66)
Diluted		
Numerator:		
Net loss attributable to common stockholders, basic	$ (15.2)	$ (11.4)
Effect of dilutive securities	—	—
Net loss, diluted	$ (15.2)	$ (11.4)
Denominator:		
Weighted average common shares outstanding - basic	4,216,568	3,107,580
Potential common share issuances:		
Incremental dilutive shares from equity instruments (treasury stock method)	—	—
Weighted-average common shares outstanding	4,216,568	3,107,580
Diluted net loss per share	$ (3.59)	$ (3.66)

The following outstanding securities have been excluded from the computation of diluted weighted shares outstanding for the periods noted below, as they would have been anti-dilutive due to the Company's losses for the years ended December 31, 2020 and 2019:

	Years Ended December 31,	
	2020	2019
Warrants outstanding	70,361	70,361
Stock options outstanding	515,847	518,551
RSUs outstanding	243,800	-
Series A convertible preferred stock to common shares	79,304	80,038
Series B convertible preferred stock to common shares	272,084	253,843
Total	1,181,396	922,793

Note 4. Investment in Joint Venture (Investee Losses in Excess of Investment)

Current Status of the Joint Venture

Pursuant to the Enfission operating agreement, both partners agreed that Enfission would serve as the 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 both the Company and Framatome or their affiliates. The joint venture built upon the joint fuel development and regulatory licensing work under previously signed agreements initiated in March 2016.

On November 18, 2019, the Company delivered to the Board of Directors of Enfission a notice of termination of the R&D Services Agreement, dated November 14, 2017, by and among Framatome, Enfission and the Company (as amended by Amendment Number One, dated January 25, 2018, and Amendment Number Two, dated June 20, 2018, the "RDSA"), which, among other things, defined the terms and conditions for joint research and development activities among Framatome, Enfission, and the Company. The notice terminated the RDSA, effective immediately. On November 23, 2019, in connection with the termination of the RDSA, the Board of Directors and the management of Lightbridge determined that it was advisable and in the best interest of the Company and its shareholders to take the necessary steps to dissolve Enfission. On February 11, 2021, Lightbridge and Framatome reached a settlement agreement. (See Note 12. Subsequent Events for settlement agreement with Framatome.) Enfission was inactive as of December 31, 2019 and for the year ended December 31, 2020 and was dissolved on March 23, 2021.

The Enfission operating agreement provided that Lightbridge and Framatome each hold 50% of the total issued Class A voting membership units of the joint venture. The Company's equity in losses is accounted for under the equity method consisted of the following as of December 31, 2020 and 2019 (rounded in millions):

	December 31, 2020	December 31, 2019
Enfission, LLC		
Ownership Interest	50%	50%
Carrying Amount		
Total cumulative contributions	$ 9.2	$ 9.2
Less: Share of the loss in investment in Enfission	(9.2)	(9.2)
Equity losses in excess of investment	$ —	$ —

The Company invested approximately $9.2 million in Enfission and Framatome invested approximately $2.9 million of equity for the period from January 24, 2018 (date of inception of Enfission) to December 31, 2020. In accordance with the provisions in the joint venture operating agreement, the Company did not record its share of the loss in investment in Enfission for the year ended December 31, 2020.

As of December 31, 2020, the Company's total equity share of the joint venture accumulated losses is limited to the total equity contributions Lightbridge made since January 24, 2018 according to the Enfission joint venture operating agreement. The joint venture operating agreement stated that at no time during the term of the company or upon dissolution or liquidation of the company shall a member with a deficit balance in its capital account have any obligation to Enfission or to the other members of Enfission to restore such deficit capital balance, to the fullest extent permitted by applicable law and to the provisions of the joint venture operating agreement. The Company had not separately guaranteed any obligations of Enfission. The Company does not expect to provide additional equity contributions in 2021 nor for the foreseeable future until Enfission is dissolved.

Enfission was inactive and not significant for 2020 and, therefore, no summarized balance sheet and summarized income statement information is required to be presented.

