Risk Factors Comparison 2025-03-03 to 2024-03-04 Form: 10-K

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Our business faces significant risks. You should carefully consider all the information set forth in this annual report and in our other filings with the SEC, including the following risk factors which we face, and which are faced by our industry. Our business, financial condition, and results of operations could be materially and adversely affected by any of these risks. In that event, the trading price of our common stock would likely decline, and you might lose all or part of your investment. This report also contains forward- looking statements that involve risks and uncertainties. Our results could materially differ from those anticipated in these forward- looking statements, as a result of certain factors including the risks described below and elsewhere in this report and our other SEC filings. See also " Forward- Looking Statements " above. ~~13Risks~~ -- **Risks** Related to Our Business We will need to raise significant additional capital in the future to expand our operations and continue our R & D activities and we may be unable to raise such funds when needed on acceptable terms, or at all. Any capital raises may cause significant dilution to our shareholders. As of December 31, ~~2023~~ **2024** , we had **approximately** $ ~~28~~ **40** . ~~6~~ **0** million in cash and cash equivalents. We have experienced substantial and recurring losses from operations, which has created an accumulated deficit of $ ~~152~~ **164** . ~~4~~ **2** million as of December 31, ~~2023~~ **2024** . We will continue to incur losses because we are in the early development stage of commercializing our nuclear fuel. We will need to raise significant additional capital (up to several hundred million dollars **in total over the next 10- 15 years**) in order to continue our R & D activities and fund our operations through the commercialization of our nuclear fuel **. R & D costs may exceed our budget estimates, leading to financial strain and suspending our R & D activities** . Our current plan is to maximize external funding from third- party sources, including potentially the DOE, to support the remaining development, testing and demonstration activities relating to our metallic nuclear fuel technology. When we elect to raise additional funds or additional funds are required, we may raise such funds from time to time through public or private equity offerings, debt financings or other financing alternatives. Additional equity or debt financing, or other alternative sources of capital may not be available to us on acceptable terms, if at all. If we are unable to meet our future financial obligations, we could be forced to delay, reduce, or cease our operations, including substantially decrease or suspend our R & D activities, or otherwise impede our ongoing business efforts, which could have a material adverse effect on our business, operating results, financial condition, and long- term prospects, and, investors may lose their entire investment in the Company. In addition, if we are unable to demonstrate meaningful progress to further the development of our fuel products, it may be difficult for us to raise additional capital on terms acceptable to us or at all. When we raise additional funds by issuing equity securities, **including using our at- the- market (ATM) facility,** our stockholders will experience dilution. Sales of substantial amounts of our common stock may cause the trading price of our common stock to decline in the future. New investors may have rights superior to existing securityholders. Debt financing, if available, would result in substantial fixed payment obligations and may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, or declaring dividends. Any debt financing or additional equity that we raise may contain terms, such as liquidation and other preferences, which are not favorable to us or our stockholders. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may not be able to fully develop our nuclear fuel designs, our future operations will be limited, and our ability to generate revenues and achieve or sustain future profitability will be substantially harmed. In particular, we may be required to delay, reduce the scope of or terminate one or more of our research projects, sell rights to our nuclear fuel technology or license the rights to such technologies on terms that are less favorable to us than might otherwise be available. ~~We~~ **14We** are dependent upon significant U. S. government funding and / or in- kind contributions and political support for nuclear power in order to complete our fuel development efforts and commercialize our nuclear fuel technology. Our projected fuel development timeline is dependent upon receiving significant funding and / or in- kind contributions from the U. S. government to not only support our ongoing R & D efforts, but to also provide confidence to our investors and reduce the need to raise funds through the issuance of additional dilutive equity securities. Government funding of R & D is subject to the political process, which is inherently unpredictable and