LIGHTBRIDGE Corp
Form 10-K
February 22, 2011

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

# FORM 10-K

[X] **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)**
**OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the Fiscal Year Ended: December 31, 2010**

**OR**

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

**For the Transition Period from ___ to ___**

**Commission File Number: 000-28543**

# 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 Number)* |

**1600 Tysons Boulevard, Suite 550**
**McLean, Virginia 22102**
*(Address of Principal Executive Office and Zip Code)*

**(571) 730-1200**
*(Registrant s Telephone Number, Including Area Code)*

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

Securities registered pursuant to Section 12(g) of the Act: **Common Stock, par value $0.001**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes [ ] No [X]

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

Yes [ ] No [X]

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes [X] No [ ]

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of large accelerated filer, accelerated filer, and smaller reporting company in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer [ ] Accelerated filer [X] Non-accelerated filer [ ] Smaller reporting company [X]

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).

Yes [ ] No [X]

As of June 30, 2010, the aggregate market value of the shares of the Registrant s common stock held by non-affiliates (based upon the closing price of such shares as reported on the NASDAQ Stock Market on such date) was approximately $78.4 million. Shares of the Registrant s common stock held by each executive officer and director have been excluded in that such persons may be deemed to be affiliates of the Registrant. This determination of affiliate status is not necessarily a conclusive determination for other purposes As of February 18, 2011 there were 12,346,645 shares of the Registrant s common stock outstanding.

**DOCUMENTS INCORPORATED BY REFERENCE:**

Portions of the Registrant s Definitive Proxy Statement for its 2011 Annual Meeting of Shareholders to be filed with the Commission within 120 days after the close of the Registrant s fiscal year are incorporated by reference into Part III of this Annual Report on Form 10-K.

**LIGHTBRIDGE CORPORATION**

**FORM 10-K**
**For the Fiscal Year Ended December 31, 2010**

**TABLE OF CONTENTS**


| | | Page |
|---|---|---|
| | **PART I** | |
| Item 1. | Business | 1 |
| Item 1A. | Risk Factors | 8 |
| Item 1B. | Unresolved Staff Comments | 14 |
| Item 2. | Properties | 14 |
| Item 3. | Legal Proceedings | 14 |
| Item 4. | Submission of Matters to a Vote of Security Holders | 14 |
| | **PART II** | |
| Item 5 | Market for Registrant s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities | 14 |
| Item 6. | Selected Financial Data | 16 |
| Item 7. | Management s Discussion and Analysis of Financial Condition and Results of Operations | 16 |
| Item 7A. | Quantitative and Qualitative Disclosures About Market Risk | 26 |
| Item 8. | Financial Statements and Supplementary Data | 26 |
| Item 9. | Changes in and Disagreements with Accountants on Accounting and Financial Disclosure | 26 |
| Item 9A. | Controls and Procedures | 26 |
| Item 9B. | Other Information | 27 |
| | **PART III** | |
| Item 10. | Directors, Executive Officers and Corporate Governance | 27 |
| Item 11. | Executive Compensation | 28 |
| Item 12. | Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters | 28 |
| Item 13. | Certain Relationships and Related Transactions | 28 |
| Item 14. | Principal Accountant Fees and Services | 28 |
| | **PART IV** | 28 |
| Item 15. | Exhibits, Financial Statement Schedules | |

**FORWARD-LOOKING STATEMENTS**

In addition to historical information, this report contains forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. We use words such as believe , expect , anticipate project , target , plan , optimistic , intend , aim , will or similar expressions which are intended to identify forw statements. Such statements include, among others, (1) those concerning market and business segment growth, demand and acceptance of our Nuclear Energy Consulting Services and Nuclear Fuel Technology Business, (2) any projections of sales, earnings, revenue, margins or other financial items, (3) any statements of the plans, strategies and objectives of management for future operations, (4) any statements regarding future economic conditions or performance, (5) uncertainties related to conducting business in foreign countries, as well as (6) all assumptions, expectations, predictions, intentions or beliefs about future events. 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 attract new customers,
- 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,
- general economic and business conditions in the local economies in which we regularly conduct business, which can affect demand for the Company s services,
- changes in laws, rules and regulations governing our business,
- development and utilization of our intellectual property,
- potential and contingent liabilities, and
- the risks identified in Item 1A. Risk Factors included herein.

All statements other than statements of historical fact are statements that could be deemed forward-looking statements. The Company assumes no obligation and does not intend to update these forward-looking statements, except as required by law. When used in this report, the terms Lightbridge , Company , we , our , and us r Lightbridge Corporation and its wholly-owned subsidiaries Thorium Power, Inc. (a Delaware corporation) and Lightbridge International Holding, LLC (a Delaware limited liability company).

## PART I

### Item 1. Description of Business.

### General Overview of Our Business Segments

We are a leading nuclear fuel technology company, and participate in the nuclear power industry in the U.S. and internationally. Our business operations can be categorized into two segments: (1) we are a developer of next generation nuclear fuel technology that has the potential to significantly up-rate the power output of reactors, reducing the per-megawatt-hour cost of generating nuclear energy and reducing nuclear waste and proliferation, and (2) we are a provider of nuclear power consulting and strategic advisory services to commercial and governmental entities worldwide.

### Our Nuclear Fuel Technology Business Segment

#### *The Nature of Our Proprietary Technology Development Activities*

We are developing innovative, proprietary nuclear fuel designs which we expect will significantly enhance the nuclear power industry s economics and increase power output by: (1) Extending the fuel cycle length to 24 months or longer while simultaneously increasing the power output by up to 17% in existing pressurized water reactors (including Westinghouse 4-loop reactors, which are currently limited to an 18-month fuel cycle); (2) Enabling increased reactor power output (up to 30% increase) without changing the core size in new-build PWRs; and (3) Addressing concerns relating to the back-end of the fuel cycle including the volume of used fuel per kilowatt-hour as well as proliferation of weapons-usable materials. Significant technological synergies exist among our primary fuel products due to utilization of the proprietary metallic fuel rod technology that is at the core of each of these products. As a result, once completed, full-scale demonstration and qualification of the metallic fuel rod technology will simultaneously advance all of our product families currently under development. We currently anticipate that we will be able to complete demonstration of full-scale metallic fuel rod fabrication process by the end of 2012 and begin lead test assembly (LTA) operation in a full-size commercial light water reactor, which involves testing a limited number of our full-scale fuel assemblies in the core over three 18-month cycles, by the end of 2016. Accordingly, based on our current estimated schedule, final qualification of our fuel for 10-17% power uprates in a commercial reactor is expected in 2021 (at the end of three 18-month cycles of LTA operation).

The fuel in a nuclear reactor generates heat energy. That heat is then converted into electricity that is sold. Burnup is the total amount of electricity generated per unit mass of nuclear fuel. Burnup is largely a function of the power density of a nuclear fuel. Power density is the amount of heat power generated per unit volume of nuclear fuel. Conventional oxide fuel used in existing commercial reactors is approaching the limits of its burnup and power density capability. As a result, further optimization to increase power output from the same core size and improve the economics of nuclear power generation using conventional oxide fuel technologies may be limited. As the industry prepares to meet the increasing global demand for electricity production, longer operating cycles and higher reactor power outputs will become a much sought-after solution for the current and future reactor fleet.