Summarized balance sheet information for the Company's equity method investee, Enfission, as of December 31, 2019 is presented in the following table (rounded in millions):

	December 31, 2019
Assets	
Cash	$ 1.0
Total assets	$ 1.0
Liabilities and equity	
Total liabilities	$ 2.1
Equity	(1.1)
Total liabilities and equity	$ 1.0

Summarized statement of operations information for the Company's equity method investee, Enfission, for the year ended December 31, 2019 is presented in the following table (rounded in millions):

	For the year ended December 31, 2019
Revenues	$ —
Research and development expenses	4.2
General and administrative expenses	1.3
Total Operating Loss	$ 5.5
Loss from operations	$ 5.5
Net loss	$ 5.5

As of December 31, 2020 and 2019, the total receivable due from Enfission was $0 and approximately $0.4 million, respectively, which represents management and administrative services, consulting fees and reimbursable expenses Lightbridge charged to Enfission in 2019 (see Note 11. Related Party Transactions). Lightbridge did not bill any management and administrative services, consulting fees or other services to Enfission for the year ended December 31, 2020, as Enfission's operations were inactive during this reporting period.

Disputed Framatome Invoices

Included in the total liabilities of Enfission of $2.1 million at December 31, 2019, are disputed invoices totaling $1.3 million for research and development work submitted by Framatome in 2019. No amounts related to the equity method investment in Enfission have been recorded on the consolidated statements of operations for the year ended December 31, 2020.

On February 11, 2021, Lightbridge and Framatome reached a settlement agreement in which the Company agreed to pay approximately $4.2 million primarily for these past-due disputed invoices and other related costs. The Settlement Agreement resolved all disputes between the companies and terminated all agreements pertaining to the joint venture. See Note 12. Subsequent Events for the settlement agreement terms and payment to Framatome and the dissolution of Enfission.

Note 5. Patents and Trademarks, net

Patents and Trademarks, net, net consisted of the following (rounded in millions):

	December 31, 2020	December 31, 2019
Patents	$ —	$ 1.6
Trademarks	0.1	0.1
	0.1	1.7
Accumulated amortization	—	(0.6)
Total	$ 0.1	$ 1.1

The Company revised the patent amortization expense by recording a cumulative adjustment to accumulated amortization of $0.6 million as of January 1, 2019 (see Note 2. Revision and Correction of an Immaterial Error in Previously Issued Financial Statements). For the years ended December 31, 2020 and 2019, the Company capitalized approximately $0.2 million each year, for patent filing costs and related legal fees. Amortization expense was approximately $0.1 million for the years ended December 31, 2020 and 2019, respectively.

The Company considered the fourth quarter 2019 deterioration of the Company's relationship with Framatome, its joint venture partner in Enfission, (See Notes 1, 4, 7 and 12) to be a triggering event for the assessment of possible impairment of its patent assets. The Company performed an impairment test in the fourth quarter of 2019 and no impairment of the patent assets was identified.

During 2020, as discussed in Note 8, the Company began a program to support the development of its fuel in collaboration with Idaho National Laboratory (INL) with funding in the form of a voucher from the U.S. Department of Energy (DOE) Gateway for Accelerated Innovation in Nuclear (GAIN) program. In the fourth quarter of 2020, the Company received information that cutbacks in government funding for certain types of nuclear research is expected and the INL research facilities will only be available on a limited basis. The INL notified the Company that the advanced test reactor would not be available to conduct critical experiments and that the INL laboratories now have limited research capabilities which extended fuel development timelines to 15-20 years, which is beyond the remaining legal lives of the patents. These recent developments regarding future potential DOE funding and INL research facility limitations have caused significant delays in the projected timelines for development and commercialization of the Company's fuel, which constitutes impairment indicators of the Company's patent costs.

The extended timelines for the development and commercialization of the Company's fuel results in the reduced prospects of the existing patents providing the necessary legal protection from competitors over the remaining average legal lives of the patent portfolio, as well as the utilization of the Company's patents in obtaining substantial research grant funding. The Company performed an impairment analysis and determined that the carrying value of the patents were not recoverable. Using both the income approach and the cost approach, the patent costs were determined to have a fair value of $0 as of December 31, 2020. As a result, the Company recognized a total impairment charge of $1.1 million in the fourth quarter of 2020, which is included in operating expenses in the accompanying consolidated statement of operations.

Note 6. Accounts Payable and Accrued Liabilities

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

	December 31, 2020	December 31, 2019
Trade payables	$ 0.2	$ 0.3
Accrued expenses	0.2	0.1
Total	$ 0.4	$ 0.4

Note 7. Commitments and Contingencies

Commitments

Operating Leases

The Company leases office space for a 12-month term with a monthly payment of approximately $10,000 per month for office rent. The Company entered into a new lease on January 1, 2021 through December 31, 2021.