highly competitive. The funding of government programs is dependent on budgetary limitations, congressional appropriations, and administrative allotment of funds, all of which are uncertain and may be affected by changes in U. S. government policies resulting from various political developments. If political support for the prioritization of the development of nuclear energy decreases, including due to policy changes by **current or** ~~the Biden administration and~~ future administrations and changing congressional funding priorities, it may affect our ability to secure government funding which would adversely affect our business, fuel development timeline, financial condition, and results of operations. Changes to, or termination of, any agreements with the U. S. government national laboratories, or deterioration in our relationship with the U. S. government, could adversely affect our research and development activities. We are a party to agreements and arrangements with U. S. national laboratories that are subject to review and approval by the DOE and which are important to our R & D activities. Termination, expiration, or modification of one or more of these ~~or other~~ agreements **or their agreements with others** could adversely affect our future prospects to develop our fuel and / or commercially deploy it. In addition, deterioration in our relationship with the U. S. national laboratories that are parties to these agreements and / or the DOE could impair or impede our ability to successfully implement these agreements, which could adversely affect our R & D activities. ~~14The~~ -- **The** amount of time and funding needed to bring our nuclear fuel to market may greatly exceed our projections. The development of our nuclear fuel will take a significant amount of time and funding, and any shortfall in R & D funding levels or a delay in achieving fuel development milestones, or uncertainty in regulatory licensing timelines could result in significant delays and

cost overruns. We cannot at this stage accurately predict the amount of funding or the time required to successfully manufacture and sell our nuclear fuel in the future. However, our best estimate at this time is that our metallic fuel development program is expected to take 15- 20 years and cost several hundred million U. S. dollars before we can secure our initial commercial order for a batch reload. The actual cost and time required to commercialize our fuel technology may vary significantly depending on, among other things, the results of our research and product development efforts; the cost of developing or licensing our nuclear fuel; changes in the focus and direction of our research and product development programs; access to test reactor loops and / or other test facilities; competitive and technological advances; the cost of filing, prosecuting, defending and enforcing claims with respect to patents; the regulatory approval process; fuel manufacturing process; availability of metallic high assay low enriched uranium, and marketing and other costs associated with commercialization of these technologies. Because of this uncertainty, even if financing is available to us, we may need significantly more capital than anticipated, which may not be available on terms acceptable to us or at all, and the expected revenues and other expected benefits from our nuclear fuel technology may be delayed or never realized. Our current economic model for selling our nuclear fuel may prove to be inaccurate and subject to competition and our nuclear fuel technology products may not be cost effective. Although our preliminary economic model concludes that our nuclear fuel technology may provide **economic benefits** ~~a significant payback~~ to utilities **by enabling power uprates** , it is based upon a number of assumptions that may not prove to be accurate. If our model is inaccurate, our nuclear fuel product may not provide nuclear utility customers with sufficient economic incentive to switch from existing nuclear fuels, and we could lose or fail to develop customers. For example, if ATF is successful in extending the cycle length from 18 to 24 months **and / or enabling significant power uprates** in existing PWRs, ~~it~~ **this** could severely weaken or undermine the anticipated economic value of our nuclear fuel for large PWRs. Separately, our economic model for SMRs is in the development stage and its viability is subject to favorable wholesale power prices in the markets in which our nuclear fuel may be used, the necessary upfront capital investment to enable **up to** a 30 % power uprate in future SMRs using our nuclear fuel and the future costs of uranium metallization and fabrication of our fuel rods and fuel assemblies at commercial scale, all of which are inherently unpredictable. Additionally, we believe our metallic fuel can be used in CANDU heavy water reactors. **While the initial** ~~However, we have yet to complete our~~ feasibility study **indicates the potential** ~~to confirm our fuel' s suitability~~ for **Lightbridge Fuel ™ to double** ~~those~~ -- **the** ~~types of~~ **burnup in CANDU** reactors ~~. As a result~~ , we do not yet have an economic model for