In response to the challenges associated with conventional oxide fuels, we are developing an innovative, proprietary metallic fuel technology, that is capable of significantly higher burnup and power density compared to conventional oxide fuels, which we believe will allow current and new-build nuclear reactors to safely increase power production and reduce the initial capital investment as well as operations and maintenance costs on a per kilowatt-hour basis. As a result, in addition to the projected electricity production cost savings, we believe that our technology can result in utilities or countries needing to deploy fewer new reactors to generate the same amount of electricity. For utilities or countries that already have operating reactors, our technology could be utilized to increase the power output of those reactors instead of building new reactors. Further, we believe that the fuel fabrication, or manufacturing process for this new fuel design is simpler, which we expect could lower fuel fabrication costs.

Various industry efforts currently underway to meet the growing demand for more electric power output from the same reactor core size, and to create a more efficient fuel cycle, with improved safety, reliability and extended fuel cycle length, are largely focused on stretching the limits of conventional oxide fuels. While this strategy has worked well in the past, now almost all of the available fuel performance margins with conventional oxide fuels have been utilized. However, due to the risk-averse nature of the major industry players and a significant capital investment made in existing infrastructure supporting conventional oxide fuels, major fuel vendors are reluctant to take on early risks associated with fuel development programs on next generation nuclear fuel designs. As a result, as discussed in the section below titled "*Competition in the Nuclear Fuel Design and Fabrication Area*," we believe that we are well positioned to take advantage of this market opportunity by developing next generation fuel designs that can meet the needs of the power generator.

***Nuclear Fuel Development***

Since the founding of our company in 1992, we have been engaged in the design and development of proprietary innovative nuclear fuels. This effort has led us to the development of a metallic fuel rod design that is at the heart of each of our nuclear fuel products.

We are currently focusing our development efforts on three primary fuel product lines: (1) all-uranium seed and blanket fuel for existing plants, (2) all-metal fuel (i.e., non-oxide fuel) for new build reactors, and (3) thorium-based seed and blanket fuel for both existing and new build reactors. Each of the fuel designs utilizes our metallic fuel rod technology. In addition, each of the fuel designs also advances our mission to improve the safety, proliferation resistance, performance, and cost competitiveness of nuclear power generation.

***Development of Three Nuclear Fuel Product Lines***

The first nuclear fuel product line includes an all-uranium seed and blanket fuel that is particularly suitable for existing PWRs, though can also be utilized in new build PWRs. We are developing two variants of this fuel technology for PWR reactors: (1) an all-uranium seed-and-blanket fuel for power uprate up to 10% and a 24-month fuel cycle, and (2) an all-uranium seed-and-blanket fuel for a power uprate up to 17% and a 24-month fuel cycle. A power uprate, coupled with a 24-month fuel cycle, can be a particularly attractive option for existing Westinghouse-type 4-loop PWRs that are currently limited to an 18-month fuel cycle due to fuel performance constraints attributed to conventional uranium oxide fuels. To accommodate up to a 17% power uprate, a number of reactor design modifications would be required, including upgrades to the primary and secondary systems. For uprates up to 10%, only relatively minor reactor system modifications would be required.

The second nuclear fuel product line includes our all-metal fuel, which we expect will be able to provide up to a 30% increase in power output of new build PWRs, such as Westinghouse (U.S.)-designed AP-1000, AREVA (French)-designed EPR, Mitsubishi (Japanese)-designed APWR, KEPCO (Korean)-designed APR-1400 and others. Also, we believe that this fuel technology can be used to extend the fuel cycle length up to 24 months in addition to the 30% uprate. To accommodate up to a 30% power uprate, a number of reactor design modifications would be required, including upgrades to the primary and secondary systems, as well as potential modifications to the reactor containment structure.

The third nuclear fuel product line includes our thorium-based seed-and-blanket fuel, which we believe has several major benefits, including: (1) enhanced proliferation resistance, (2) significantly reduced volume (up to 40% reduction) and weight (up to 90% reduction) of spent fuel, and (3) reduced natural uranium requirements (up to 10% reduction) in a once-through fuel cycle. These benefits can be particularly appealing to those markets that either have significant domestic thorium reserves but lack natural uranium resources or are concerned with the cost of long-term storage as a used fuel management option. Further, the economics of our thorium-based fuel can become more attractive as the price of natural uranium increases due to the projected reduction in natural uranium requirements per megawatt-day. Finally, the enhanced proliferation resistance aspects of the fuel can appeal to markets that put key emphasis on non-proliferation.

The development of our power uprate product lines provides diversity to our fuel offerings and synergistically advances the development of our thorium-based fuel product line.

***Competition in the Nuclear Fuel Design and Fabrication Area***

There are several major companies that collectively fabricate a large majority of the fuel used in the world s commercial nuclear power plants, including both Western-type PWRs and BWRs, as well as Russian-type VVERs. To the extent that these companies currently own and may in the future develop new nuclear fuel designs that can be used in the same types of reactors as those targeted by us, they can be viewed as potential competitors. However, our

commercialization strategy is not to compete with these major fuel fabricators, but rather to partner with one or more of these companies through a technology license arrangements. For this reason, we consider these companies as our potential partners or licensees as opposed to our competitors.

We are pursuing a commercialization strategy aimed at generating interest in our nuclear fuel designs from one or more major nuclear fuel fabricators that could lead to a technology licensing or other teaming arrangement over the next three years to further conduct research and development activities. Our commercialization efforts are based on a multi-prong approach that we believe will increase the probability of success:

1. Approach major fuel fabricators (push marketing strategy)

2. Reach out early to nuclear power plants (pull marketing strategy)

3. Generate public, industry and government awareness in our fuel technologies

We are putting a significant amount of effort in reaching out to major fuel fabricators. Our ultimate commercial success depends on how soon and what kind of a commercial arrangement we are able to negotiate with one or more of these potential partners. As a result, building relationships with these potential partners and keeping them up-to-date on our fuel technology progress through ongoing dialogue are the essential elements of our commercialization strategy.

We recognize that a successful commercialization strategy is highly dependent upon the interest in our nuclear fuel designs from nuclear power plants which are the ultimate fuel product user. If we are successful in generating sufficient interest from one or more nuclear power plants in evaluating our fuel technology for potential use, we believe it would make it easier to find a major fuel fabricator that would be willing to partner with us in order to offer that fuel product to the nuclear power generator.

Finally, it is also important to generate public, industry and government awareness of our nuclear fuel technology that could help build confidence in our technology and increase credibility among fuel fabricators and nuclear power plants. As a result, we are pursuing a public outreach effort by seeking publication of technical papers highlighting progress on our fuel designs in peer-reviewed technical journals and presentations at major international nuclear conferences.

Competition with respect to the design of commercially viable fuel products is limited to conventional uranium oxide fuels, which, as discussed above, are reaching the limits in terms of their capability to provide increased power output or longer fuel cycles. We believe that the industry needs fuel products that can provide these benefits. To our knowledge, our nuclear fuel development project is the only commercially viable program that could achieve these goals. Due to the long-term product development timelines, significant nuclear regulatory requirements, and our comprehensive patent portfolio, we believe that the barriers to entry prevent a viable competitor in the foreseeable future.

***Future Licensing Revenue from Our Fuel Technology***

We see our fuel technology development business as an intellectual property licensing business and we do not plan to become a fuel fabricator. Instead, we intend to license our intellectual property rights in our nuclear fuel designs to existing major nuclear fuel fabricators that own and operate fuel fabrication facilities and have long-term fuel supply contracts with nuclear power plants. We believe that this partnering strategy would also allow us to take advantage of the existing customer base of such major fuel fabricators, thus enabling our fuel products to achieve high market penetration rates in a relatively short period of time. We are currently pursuing a research and development strategy aimed at generating sufficient interest and confidence in our fuel technology among major fuel fabricators with a view of entering into a commercial arrangement with one or more of them within the next 2-3 years.