The future minimum lease payments required under the non-cancellable operating leases for 2021 total approximately $0.1 million. Total rent expense for the years ended December 31, 2020 and 2019 was $0.1 million.

Contingency

Litigation

A former Chief Financial Officer of the Company filed a complaint against the Company with the US Occupational Safety and Health Administration (“OSHA”) on March 9, 2015. This complaint was dismissed by OSHA in January 2018 without any findings against the Company. On March 14, 2018, an appeal was filed. The Company has and will continue to vigorously defend this appeal and believes that this appeal hearing will not result in any findings against the Company. On September 6, 2019, the Company filed a motion for summary decision seeking a decision in its favor as a matter of law. The motion for summary judgement was denied on September 30, 2020. As of December 31, 2020 and 2019, legal fees of approximately $13,000 and $6,000 were owed, respectively, and are expected to be paid in full by the Company’s insurance carriers.

Filing of Arbitration

On November 18, 2019, the Company delivered a notice of termination of the RDSA to Framatome, thereby terminating the RDSA, based on the Company’s assertion that Framatome materially breached certain material terms of the RDSA, relating to its invoicing obligations, as well as a failure of the escalation process under the RDSA to agree to a budget commitment for 2019-2020. Framatome had contested the Company’s right to terminate the RDSA, raised questions as to the Company’s rights relating to their co-owned intellectual property and the Company’s right to conduct certain research and development activities, and reserved its right to seek compensation from the Company. On this basis and based on the Company’s assertion that the conduct of Framatome prevented Enfission from functioning and progressing towards its goals, on February 7, 2020, the Company had filed a request for arbitration (the “Arbitration Request”) in the International Court of Arbitration of the International Chamber of Commerce against Framatome. The Company undertook this action in order to obtain, inter alia, a declaration that the RDSA was validly terminated and was no longer in force, and to obtain compensation for the damages incurred. Following the termination of the RDSA and the subsequent filing of the Arbitration Request, Lightbridge had reduced its research and development activities as it is no longer conducting research and development activities with Framatome and Enfission.

On April 3, 2020, Framatome submitted its answer to the Arbitration Request, disputing the Company's claims, setting out its own counterclaims against the Company and its request for relief sought from the International Court of Arbitration.

On January 17, 2021, the Company filed a petition for judicial dissolution of Enfission in the Court of Chancery of the State of Delaware, requesting that the Court enter an order dissolving Enfission and directing that the business and affairs of Enfission be wound up, among other things. The Company's Board of Directors and management determined in November 2019 that it was advisable and in the best interest of the Company and its shareholders to take the necessary steps to dissolve Enfission. Enfission has been inactive for over a year and was dissolved on March 23, 2021. The Company will withdraw its petition for judicial dissolution of Enfission on file with the Court of Chancery of the State of Delaware.

On February 11, 2021, Lightbridge and Framatome reached a settlement agreement. See Note 12. Subsequent Events, regarding the settlement of these disputes and accrued legal settlement costs.

Note 8. Research and Development Costs

Lightbridge's total corporate research and development costs, included in the caption research and development expenses in the accompanying consolidated statement of operations, amounted to approximately $0.9 million and $2.7 million for the years ended December 31, 2020 and 2019, 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 in 2019.

On December 19, 2019, the Company was awarded a voucher from the U.S. Department of Energy's (DOE) Gateway for Accelerated Innovation in Nuclear (GAIN) program to support development of Lightbridge Fuel™ in collaboration with Idaho National Laboratory (INL). The scope of the project includes experiment design for irradiation of Lightbridge metallic fuel material samples in the Advanced Test Reactor (ATR) at INL. On April 22, 2020, the Company entered into a Cooperative Research and Development Agreement (CRADA) with Battelle Energy Alliance, LLC, the operating contractor of INL, in collaboration with DOE. Signing the CRADA was the last step in the contracting process to formalize a voucher award from the GAIN program. The project has commenced in the second quarter of 2020. The total project value is approximately $846,000, with three-quarters of this amount funded by DOE for the scope performed by INL and the remaining amount funded by Lightbridge, by providing in-kind services to the project.

For the year ended December 31, 2020, approximately $73,000 of work was completed by INL that caused the DOE to incur payment obligations related to the GAIN voucher. This amount was recorded as grant income in Other Operating Income (Loss) line item of the consolidated statement of operations and the corresponding amount as research and development expenses. No work was completed by INL for the year ended December 31, 2019. The Company completed a contract extension for the INL GAIN voucher in January 2021. The period of performance now runs through September 30, 2021.

Note 9. Income Taxes

The 2020 and 2019 annual effective tax rate is estimated to be a combined 25% for the combined US federal and state statutory tax rates. The Company reviews tax uncertainties in light of changing facts and circumstances and adjust them accordingly. As of December 31, 2020 and 2019, 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 25% effective tax rate) as of December 31, 2020 and 2019, respectively, are as follows.

Deferred Tax Assets consisted of the following (rounded in millions):

	2020	2019
Capitalized start-up costs	$ 0.1	$ 0.4
Stock-based compensation	3.3	3.0
Patent impairment provision	0.3	—
Accrued legal settlement	1.1	—
Partnership basis differences	—	(0.3)
Net operating loss carry-forward	24.3	22.3
Research and development tax credits	0.3	0.3
Less: valuation allowance	(29.4)	(25.7)
Total	$ —	$ —

The Company has a net operating loss carry-forward for federal and state tax purposes of approximately $96.0 million at December 31, 2020, that is potentially available to offset future taxable income. The Tax Cuts and Jobs Act (the “Tax 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. The $96.0 million available at December 31, 2020 includes $33.7 million of post 2017 NOLs without expiration dates and $62.3 million of pre-2018 NOLs expiring from 2024 to 2037. The NOLs expiring in the next 5 years total approximately $12.0 million.

For financial reporting purposes, no deferred tax asset was recognized because as of December 31, 2020 and 2019, 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 the Company 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.

The reconciliation between income taxes (benefit) at the US and State statutory combined tax rates of approximately 25% and the amount recorded in the accompanying consolidated financial statements is as follows (rounded in millions):

	December 31, 2020	December 31, 2019
Tax benefit at US federal statutory rates	$ (3.0)	$ (2.2)
Tax benefit at state statutory rates	(0.6)	(0.1)
Tax benefit from federal and state R&D tax credits	(0.1)	(0.1)
Increase in valuation allowance	3.7	2.4
Total provision for income tax benefit	$ —	$ —

Note 10. Stockholders' Equity and Stock-Based Compensation

At December 31, 2020, the Company had 6,567,110 common shares outstanding. Also outstanding were warrants relating to 70,361 shares of common stock, stock options relating to 515,847 shares of common stock, 243,800 restricted shares units of common stock, 699,878 shares of Series A convertible preferred stock convertible into 58,323 shares of common stock (plus dividends of $691,120 relating to an additional 20,980 common shares), and 2,666,667 shares of Series B convertible preferred stock convertible into 222,222 shares of common stock (plus accrued dividends of $897,518, relating to an additional 49,862 common shares), all totaling 7,748,505 shares of common stock and all common stock equivalents, including accrued preferred stock dividends, outstanding at December 31, 2020.

At December 31, 2019, the Company had 3,252,371 common shares outstanding. Also outstanding were warrants relating to 70,361 shares of common stock, stock options relating to 518,551 shares of common stock, 757,770 shares of Series A convertible preferred stock convertible into 63,148 shares of common stock (plus dividends of $556,390 relating to an additional 16,890 common shares), and 2,666,667 shares of Series B convertible preferred stock convertible into 222,222 shares of common stock (plus accrued dividends of $569,181, relating to an additional 31,621 common shares), all totaling 4,175,164 shares of common stock and all common stock equivalents, including accrued preferred stock dividends, outstanding at December 31, 2019.

Common Stock Equity Offerings

ATM Offerings

On May 28, 2019, the Company entered into an at-the-market equity offering sales agreement (" ATM") with Stifel, Nicolaus & Company, Incorporated ("Stifel"), pursuant to which the Company may issue and sell shares of its common stock from time to time through Stifel as the Company's sales agent. Sales of the Company's common stock through Stifel, if any, will be 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) filed on March 15, 2018 and declared effective March 23, 2018. Due to the offering limitations currently applicable to the Company under General Instruction I.B.6. of Form S-3 and the Company's public float as of May 28, 2019, and in accordance with the terms of the sales agreement, the Company may offer and sell shares of its common stock having an aggregate offering price of up to $13,500,000. On October 9, 2020, the Company updated the aggregate amount that may be issued and sold under the 2019 ATM from $13.5 million to approximately $14.7 million by filing a prospectus supplement pursuant to which the Company registered an additional approximate $1.2 million of shares of common stock. All the 2019 ATM available proceeds were sold during the year ended December 31, 2020.