We anticipate that the following factors will play a key role in structuring a technology license agreement with a major fuel supplier:

- Sharing of future fuel development costs;

- An upfront technology access fee payable to us;
- Ongoing royalty fees from future fuel product sales payable to us based on the cost sharing formula; and
- Potential training and consulting payments payable to us.

In addition to the fuel design license agreement, we believe that there may be a manufacturing technology license or manufacturing support fees that we may be able to receive from the fuel fabricator.

***Sources and Availability of Raw Materials***

As previously stated, our fuel technology development business is a licensing business since we intend to license our fuel technology to fuel fabricators. Accordingly, we do not plan to utilize any raw materials in the conduct of our operations. However, the fuel fabricators which will ultimately fabricate our fuel products will need zirconium, uranium and/or thorium, 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 to the fuel fabricators from various suppliers at market driven prices. The current demand for thorium is very low. Thorium is sometimes used in government flares, camping lantern wicks and in other products in small quantities. If thorium-based fuels become commercially accepted in the nuclear power industry, there would be a significant increase in the demand for thorium. According to the International Atomic Energy Agency, or IAEA, thorium is over three times more naturally abundant than uranium and is found in large quantities in monazite sands in many countries, including, Australia, India, the United States of America, and China.

In certain countries, such as the U.S., nuclear fuel provision works as a tolling operation. Rather than ordering assembled nuclear fuel, reactor operators separately source (1) uranium, (2) services to convert the uranium into uranium hexafluoride gas that is capable of being enriched, (3) uranium enrichment services, and then (4) pay a nuclear fuel fabricating company to fabricate the enriched uranium into nuclear fuel. In other countries, such as Russia, reactor operators purchase the finished nuclear fuel assemblies directly from the fuel fabricator without separately procuring natural uranium material and conversion or enrichment services.

**Our Nuclear Energy Consulting and Strategic Advisory Services Business Segment**

***The Nature of Our Consulting Services***

We are primarily engaged in the business of assisting commercial and governmental entities globally with developing and expanding their nuclear industry capabilities and infrastructure. We provide integrated strategic advice across a range of expertise areas including, for example, regulatory development, nuclear reactor site selection, procurement and deployment, reactor and fuel technology, international relations and regulatory affairs.

Due to the relatively limited growth in the nuclear energy industry during the 1980 s and 1990 s, and corresponding limited recruitment into the industry, the cadre of engineers, managers and other nuclear energy industry experts is aging. In any nuclear renaissance, we believe that the industry will be challenged in acquiring and retaining sufficient qualified expertise. Moreover, in countries studying new nuclear energy programs, the number of qualified nuclear energy personnel is limited, and we believe that those countries will need to rely on significant support from non-domestic service providers and experts to ensure success in those programs.

Our emergence in the field of nuclear energy consulting is in direct response to the need for independent assessments and highly qualified technical consulting services from countries looking to establish nuclear energy programs, by providing a blueprint for safe, secure, efficient and cost-effective nuclear power. We offer full-scope strategic planning and advisory services for new and growing existing markets. Furthermore, we only engage with commercial entities and governments that are dedicated to non-proliferative and transparent nuclear programs.

Our consulting services are expert and relationship based, with particular emphasis on key decision makers in senior positions within governments or companies, as well as focus on overall management of nuclear energy programs. To date, substantially all of our revenues are derived from our consulting and strategic advisory services business segment, which primarily provides nuclear consulting services to entities within the United Arab Emirates, our first significant consulting and strategic advisory client. In April 2010 and December 2010 we began to provide consulting services in additional countries, including the member states of the Gulf Cooperation Council. We have also provided nuclear safety consulting advice to U.S. nuclear utilities. We plan to continue and potentially expand this nuclear

safety consulting work in the U.S.

***Competition in Nuclear Industry Consulting***

In general, the market for nuclear industry consulting services is competitive, fragmented and subject to rapid change. The market includes a large number of participants with a variety of skills and industry expertise, including local, regional, national and international firms that specialize in political assessment, nuclear technology or program implementation. Some of these companies are global in scope and have greater personnel, financial, technical, and marketing resources than we do. The larger companies offering similar services as we do typically are also active in the delivery of nuclear power plant equipment and/or provision of engineering design services. However, we believe that our independence, experience, expertise, reputation and segment focus, enable us to compete effectively in this marketplace.

**Overview of the Nuclear Power Industry**

***Potential Market***

Presently, nuclear power provides approximately 7% of the world s energy, including approximately 17% of the world s electricity. According to the International Atomic Energy Agency, there are over 440 nuclear power plants in operation today, mostly light water reactors, with the most dominant types being pressurized water reactors, or PWRs, boiling water reactors, or BWRs, and VVER reactors (a Russian equivalent of PWRs).

A majority of currently operating reactors around the world were built over 20 year ago. Many of these reactors have a licensed operating life of 40 years. Unless there is a significant increase in new-build activity over the next two decades, it is possible that the majority of reactors in operation in 2030 are already in use today.

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

Of the world s existing reactors currently in operation, PWRs account for more than half of the net operating capacity, with BWRs being second accounting for another 20%.

Of the nuclear reactors currently under construction, over 80% are either PWRs or VVERs with a rated power output of 1,000 MW or greater.

Utilities have utilized power uprates since the 1970s as a way to increase the power output of their nuclear plants. Typically more highly enriched uranium fuel and/or more fresh fuel is needed to increase power output. This enables the reactor to produce more thermal energy and therefore more steam to drive the turbine generator and produce electricity. In order to accomplish this, components such as pipes, valves, pumps, heat exchangers, electrical transformers and generators, must be able to accommodate the conditions that would exist at the higher power level. For example, a higher power level usually involves higher steam and water flow through the systems used to convert thermal power into electric power. These systems must be capable of accommodating the higher flows.

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

In addition to the technical analyses, the utility will conduct an economic analysis to evaluate the potential financial benefits of the proposed uprate. Typically, power uprates enable utilities to increase their generating capability at a

cost significantly less than the cost of building a new plant. Power uprates can be completed in months as opposed to the several years required for new-build, thus the invested dollars begin producing revenue shortly after they are spent. Power uprates, therefore, represent an efficient use of capital.

Utilities have embraced power uprates as a cost effective way to increase their generation capacity. While the efforts thus far have occurred mostly in the United States, there is a large, untapped worldwide market for power uprates. There are about 150 PWRs operating outside the United States. If all of these plants had their power increased by 10% the generating capacity would increase by about 14,500 MW. This is equivalent to about 12 new 1,200 MW reactors. We believe that the incentive to proceed with power uprates at the 10% level is significant since there are few changes required to implement the power uprate and the changes are relatively inexpensive. The limiting factor at the moment is the fuel. We believe that our metallic fuel rod technology enables the 10% increase in power along with extending the fuel cycle to 24 months, and can be used to support even greater power increases up to 30%.

Most nuclear power plants originally had a licensed lifetime of 25 to 40 years, but engineering assessments have established that many can operate much longer. In the U.S. approximately 60 reactors have been granted license renewals which extend their operating lives by 50% to 60 years. Most of the plants that have not already requested a license extension are expected to apply in the near future. A license extension at about the 30-year mark justifies additional capital expenditure for the replacement of worn equipment and outdated control systems.