The Company sold 3.3 million shares under the ATM for the year ended December 31, 2020. Net proceeds received from the ATM sales during the year ended December 31, 2020 were approximately $12.3 million. The Company records its ATM sales on a settlement date basis.

The Company sold 0.5 million shares (post-split) under the ATM for the year ended December 31, 2019. Net proceeds received from the ATM sales during the year ended December 31, 2019 were approximately $3.8 million. The Company records its ATM sales on a settlement date basis.

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 55,555 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 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 $18 per share subject to adjustments in the case of stock splits and stock dividends.

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 $22.50. 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 11,119 common shares in the Company at an exercise price of $18 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 Company has not redeemed any of the outstanding Series B Preferred Stock during the years ended December 31, 2020 and 2019.

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 $65.88 prior to August 2, 2019 or greater than $98.82 at any time. The Company can exercise this option only 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. The Company did not force the conversion of any of the outstanding Series B Preferred Stock during the years ended December 31, 2020 and 2019.

Of the $4.0 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 (now convertible into 222,222 shares of common stock when adjusted for the one-for-twelve reverse stock split on October 21, 2019). 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 $28.08 per share. At $28.08 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 $3.7 million (rounded) 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.

Additionally, comparison of the original $1.50 conversion price prior to the one-for-twelve reverse stock split on October 21, 2019 of the PIK dividends to the $2.34 commitment date fair value per share on January 30, 2018 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 deemed dividends for this PIK dividend for the years ended December 31, 2020 and 2019 were approximately $0.2 million.

The accumulated PIK dividends (unpaid) at December 31, 2020 and 2019 was approximately $0.9 million and $0.6 million, respectively. The Series B Preferred Shares outstanding as of December 31, 2020 and 2019 was 2,666,667 shares with an aggregate liquidation preference of approximately $4.9 million and $4.6 million, including the accumulated dividends at December 31, 2020 and 2019, respectively.

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 $32.94 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.

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 $32.94 per share) before August 2, 2019, or if the trading price is more than three times the applicable conversion price. The Company has not redeemed any of the outstanding Series A Preferred Stock during the years ended December 31, 2020 and 2019 and from the date of issuance.

The Series A Preferred Stock was initially convertible into 1,020,000 shares of common stock (now convertible into 85,000 common shares when adjusted for the one-for-twelve reverse stock split on October 21, 2019). 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 $39.78 per share. At $39.78 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, original conversion price of the PIK dividends prior to the one-for-twelve reverse stock split on October 21, 2019, 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. Total deemed dividends for this PIK dividend for the years ended December 31, 2020 and 2019 were approximately $38,000.

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.

During the years ended December 31, 2020 and 2019, the Company had the following conversions of the Series A Preferred Stock to common shares:

Dates of conversion	Preferred Shares	Common Shares
April 16, 2019	27,747	2,782
October 8, 2019	28,107	2,922
February 10, 2020	11,875	1,254
May 15, 2020	17,080	1,848
August 31, 2020	16,689	1,846
November 30, 2020	12,248	1,379

The accumulated PIK dividends at December 31, 2020 and 2019 was approximately $0.7 million and $0.6 million, respectively. The Series A Preferred Shares outstanding as of December 31, 2020 and 2019 were 699,878 shares and 757,770 shares, respectively, with an aggregate liquidation preference of approximately $2.6 million, including accumulated dividends.

Warrants

The Company's outstanding warrants at December 31, 2020 and 2019 are below. These warrants are classified within equity on the consolidated balance sheets.

Outstanding Warrants	December 31, 2020	December 31, 2019
Issued to Investors on October 25, 2013, entitling the holders to purchase 20,833 common shares in the Company at an exercise price of $138.00 per common share up to and including April 24, 2021. In 2016, 4,954 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 $75.00 per share.	13,665	13,665
Issued to Investors on November 17, 2014, entitling the holders to purchase 45,577 common shares in the Company at an exercise price of $138.60 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 $75.00 per share.	45,577	45,577
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 11,119 common shares in the Company at an exercise price of $18.00 per share, up to and including January 30, 2021 (warrants expired subsequent to December 31, 2020).	11,119	11,119
Total	70,361	70,361

Stock-based Compensation – Stock Options

Adoption of 2020 Stock Plan

On March 9, 2020, the Board of Directors adopted the Company's 2020 Omnibus Incentive Plan (the "2020 Plan"). On September 3, 2020, the shareholders approved the 2020 Plan to authorize grants of the following types of awards (a) Options, (b) Stock Appreciation Rights, (c) Restricted Stock and Restricted Stock Units ("RSUs"), and (d) Other Stock-Based and Cash-Based Awards. The shares available for award under the 2020 plan authorized a total of 350,000 shares to be available for grant.

On October 28, 2020, the Compensation Committee of the Board granted from the 2020 Plan time-based RSUs to certain of the Company's executive officers, employees, and consultants. Each RSU represents a contingent right to receive, upon vesting, one share of the Company's Common Stock. The number of RSUs granted to executive officers, employees and consultants totaled 243,800 shares. These RSU awards granted vest in three equal installments on each of the first three anniversaries of the grant date, on October 28, 2021, October 28, 2022 and October 28, 2023. These RSU awards were valued at approximately $656,000, based on the opening price of the Company's stock on October 28, 2020 at $2.69 per share. During the year ended December 31, 2020, the Company recorded approximately $39,000 of stock-based compensation expense in connection with the foregoing equity awards in general and administrative expenses.

On October 28, 2020, the Compensation Committee of the Board approved a grant of a total of 21,200 shares of common stock to the Company's four directors. All of these common shares will be issued and will vest immediately upon issuance, upon the filing of the Form S-8 with the SEC, to register the underlying shares of the 2020 Stock Plan. These awards were valued on October 28, 2020 and approximately $57,000 was charged to director's compensation for the year ended December 31, 2020

2015 Equity Incentive Plan

On March 25, 2015, the Compensation Committee and Board of Directors approved the Lightbridge Corporation 2015 Equity Incentive Plan (the "2015 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 shares available for award under the 2015 plan are subject to equitable adjustment for the October 21, 2019 reverse stock split described in Note 1. The 2015 Plan initially authorized a total of 50,000 shares to be available for grant under the 2015 Plan, of which the amount was increased to 116,667 shares in May 2016, 241,667 shares in May 2017, and 525,000 shares in May 2018. Lightbridge's policy is to utilize stock reserved for issuance under the 2015 Plan for issuing shares upon share option exercise.

Short-Term Non-Qualified Option Grants

On December 2, 2019, the Compensation Committee of the Board granted 86,982 short-term incentive stock options and non-qualified stock options under the 2015 Equity Incentive Plan to employees, consultants, and directors of the Company. All of these stock options vested immediately, with a strike price of $3.82, which was the closing price of the Company's stock on December 2, 2019. These options have a 10-year contractual term, with a fair market value of approximately $2.59 per option with an expected term of 5 years. During the years ended December 31, 2020 and 2019, the Company granted 7,634 and 4,247 stock options, respectively to one consultant. The current year stock-based compensation expense for these equity grants were not significant.

The 2019 options issued for the employees, directors, and consultants of the Company were assigned a fair value of $2.59 per share (total fair value of $0.2 million). The value was determined using Black-Scholes pricing model. The following assumptions were used in the Black-Scholes pricing model:

Expected volatility	86%
Risk free interest rate	1.65%
Dividend yield rate	0%
Weighted average years	5 years
Closing price per share – common stock	$ 3.82

Total stock options outstanding at December 31, 2020 and 2019 under the 2006 Stock Plan and 2015 Plan were 515,847 and 518,551, of which 466,121 and 433,678 of these options were vested at December 31, 2020 and 2019, respectively.