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

The loss of generating capacity by old plants being retired is balanced by new plants coming on line. There are no firm projections for retirements over the next two decades, however the World Nuclear Association, or WNA, estimates that at least 60 of those now operating will close by 2030, most being small plants. Using conservative assumptions about license renewal, the 2009 WNA Market Report anticipates that 143 reactors will be decommissioned by 2030.

According to the WNA, over 150 power reactors, with a total net capacity of almost 170,000 MW, are planned and over 340 more plants are proposed. Rising gas prices and greenhouse constraints on coal, coupled with energy security concerns, have combined to put nuclear power back on the agenda for projected new capacity in both Europe and North America.

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

***Our Target Market***

Presently, we are targeting Western-type PWR reactors with a net capacity of 900 MW or more that will be under 40 years of age by 2021. These reactors represent the largest market segment, both in terms of operating reactors and new-build units under construction or planned. Our technology is applicable to many more reactors than those included in our target market. The current target market was selected as we believe that it represents the largest commercial market segment with the highest potential for return on investment in the near-term.

Based on the WNA s reactor database, we estimate that the current size of our target market is approximately 148 gigawatts, or GW, of net generating capacity that is expected to grow to 184 GW by 2020 if all of the reactor units currently under construction are completed. Further, the projected size of the target market is expected to expand to 222 GW by 2020 and 269 GW by 2030 if all of the currently planned new-build and half of the proposed reactor units are completed.

Within the identified potential target market, France, China, United States, Korea and Japan represent the largest market segment, accounting for over 80% of the total projected target market size in 2030. As a result, we believe that it is important for us, through technology license arrangements with major fuel vendors, to ultimately secure a footing in one or more of these countries to be able to achieve meaningful market penetration rates.

**Our Intellectual Property**

Our nuclear fuel technologies are protected by multiple U.S. and international patents. Our current patent portfolio is comprised of the following patents:

***Issued Patents***

U.S. patents:

- Patent No. 6,026,136, a seed-blanket unit fuel assembly for a nuclear reactor
- Patent No. 5,949,837, a nuclear reactor having a core including a plurality of seed-blanket units
- Patent No. 5,864,593, a method for operating a nuclear reactor core comprised of at least first and second groups of seed-blanket units
- Patent No. 5,737,375, a nuclear reactor having a core including a plurality of seed-blanket units

The U.S. patents expire August 16, 2014.

International patents:

- Russia Patent No. 2,176,826 Expires August 16, 2014
- Russia Patent No. 2,222,837 Expires August 16, 2014
- South Korea Patent No. 301,339 Expires August 16, 2014
- South Korea Patent No. 336,214 Expires August 16, 2014
- China Patent No. ZL 96196267.4 Expires August 16, 2014

***Pending Patents***

- PCT patent application NO. PCT/RU2008/000801 filed on December 25, 2008 entitled A Light Water Reactor Fuel Assembly (Alternatives), A Light Water Reactor and A Fuel Assembly Fuel Element .
- Euroasian patent application NO. 200802041, Priority claimed based on PCT/RU 200732.
- U.S. provisional patent application NO. 61/116,730 filed on November 21, 2008 entitled Nuclear Reactor (Alternatives), Fuel Assembly of Seed-Blanket Subassemblies for Nuclear Reactor (Alternatives), and Fuel Element for Fuel Assembly .
- U.S. utility patent application No. 12340833 filed on December 22, 2008. Priority claimed on PCT/RU 2007/000732 and U.S. provisional patent application No. 61/116,730.
- European Patent Application No. EP08172834.7 filed on December 23, 2008 entitled A Fuel Element, A Fuel Assembly and a Method of Using a Fuel Assembly . Priority claimed on PCT/RU 2007/000732 and A U.S. provisional patent application No. 61/116,730.
- Japan Patent No. JP2010-540611 Expires December 26, 2027
- Australia Patent No. 2007 363 064 Expires December 26, 2027
- South Korea Patent No. 10-2010-7016627 Expires December 26, 2027
- Canada Patent No. 2,710,432 Expires December 26, 2027
- China Patent No. CN 20078102099.4 Expires December 26, 2027
- India Patent No. 5244/DELNP/2010 Expires December 26, 2027

We have recently filed trademark applications in the United States, European Union and Russia for the following trademarks:

- Lightbridge corporate name
- Lightbridge corporate logo
- Thorium Power corporate name

We are continually executing a strategy aimed at further expanding our intellectual property portfolio.

**Regulation**

No safety regulatory approval is required to design nuclear fuels, although certain technology transfers may be subject to national and international export controls. However, the testing, fabrication and use of nuclear fuels by our future partners, licensees and nuclear power generators, are 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 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 licenses from us, are similarly regulated. 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.

**Employees**

As of December 31, 2010, we had 20 employees, 16 of whom were full-time employees. We believe that our relationship with our employees is satisfactory.

Our business model is to limit full-time employees and to rely on consultants, outside agencies and technical facilities with specific skills to assist with various business functions including: corporate governance, research and development, and government relations. This model limits costly overhead and allows us to draw upon resources that are specifically tailored to our internal and external (client) needs.

**History and Corporate Structure**

We were incorporated under the laws of the State of Nevada on February 2, 1999. During the period from inception until October 6, 2006, we were engaged in businesses other than our current business. On October 6, 2006, we acquired our wholly-owned subsidiary Thorium Power, Inc. in a merger transaction and changed our name to Thorium Power, Ltd. Thorium Power, Inc. was incorporated on January 8, 1992. The merger was accounted for as a reverse merger and Thorium Power, Inc. was treated as the accounting acquirer. In 2008 we formed Lightbridge International Holding, LLC (a Delaware limited liability company). We formed a branch office in England in 2008 called Lightbridge Advisors Limited, a branch office in Moscow, Russia in July 2009 and a branch office in the United Arab Emirates in January 2010. On September 21, 2009, we changed our name from Thorium Power Ltd. to Lightbridge Corporation to more accurately reflect the varied nature of our business operations. Thorium Power, Inc. remains a wholly-owned subsidiary of Lightbridge Corporation.

**Available Information**

Our Annual Report 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 Exchange Act, are available free of charge on our website at *www.ltbridge.com* as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the Securities and Exchange Commission. Copies of these reports may also be obtained free of charge by sending written requests to Investor Relations, Lightbridge Corporation, 1600 Tysons Blvd, Suite 550 Mclean, VA 22102 USA. The information posted on our web site is not incorporated into this Annual Report.

**Item 1A. Risk Factors.**

**General Business Risks**

***If the price of non-nuclear energy sources falls, there could be an adverse impact on new-build nuclear reactor activities in certain markets, 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. As a result, this could reduce the size of the potential markets for both our fuel technology and our consulting services.

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

Our future results may be impacted 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. The cost of raising money in the debt and equity capital markets has increased substantially during the current financial crisis while the availability of funds from those markets has diminished significantly. Even with the

net proceeds of our July 2010 financing, we may require additional capital in the future. However, due to the above listed factors, we cannot be certain that additional funding will be available on terms that are acceptable to us, or at all.

***Our limited operating history makes it difficult to judge our prospects.***

Prior to 2008 we were a development stage company. We have only recently commenced the provision of nuclear consulting services and currently have only a limited number of clients in this area of our business. Similarly, our fuel design patents and technology have not been commercially used and we have not received any royalty or sales revenue from this area of our business. We are subject to the risks, expenses and problems frequently encountered by companies in the early stages of development.