The components of stock-based compensation expense included in the Company's consolidated statements of operations for the years ended December 31, 2020 and 2019 are as follows (rounded to the nearest thousand):

	Year ended December 31,	
	2020	**2019**
Research and development expenses	$ 2,000	$ 398,000
General and administrative expenses	51,000	425,000
Total stock-based compensation expense	$ 53,000	$ 823,000

Stock option transactions with employees, directors and consultants are summarized as follows for the year ended December 31, 2020:

	Options Outstanding	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value
Beginning of the year	518,551	$ 21.99	$ 15.89
Granted	7,634	4.45	3.28
Exercised	(6,548)	3.82	2.59
Forfeited	(1,844)	10.80	8.33
Expired	(1,946)	491.10	384.02
End of the year	515,847	$ 20.23	$ 14.51
Options exercisable	466,121	$ 21.35	$ 15.27

Stock option transactions with employees, directors and consultants are summarized as follows for the year ended December 31, 2019:

	Options Outstanding	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value
Beginning of the year	467,013	$ 32.64	$ 23.52
Fraction option shares to options holders due to the one-for-twelve reverse stock split on October 21, 2019	99	32.64	23.52
Adjusted beginning of the year	467,112	32.64	23.52
Granted	91,229	4.03	2.74
Exercised	—	—	—
Forfeited	(18,180)	34.34	25.56
Expired	(21,610)	167.52	116.81
End of the year	518,551	$ 21.99	$ 15.89
Options exercisable	433,678	$ 24.19	$ 17.39

A summary of the status of the Company's non-vested options as of December 31, 2020 and 2019, and changes during the years ended December 31, 2020 and 2019, is presented below:

	Shares	Weighted Average Exercise Price	Weighted Average Fair Value Grant Date
Non-vested – December 31, 2018	139,085	$ 10.92	$ 6.48
Fraction option shares to non-vested options holders due to the one-for-twelve reverse stock split on October 21, 2019	8	10.92	6.48
Adjusted non-vested – December 31, 2018	139,093	10.92	6.48
Granted	91,229	4.03	2.74
Vested	(145,449)	6.65	4.91
Forfeited	—	—	—
Non-vested – December 31, 2019	84,873	10.73	5.15
Granted	7,634	4.45	3.28
Vested	(41,552)	10.80	8.29
Forfeited	(1,229)	10.80	8.33
Non-vested – December 31, 2020	49,726	9.71	7.44

The above tables include options issued and outstanding as of December 31, 2020 as follows:

i. A total of 393,130 incentive stock options and non-qualified 10-year options have been issued, and are outstanding, to the directors, officers, and employees at exercise prices of $3.82 to $331.80 per share. From this total, 128,010 options are outstanding to the Chief Executive Officer, who is also a director, with remaining contractual lives of 0.2 years to 8.9 years. All other options issued to directors, officers, and employees have a remaining contractual life ranging from 0.2 years to 8.9 years.

ii. A total of 122,717 non-qualified 10-year options have been issued, and are outstanding, to consultants at exercise prices of $3.82 to $325.20 per share.

As of December 31, 2020, there was approximately $42,000 of total unrecognized compensation cost related to non-vested stock options granted under the plans. That cost is expected to be recognized over a weighted-average period of approximately 2.06 years. For stock options outstanding at December 31, 2020, the intrinsic value was $32,978. For stock options outstanding at December 31, 2019, the intrinsic value was $59,148.

The following table provides certain information with respect to the above-referenced stock options that were outstanding and exercisable at December 31, 2020:

	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
$ 3.82-$12.48	8.16	225,179	$ 8.04	8.21	176,332	$ 7.60
$ 12.49-$24.00	6.57	199,790	$ 14.19	6.56	198,911	$ 14.20
$ 24.01-$72.00	4.89	65,333	$ 55.07	4.89	65,333	$ 55.07
$ 72.01-$240.00	4.32	24,526	$ 75.59	4.32	24,526	$ 75.59
$ 240.01-$331.80	0.23	1,019	$ 329.81	0.23	1,019	$ 329.81
Total	6.93	515,847	$ 20.23	6.82	466,121	$ 21.35

The following table provides certain information with respect to the above-referenced stock options that were outstanding and exercisable at December 31, 2019:

	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
$ 3.82-$12.48	9.22	225,937	$ 8.07	9.40	143,696	$ 6.57
$ 12.49-$24.00	7.57	199,790	$ 14.19	7.56	197,158	$ 14.21
$ 24.01-$72.00	5.89	65,333	$ 55.07	5.89	65,333	$ 55.07
$ 72.01-$240.00	5.32	24,526	$ 75.59	5.32	24,526	$ 75.59
$ 240.01-$519.00	0.63	2,965	$ 435.67	0.63	2,965	$ 435.67
Total	7.93	518,551	$ 21.99	7.74	433,678	$ 24.19