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

Our success depends upon certain members of our senior management, including Seth Grae, Chief Executive Officer of the Company. Mr. Grae s knowledge of the nuclear power industry, his network of key contacts within that industry and in governments and, in particular, his expertise in the potential markets for the Company s technologies, is critical to the implementation of our business model. Mr. Grae is likely to be a significant factor in our future growth and success. The loss of the service of Mr. Grae would likely have a material adverse effect on our Company.

***Competition for highly skilled professionals could have a material adverse effect on our success.***

We rely heavily on our contractor staff and management team. Our success depends, in large part, on our ability to hire, retain, develop and motivate highly skilled professionals. Competition for these skilled professionals is intense and our inability to hire, retain and motivate adequate numbers of consultants and managers could have a serious effect on our ability to meet client needs and to continue the development of our fuel designs. A loss of a significant number of our employees could have a serious negative effect on us. In addition, any significant volatility or sustained decline in the market price of our common stock could impair our ability to use equity-based compensation to attract, retain and motivate key employees and consultants.

Public opposition to nuclear power could increase, resulting in a slow down in new construction of nuclear power plants and an early shut down of existing power plants and the narrowing of our potential target market.

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 occurrence of another major, Chernobyl-like nuclear accident could have a significant adverse effect on public opinion about nuclear power and the favorable regulatory climate needed to introduce new nuclear technologies. Strong public opposition could hinder the construction of new nuclear power plants and lead to early shut-down of the existing nuclear power plants. Furthermore, nuclear fuel fabrication and the use of new nuclear fuels in reactors must be licensed by the U.S. Nuclear Regulatory Commission and equivalent governmental authorities around the world. In many countries, the licensing process includes public hearings in which opponents of the use of nuclear power might be able to cause the issuance of required licenses to be delayed or denied.

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

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

**Risks Associated with our Fuel Technology Business**

***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 be fabricated, tested and licensed before they can be offered for sale in commercial markets. Our fuel designs are still in the research and development stage and while certain testing on our fuel technologies has been completed, further testing and experiments will be required in test facilities. Furthermore, the fuel technology has yet to be demonstrated in an existing commercial reactor. Until we are able to successfully demonstrate operation of our fuel designs in an actual commercial reactor, we will not be certain about the ability of the fuel we design to perform as expected. In addition, there is also a risk that suitable testing facilities may not be available to us on a timely basis, which could cause limited development program schedule delays.

We will also have to enter into a commercial arrangement with a fuel fabricator to actually produce fuel using our designs. If our fuel designs do not perform as anticipated in commercial use, we will not realize revenues from licensing or other use of our fuel designs.

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. As a result, the regulatory licensing and approval process for 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 U.S. Nuclear Regulatory Commission, or its counterparts around the world.

Our fuel designs differ significantly in some aspects from the fuel licensed and used today by commercial nuclear power plants. These differences will likely result in more prolonged and extensive review by the U.S. Nuclear Regulatory Commission or its counterparts around the world that could cause development program schedule delays. Also, 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 research and development program schedule relies on the transferability and applicability of the operating experience of the Russian icebreakers with metallic fuels for regulatory licensing purposes outside of Russia. There is a risk that if this fuel performance operating experience is found by the regulatory authority not to be transferable, more extensive experiments will be required which could cause program schedule delays and require more research and development funding.

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

Existing commercial nuclear infrastructure, including conversion facilities, enrichment facilities, fabrication facilities, fuel storage facilities, fuel handling procedures and fuel operation at reactor sites, used fuel storage facilities and shipping containers, was designed and is currently licensed to handle uranium enrichment up to 5%. Our fuel designs are expected to have enrichment levels up to 19.7% and would therefore require certain modifications to existing commercial nuclear infrastructure to enable commercial nuclear facilities to handle our fuels. In addition, those nuclear facilities will need to go through a regulatory licensing process and obtain regulatory approvals to be able to handle uranium with enrichment levels up to 19.7% and operate commercial reactors using our fuel. There is a risk that some relevant entities within the nuclear power industry may be slow in making any required facility infrastructure modifications or obtaining required licenses or approvals to handle our fuel or operate commercial reactors using our fuel.

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

***Our plans to develop our fuel designs depend on us acquiring rights to the designs, data, processes and methodologies that are used or may be used in our business in the future. If we are unable to obtain such rights on reasonable terms in the future, our ability to exploit our intellectual property may be limited.***

We are currently conducting fuel assembly design and testing work in Russia through our Moscow office personnel as well as Russian research institutes and other nuclear entities that are owned or are closely affiliated with the government of the Russian Federation. We do not currently have all of the necessary licensing or other rights to acquire or utilize certain designs, data, methodologies or processes required for the fabrication of our fuel assemblies. If we, or a fuel fabricator to whom we license our fuel technology, desire to utilize such processes or methodologies in the future, a license or other right to use such technologies from the Russian entities that previously developed and own such technologies would be required. Furthermore, nuclear operators typically seek diversity of fuel supply and may be hesitant to use a fuel product that is only available from a single supplier. If we are unable to obtain a license or other right to acquire or utilize certain know-how required for the fabrication of our fuel assemblies on terms that the Russian entities deem to be reasonable, or there is only a single supplier of our fuel assemblies, then we may not be able to fully exploit our intellectual property and may be hindered in the sale of our fuel products and services.

***Our research operations are conducted primarily in Russia, making them subject to political uncertainties relating to Russia and U.S.-Russian relations.***

Much of our present research activities are being conducted in Russia. Our research operations conducted in Russia are subject to various political risks and uncertainties inherent in the country of Russia. If U.S.-Russia relations deteriorate, the Russian government may decide to scale back or even cease completely its cooperation with the United States on various international projects, including nuclear power technology development programs. If this should happen, our research and development program in Russia could be scaled back or shut down, which could cause development program schedule delays and may require additional funding to access alternative testing facilities outside of Russia. Furthermore, the Russian institutes or nuclear entities engaged in our project are highly regulated and, in many instances, are controlled by the Russian government. The Russian government could decide that the nuclear scientists engaged in our project in Russia or testing facilities employed in our project should be redirected to other high priority national projects in the nuclear sector which could lead to development program schedule delays. Finally, certain future research and development activities to be performed by Russian entities under contract with us will require formal authorization from the Russian State Atomic Energy Corporation, Rosatom , which owns those entities and is the main Russian government agency that oversees Russia s civil nuclear power industry.

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

Intellectual property rights are evolving in Russia, trending towards international norms, but are by no means fully developed. While we are continuing to diversify our research and development activities with associated intellectual property, historically, we have worked closely with our Russian branch office employees and other Russian contractors and entities to develop a significant portion of our material intellectual property. Our rights in this intellectual property, therefore, derive, or are affected by, Russian intellectual property laws. If the application of these laws to our intellectual property rights proves inadequate, then we may not be able to fully avail ourselves of our intellectual property and our business model may fail or be significantly impeded.

***If the Department of Energy, or 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 would become compromised and our business model could fail or 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 might gain an ownership interest in such an invention outside of the Russian Federation and our intellectual property rights in that claimed invention would become compromised and our business model may then fail or be significantly impeded.

11

***If we are unable to obtain or maintain intellectual property rights 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. However, we have not obtained patent protection in each market in which we plan to compete. In addition, 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.

***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. Further, 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.

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

Production of fuel assemblies using our nuclear fuel designs is dependent on the ability of fuel fabricators to obtain supplies of nuclear material utilized in our fuel assembly design. 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.

**Risks Associated With Our Consulting Activities.**

***Our inability to attract business from new clients or the loss of any of our existing clients could have a material adverse effect on us.***

We expect that many of our future client engagement agreements will be terminable by our clients with little or no notice and without penalty. Some of our work will involve multiple engagements or stages. In those engagements, there is a risk that a client may choose not to retain us for additional stages of an engagement or that a client will cancel or delay additional planned engagements. In addition, a small number of existing clients account for a majority of our consulting revenues, the loss of any one of which would have a material adverse effect on our results of operations.

***Our future profitability will suffer if we are not able to maintain current pricing and utilization rates.***

Our revenue, and our profitability, will be largely based on the billing rates charged to clients and the number of hours our professionals will work on client engagements, which we define as the utilization of our professionals. Accordingly, if we are not able to maintain the pricing for our services or an appropriate utilization rate for our professionals, revenues, project profit margins and our future profitability will suffer. Bill rates and utilization rates are affected by a number of factors, including:

- our ability to predict future demand for services and maintain the appropriate headcount and minimize the number of underutilized personnel;
- our clients perceptions of our ability to add value through our services;
- our competitors pricing for similar services;
- the market demand for our services; and
- our ability to manage significantly larger and more diverse workforces as we increase the number of our professionals and execute our growth strategies.

***Unsuccessful future client engagements could result in damage to our professional reputation or legal liability, which could have a material adverse effect on us.***

Our professional reputation and that of our personnel is critical to our ability to successfully compete for new client engagements and attract or retain professionals. Any factors that damage our professional reputation could have a material adverse effect on our business.

In addition, any client engagements that we obtain will be subject to the risk of legal liability. Any public assertion or litigation alleging that our services were negligent or that we breached any of our obligations to a client could expose us to significant legal liabilities, could distract our management and could damage our reputation. We carry professional liability insurance, but our insurance may not cover every type of claim or liability that could potentially arise from our engagements. In addition, the limits of our insurance coverage may not be enough to cover a particular claim or a group of claims, and the costs of defense.

***Our results of operations could be adversely affected by disruptions in the marketplace caused by economic and political conditions.***

Global economic and political conditions affect our clients businesses and the markets they serve. A severe and/or prolonged economic downturn or a negative or uncertain political climate could adversely affect our clients financial condition and the levels of business activity engaged in by our clients and the industries we serve. Clients could determine that discretionary projects are no longer viable or that new projects are not advisable. This may reduce demand for our services, depress pricing for our services or render certain services obsolete, all of which could have a material adverse effect on our results of operations. Changes in global economic conditions or the regulatory or

legislative landscape could also shift demand to services for which we do not have competitive advantages, and this could negatively affect the amount of business that we are able to obtain. Although we have implemented cost management measures, if we are unable to appropriately manage costs or if we are unable to successfully anticipate changing economic and political conditions, we may be unable to effectively plan for and respond to those changes, and our business could be negatively affected.

**Risks Relating to the Ownership of Our Securities**

***There may be volatility in our stock price, which could negatively affect investments, and 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 its control, including:

- quarterly variations in operating results,
- changes in financial estimates by securities analysts,
- changes in market valuations of other similar companies,
- announcements by us or our competitors of new products or of significant technical innovations, contracts, receipt of (or failure to obtain) government funding or support, acquisitions, strategic partnerships or joint ventures,
- additions or departures of key personnel,
- any deviations in net sales or in losses from levels expected by securities analysts, or any reduction in political support from levels expected by securities analysts,
- future sales of common stock, and
- results of analyses of mining and resources assets.

In addition, 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.

**Item 1B. Unresolved Staff Comments.**

Not applicable.

**Item 2. Description of Property.**

We are obligated to pay approximately $43,000 per month for office rent and approximately another $2,000 per month for other fees for the rented office space located at 1600 Tysons Boulevard, Suite 550, McLean, Virginia 22102. The space is used by our executives, employees and contractors for administrative purposes. The term of the lease for our offices expires on December 31, 2013 and is renewable for additional one-year terms.

We are obligated to pay approximately US$9,000 per month for office rent and approximately another US$1,500 per month for other fees for the rented office space located at Zemlyanoi Val, 9, Moscow, Russia, 105064. The space is used by our Moscow staff for administrative purposes. The term of the lease for our offices expires on April 30, 2011 and is renewable for additional one-year terms.

Our branch offices in London and Abu Dhabi are maintained via corporate agents, and fees that we pay our agents include rental expense. The address for our branch in London is Lightbridge Advisors Limited, High Street Partners, 83 Victoria Street, London, SW1H OHW. The address for our branch in Abu Dhabi is Fotouh Al Khair Center (Marks & Spencer) Tower No. 3, 0 floor, next to Etisalat Head office, PO Box 44183, Abu Dhabi.

**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. We are currently not aware of any such legal proceedings or claims that we believe will have a material adverse affect on our business, financial condition or operating results.

**Item 4. [Removed and Reserved.]**

**PART II**

**Item 5. Market for Common Equity, Related Stockholder Matters and Small Business Issuer Purchases of Equity Securities.**

**Market Information**

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

The following table sets forth, for the periods indicated, the high and low sales prices of our common stock. These prices reflect inter-dealer prices, without retail mark-up, mark-down or commission, and may not represent actual transactions.

The quotations for all periods prior to and including September 30, 2009 have been adjusted to account for our 30-for-1 reverse stock split which was effective as of September 21, 2009.

| Fiscal Year | Quarter Ending | High | Low |
|---|---|---|---|
| 2010 | December 31 | $ 6.23 | $ 5.00 |
| | September 30 | $ 8.31 | $ 5.31 |
| | June 30 | $ 11.15 | $ 5.26 |
| | March 31 | $ 9.00 | $ 5.99 |
| 2009 | December 31 | $ 12.05 | $ 5.03 |
| | September 30 | $ 10.95 | $ 5.46 |
| | June 30 | $ 7.35 | $ 5.40 |
| | March 31 | $ 8.40 | $ 4.08 |

In addition, our common stock is included in the World Nuclear Association s Nuclear Energy Index, which tracks the overall performance of globally traded companies that are engaged in the nuclear energy industry.

**Holders**

As of February 18, 2011, our common stock was held by 168 stockholders of record. This number excludes the shares of our common stock owned by stockholders holding stock under nominee security position listings.

**Reports to Stockholders**

We plan to furnish our stockholders with an annual report for each fiscal year ending December 31, containing financial statements audited by our independent certified public accountants. Additionally, we may in our sole discretion, issue unaudited quarterly or other interim reports to our stockholders as we deem appropriate. We intend to maintain compliance with the periodic reporting requirements of the Exchange Act.

**Dividends**

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

**Transfer Agent**

Our transfer agent and registrar for our common stock is Computershare Trust Company, 350 Indiana Street, Suite 800, Golden, Colorado, 80401. Its telephone number is 800.962.4284 and facsimile is 303.262.0604.

**Recent Sales of Unregistered Securities**

Except for sales previously disclosed in quarterly reports on Form 10-Q or in a current report on Form 8-K filed by us with the Securities and Exchange Commission, we have not sold any securities without registration under the Securities Act of 1933.

**Securities Authorized for Issuance Under Equity Compensation Plans**

The information under the heading Equity Compensation Plan Information in our definitive proxy statement for the annual meeting of shareholders to be filed with the SEC is incorporated herein by reference.