Restricted Stock Awards Outstanding

The following summarizes our RSUs activity:

	Number of Shares	Weighted Average Grant Date Fair Value
Total awards outstanding at December 31, 2019	—	$ —
Total shares granted	243,800	$ 2.69
Total shares vested	—	$ —
Total shares forfeited	—	$ —
Total unvested shares outstanding at December 31, 2020	243,800	$ 2.69

Scheduled vesting for outstanding RSUs awards at December 31, 2020 is as follows:

	Year Ending December 31,			
	2021	2022	2023	Total
Scheduled vesting	81,268	81,267	81,265	243,800

At December 31, 2020, there was approximately $617,000 of net unrecognized compensation cost related to unvested RSUs compensation arrangements. This compensation is recognized on a straight-line basis resulting in approximately $219,000 of compensation expected to be expensed over the next twelve months, and the total unrecognized stock-based compensation expense having a weighted average recognition period of 2.82 years.

Note 11. Related Party Transactions

Enfission was inactive for the year ended December 31, 2020 and at December 31, 2019. The Company did not invest in Enfission during the year ended December 31, 2020 and invested approximately $9.2 million in Enfission from Enfission's date of inception of January 24, 2018 to December 31, 2019.

The Company did not charge Enfission an administrative and management services fee for the year ended December 31, 2020. The total administrative consulting services was $400,000 for the year ended December 31, 2019. 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 for the year ended December 31, 2019.

The Company did not provide Enfission with any research and development consulting services for the year ended December 31, 2020. The Company provided research and development consulting services and management services to Enfission in 2019. The total consulting services income was $0.7 million for the year ended December 31, 2019, recorded under "Other income from joint venture" in the accompanying consolidated statement of operations.

At December 31, 2020, there was no receivable due from Enfission. At December 31, 2019, the total receivable due from Enfission was approximately $0.4 million, which represented management and administrative services Lightbridge charged to Enfission for the year ended December 31, 2019.

Note 12. Subsequent Events

Settlement of Arbitration and Delaware Action - Accrued Legal Settlement Costs

These legal actions are fully described in Note 7. On February 11, 2021, the Company entered into a settlement agreement with Framatome SAS and Framatome Inc., resolving the pending claims and counterclaims between the parties in arbitration and judicial proceedings related to the parties' inactive joint venture, Enfission, LLC.

Under the terms of the Settlement Agreement, all joint venture agreements will be terminated and the joint venture will be dissolved and wound-up following satisfaction of the conditions set forth in the Agreement. Lightbridge will pay Framatome approximately $4.2 million (USD $1.8 million and €2 million) for outstanding invoices for work performed by Framatome and other expenses incurred by Framatome. Framatome will destroy all documents and content related to Lightbridge's intellectual property. Lightbridge has an obligation to destroy all documents and content related to Framatome's intellectual property. Both parties have agreed to destroy all of the Foreground Information, as defined, generated on behalf of Enfission. The Settlement Agreement secures the parties' pre-existing intellectual property rights. There will be no restrictions on Lightbridge's ability to engage in research and development activities or commercial discussions with other entities going forward. The settlement amount of $4.2 million was recorded to accrued legal settlement costs on the consolidated balance sheet as of December 31, 2020 and was reflected in other operating income/loss on the consolidated statement of operations for the year ended December 31, 2020. All the terms in the Settlement Agreement were met by both parties and the settlement payment was made on March 15, 2021. Enfission was dissolved on March 23, 2021. The Company will withdraw its petition for judicial dissolution of Enfission on file with the Court of Chancery of the State of Delaware.

Awarded Second Funding Voucher Award from the DOE from the GAIN Program

On March 25, 2021, the Company was awarded a voucher from the DOE's GAIN program to support development of Lightbridge Fuel™ in collaboration with the PNNL. The scope of the project is to demonstrate Lightbridge's nuclear fuel casting process using depleted uranium, a key step in the manufacture of Lightbridge Fuel™. The project is anticipated to commence in the first half of 2021. The total project value is approximately $664,000, with three-quarters of this amount funded by DOE for the scope performed by PNNL.

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 25, 2021

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 25, 2021.

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