**Item 6. Selected Financial Information.**

Not applicable

**Item 7. Management s Discussion and Analysis of Financial Condition and Results of Operations. Overview**

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 contained in Item 8. Financial Statements and Supplementary Data of this report. This overview summarizes the MD&A, which includes the following sections:

- *Our Business* a general overview of our two business segments, the material opportunities and challenges of our business;
- *Critical Accounting Policies and Estimates* a discussion of accounting policies that require critical judgments and estimates;
- *Operations Review* an analysis of our Company s consolidated results of operations for the two years presented in our consolidated financial statements. Except to the extent that differences among our operating segments are material to an understanding of our business as a whole, we present the discussion in the MD&A on a consolidated basis; and
- *Liquidity, Capital Resources and Financial Position* an analysis of cash flows; an overview of financial position.

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

**Our Business**

**General Overview**

We are a leading nuclear fuel technology company, and participate in the nuclear power industry in the U.S. and internationally. Our business operations can be categorized into two segments: (i) we are a developer of next generation nuclear fuel technology that has the potential to significantly uprate the power output of reactors, reducing the per-megawatt-hour cost of generating nuclear energy, and reduce nuclear waste and proliferation, and (ii) we are a provider of nuclear power consulting and strategic advisory services to commercial and governmental entities worldwide.

**Our Nuclear Fuel Technology Business Segment**

***The Nature of Our Proprietary Technology Development Activities***

We are developing innovative, proprietary nuclear fuel designs which we expect will significantly enhance the nuclear power industry s economics and increase power output by: (1) Extending the fuel cycle length to 24 months or longer while simultaneously increasing the power output by up to 17% in existing pressurized water reactors (including Westinghouse 4-loop reactors, which are currently limited to an 18-month fuel cycle); (2) Enabling increased reactor power output (up to 30% increase) without changing the core size in new-build PWRs; and (3) Addressing concerns relating to the back-end of the fuel cycle including the volume of used fuel per kilowatt-hour as well as proliferation of weapons-usable materials. Significant technological synergies exist among our primary fuel products due to utilization of the proprietary metallic fuel rod technology that is at the core of each of these products. As a result, once

completed, full-scale demonstration and qualification of the metallic fuel rod technology will simultaneously advance all of our product families currently under development.

In response to the challenges associated with conventional oxide fuels, we are developing an innovative, proprietary metallic fuel technology, that is capable of significantly higher burnup and power density compared to conventional oxide fuels, which we believe will allow current and new-build nuclear reactors to safely increase power production and reduce the initial capital investment as well as operations and maintenance costs on a per kilowatt-hour basis. As a result, in addition to the projected electricity production cost savings, we believe that our technology can result in utilities or countries needing to deploy fewer new reactors to generate the same amount of electricity. For utilities or countries that already have operating reactors, our technology could be utilized to increase the power output of those reactors instead of to building new reactors. Further, we believe that the fuel fabrication, or manufacturing process for this new fuel design is simpler, which we expect could lower fuel fabrication costs.

We intend to license our intellectual property for our nuclear fuel designs to existing major nuclear fuel fabricators that own and operate fuel fabrication facilities and have long-term fuel supply contracts with nuclear power plants. We believe that this partnering strategy would also allow us to take advantage of the existing customer base of such major fuel fabricators, thus enabling our fuel products to achieve high market penetration rates in a relatively short period of time. We are currently pursuing a research and development strategy aimed at generating sufficient interest and confidence in our fuel technology among major fuel fabricators with a view of entering into a commercial arrangement with one or more of them within the next 2-3 years. In addition to a fuel design license agreement, we believe that there may be manufacturing technology licenses or manufacturing support fees that we may be able to receive from the fuel fabricator.

***Consulting and Strategic Advisory Services Business Segment***

We are primarily engaged in the business of assisting commercial and governmental entities with developing and expanding their nuclear industry capabilities and infrastructure. We provide integrated strategic advice across a range of expertise areas including, for example, regulatory development, nuclear reactor site selection, procurement and deployment, reactor and fuel technology, international relations and regulatory affairs.

Due to the relatively limited growth in the nuclear energy industry during the 1980 s and 1990 s, and corresponding limited recruitment into the industry, the cadre of engineers, managers and other nuclear energy industry experts is aging. In any nuclear renaissance, we believe that the industry will be challenged in acquiring and retaining sufficient qualified expertise. Moreover, in countries studying new nuclear energy programs, the number of qualified nuclear energy personnel is limited, and we believe that those countries will need to rely on significant support from non-domestic service providers and experts to ensure success in those programs.

Our emergence in the field of nuclear energy consulting is in direct response to the need for independent assessments and highly qualified technical consulting services from countries looking to establish nuclear energy programs, by providing a blueprint for safe, secure, efficient and cost-effective nuclear power. We offer full-scope strategic planning and advisory services for new and growing existing markets. Furthermore, we only engage with commercial entities and governments that are dedicated to non-proliferative and transparent nuclear programs.

Our consulting services are expert and relationship based, with particular emphasis on key decision makers in senior positions within governments or companies, as well as focus on overall management of nuclear energy programs. To date, substantially all of our revenues are derived from our consulting and strategic advisory services business segment, which primarily provides nuclear consulting services to entities within the United Arab Emirates, our first significant consulting and strategic advisory client. In April 2010 and December 2010, we began to provide consulting services in additional countries, including the member states of the Gulf Cooperation Council. We have also provided nuclear safety consulting advice to U.S. nuclear utilities. We plan to continue and potentially expand this nuclear safety consulting work in the U.S.

**Factors Affecting Our Financial Performance**

***Proprietary Nuclear Fuel Technology Development***

We believe that a major opportunity for us is the possibility that our advanced nuclear fuel designs, which are currently in the research and development stage, will be used in many existing and new light water nuclear reactors. Light water reactors are the dominant reactor types currently used in the world, and fuels for such reactors constitute the majority of the commercial market for nuclear fuel.

Various industry efforts currently underway to meet the growing demand for more electric power output from the same reactor core size, and to create a more efficient fuel cycle, with improved safety, reliability and extended fuel cycle length, are largely focused on stretching the limits of conventional oxide fuels. While this strategy has worked

well in the past, now almost all of the available fuel performance margins with conventional oxide fuels have been utilized. However, due to the risk-averse nature of the major industry players and a significant capital investment made in existing infrastructure supporting conventional oxide fuels, major fuel vendors are reluctant to take on early risks associated with fuel development programs on next generation nuclear fuel designs. As a result, we are well positioned to take advantage of this market opportunity by developing next generation fuel designs that can meet the needs of the power generator.

Our commercialization strategy is not to compete with the major fuel fabricators that collectively fabricate a large majority of the fuel used in the world s nuclear power plants. Instead, we are pursuing a commercialization strategy aimed at generating interest in our nuclear fuel designs from one or more of these major nuclear fuel fabricators that could lead to a technology licensing or other teaming arrangement over the next three years. Our ultimate commercial success depends on how soon and what kind of a commercial arrangement we are able to negotiate with one or more of these potential partner companies.

In addition, we recognize that a successful commercialization strategy is highly dependent upon the interest in our nuclear fuel designs from nuclear power plants which are the ultimate fuel product user. If we are successful in generating sufficient interest from one or more nuclear power plants n evaluating our fuel technology for potential use, we believe it would make it easier to find a major fuel fabricator that would be willing to partner with us in order to offer that fuel product to the nuclear power generator.

It is also important to generate public, industry and government awareness of our nuclear fuel technology that could help build technology confidence and increase credibility among fuel fabricators and nuclear power plants. As a result, we are pursuing a public outreach effort by seeking publication of technical papers highlighting progress on our fuel designs in peer-reviewed technical journals and presentations at major international nuclear conferences.

Competition with respect to the design of commercially viable fuel products is limited to conventional uranium oxide fuels, which, as discussed above, are reaching the limits in terms of their capability to provide increased power output or longer fuel cycles. We believe that the industry needs fuel products that can provide these benefits. To our knowledge, our nuclear fuel development project is the only commercially viable program that could achieve these goals. Due to the long-term product development timelines, significant nuclear regulatory requirements, and our comprehensive patent portfolio, we believe that the barriers to entry prevent a viable competitor in the foreseeable future.

In addition, 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. As a result, this could reduce the size of the potential markets for our fuel technology. However, if prices or production costs of non-nuclear energy increase, there may be increased demand for the deployment of new-build nuclear power plants.

***Consulting and Strategic Advisory Services***

Our emergence in the field of nuclear energy consulting is in direct response to the need for independent assessments and highly qualified and integrated strategic advisory services for countries looking to establish nuclear energy programs, while still providing a blueprint for safe, secure, efficient and cost-effective non-proliferative nuclear power. We offer full-scope planning and strategic advisory services for new and existing markets and offer such services without a bias towards or against any reactor vendor or fuel technology. We believe that there are significant opportunities available to provide services to governments that are dedicated to non-proliferative, safe, and transparent nuclear programs.

Our major challenge in pursuing our business is that the decision making process for nuclear power programs typically involves careful consideration by many parties and therefore requires significant time. Also, many of the potential clients that could benefit from our services are in regions of the world where tensions surrounding nuclear energy are high, or in countries where public opinion plays an important role. Domestic and international political pressure may hinder our efforts to provide nuclear energy services, regardless of our focus on non-proliferative nuclear power.

See also Item 1A. Risk Factors in Part I of this report for additional information about risks and uncertainties facing our Company.

**Critical Accounting Policies**

***Critical Accounting Policies and Estimates***

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

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make a variety of estimates and assumptions that affect (i) the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and (ii) the reported amounts of revenues and expenses during the reporting periods covered by the financial statements.

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

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

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

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

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

We measure the fair value of stock options on the date of grant using a 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.

Prior to the completion of our merger in October 2006, we had limited historical information on the price of our stock as well as employees stock option exercise behavior for stock options issued prior to the merger. As a result, we could not rely on historical experience alone to develop assumptions for stock price volatility and the expected life of options. As such, our stock price volatility was estimated with reference to our historical stock price for the time period before the merger, from the date the announcement of the merger was made. We utilized the closing prices of our publicly-traded stock from the announcement date in January 2006 to determine our volatility and we have continued to use our historical stock price closing prices to determine our volatility.

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.

***Income Taxes***

We account for income taxes using the liability method in accordance with the accounting pronouncement *Accounting for Income Taxes*, which requires the recognition of deferred tax assets or liabilities for the tax-effected temporary differences between the financial reporting and tax bases of our assets and liabilities, and for net operating loss and tax credit carry forwards. The tax expense or benefit for unusual items, prior year tax exposure items, or certain adjustments to valuation allowances are treated as discrete items in the interim period in which the events occur.

On January 1, 2007, we adopted Accounting Interpretation *Accounting for Uncertainty in Income Taxes*, which addresses the determination of whether tax benefits claimed or expected to be claimed on a tax return should be recorded in the financial statements. Under this requirement, we may recognize the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities, based on the technical merits of the position. As a result of the implementation of this standard, we did not recognize any current tax liability for unrecognized tax benefits. We do not believe that there are any unrecognized tax positions that would have a material effect on the net operating losses disclosed.

***Revenue Recognition from Consulting Contracts***

We believe one of our critical accounting policies is revenue recognition from our consulting contracts. We are currently primarily deriving our revenue from fees by offering consulting and strategic advisory services to commercial and government owned entities outside the U.S. planning to create or expand electricity generation capabilities, using nuclear power plants. Our fee type and structure for each client engagement depend on a number of variables, including the size of the client, the complexity, the level of the opportunity for us to improve the client s electricity generation capabilities using nuclear power plants, and other factors.

The two consulting agreements that we entered into in August 2008 were fixed-fee service contracts but were subsequently changed to time and expense contracts. We recognize revenue associated with these contracts in accordance with the time and expense billed to our customer, which is subject to their review and approval. When a loss is anticipated on a contract, the full amount of the anticipated loss is recognized immediately. Our management uses its judgment concerning the chargeable number of hours to bill under each contract considering a number of factors, including the experience of the personnel that are performing the services, the value of the services provided and the overall complexity of the project. Should changes in management s estimates be required, due to business conditions that cause the actual financial results to differ significantly from management s present estimates, revenue recognized in future periods could be adversely affected.

The revenue recognition from two other governments contracts entered into April 2010 and December 2010 will be based on the completion and acceptance of contractual milestones.

We recognize revenue in accordance with SEC Staff Accounting Bulletin or SAB, No. 104, *Revenue Recognition*. We recognize revenue when all of the following conditions are met:

(1) There is persuasive evidence of an arrangement;
(2) The service has been provided to the customer;
(3) The collection of the fees is reasonably assured; and

(4) The amount of fees to be paid by the customer is fixed or determinable.

In situations where contracts include client acceptance provisions, we do not recognize revenue until such time as the client has confirmed its acceptance.

***Intangibles***

As presented on the accompanying balance sheet, we had patents with a net book value of approximately $377,000 as of December 31, 2010. There are many assumptions and estimates that may directly impact the results of impairment testing, including an estimate of future expected revenues, earnings and cash flows, and discount rates applied to such expected cash flows in order to estimate fair value. We have the ability to influence the outcome and ultimate results based on the assumptions and estimates we choose for testing. To mitigate undue influence, we set criteria that are reviewed and approved by various levels of management. The determination of whether or not intangible assets have become impaired involves a significant level of judgment in the assumptions. Changes in our strategy or market conditions could significantly impact these judgments and require adjustments to recorded amounts of intangible assets.

**Contingencies**

Management assesses the probability of loss for certain contingencies and accrues a liability and/or discloses the relevant circumstances, as appropriate. Management believes that any liability to the Company that may arise as a result of having to pay out additional expenses that may have a material adverse effect on the financial condition of the Company taken as a whole should be disclosed. Refer to Note 9 of Notes to Consolidated Financial Statements.

**Recent Accounting Standards and Pronouncements**

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

**Business Segments and Periods Presented**

We have provided a discussion of our results of operations on a consolidated basis and have also provided certain detailed segment information for each of our business segments below for the years ended December 31, 2010 and 2009, in order to provide a meaningful discussion of our business segments. We have organized our operations into two principal segments: Consulting and Strategic Advisory Services and Fuel Technology. We present our segment information along the same lines that our chief executives review our operating results in assessing performance and allocating resources.

| | | Consulting | Technology | Corporate and Eliminations | Total 12 Months |
|---|---|---|---|---|---|
| **December 31, 2010** | | | | | |
| Revenue | | 7,244,158 | 342,550 | | 7,586,708 |
| Segment Profit (Loss) | Before Tax | 1,703,301 | (1,522,275) | (7,744,508) | (7,563,481) |
| Total Assets | | 990,563 | 329,640 | 13,990,609 | 15,310,812 |
| Property Additions | | | | 1,620 | 1,620 |
| Interest Expense | | | | | |