CANDU- type reactors and are uncertain at this time as to potential economic benefits, if any, our metallic fuel could provide in those types of reactors. ~~A~~ **15A** failure of our current and future economic models, or a failure to find a strategic alternative, such as a potential business combination partner, would adversely affect our business, financial condition, and results of operations and may result in the failure of the Company. ~~We may not achieve the expected benefits from our collaboration agreement with Centrus Energy Corp. On December 7, 2023, we announced the Company' s entry into a collaboration agreement with Centrus Energy Corp. to engage in a front- end engineering and design (FEED) study to add a dedicated Lightbridge Pilot Fuel Fabrication Facility (LPFFF) at the American Centrifuge site in Piketon, Ohio. The FEED study is intended to identify infrastructure and licensing requirements as well as the estimated cost and deployment schedule for the LPFFF. Centrus Energy' s wholly- owned subsidiary, American Centrifuge Operating, LLC, will lead the study, which is expected to be completed in 2024. The American Centrifuge Plant is currently the only place in the world to produce HALEU in UF6 form outside of Russia. There can be no guarantee that the FEED study will return results that confirm the feasibility of a LPFFF and may indicate that the infrastructure and licensing requirements or the estimated cost or timelines to deploy the LPFFF would be overly onerous, too lengthy or prohibitively expensive to proceed with the deployment of the LPFFF. If the FEED study indicates that the LPFFF cannot be completed at the American Centrifuge Plant on terms acceptable to us, it may delay our anticipated timeline for the commercialization of our fuel, which would adversely affect our business, financial condition, and results of operations.~~ Development of our nuclear fuel technology is dependent upon the availability of a test reactor **and access to adequate resources and manufacturing capabilities at national laboratories** . Our fuel designs are still in the research and development stage and further research, development, and demonstration will be required in test facilities. We had intended to conduct further testing of our fuel designs at the Halden research reactor located in Halden, Norway. However, the Halden research reactor, which became operational in 1958, was shut down in June 2018 and will not reopen. The Company has identified alternative options to generate the irradiation data we need to support regulatory licensing of our LTA operation in a commercial reactor, such as the ATR at INL, but pursuing such alternatives to the Halden research reactor may significantly delay further testing of our fuel designs. We may not be able to contractually secure another reactor in which to test our fuel designs. As a result, commercialization of our nuclear fuel technology may be significantly delayed, perhaps indefinitely, which would adversely affect our business, financial condition, and results of operations. ~~15Our~~ -- **Our** current R & D plan includes the use of research reactors made available by the U. S. government and the DOE, including but not limited to the ATR at INL. These reactors are limited in terms of technical capabilities, operating cycles, and prior reservations for similar research and development services. While the ATR may have enough space for additional flow loops where fuel rods can be irradiated, the reactor currently has only one such loop available, limiting how much fuel rod material that can be inserted into the reactor as well as its duration in the reactor. If sufficient capacity within the ATR is not available **on a timely basis** , we may not be able to obtain sufficient data to justify regulatory approval for LTA demonstration in a large commercial PWR in a commercially feasible timeframe. This would likely necessitate additional loop irradiation testing in another test reactor or LTR demonstration in a large commercial PWR in addition to the ATR loop testing before LTA demonstration could commence. Funding for any improvement of capabilities or continued operations of these reactors is subject to the priorities of the U. S. government, as well as the appropriation of funding by the U. S. Congress, and cannot be assured. Changes in these factors are outside of the Company' s control and could cause significant delays and / or cost increases in our R & D programs. **Furthermore, we currently rely on existing manufacturing equipment and capabilities at INL to demonstrate our co-extrusion fabrication process using depleted uranium and zirconium alloy and to eventually manufacture samples using**

enriched uranium and zirconium alloy for irradiation testing in a test reactor environment. INL has indicated to the Company that due to resource and manufacturing equipment constraints, it may not be able to meet the Company' s preferred project timeline. Based on the actual costs and project performance to date, we believe that the total project cost will likely exceed the previously anticipated budgets. Our fuel designs have never been tested in an existing commercial reactor and actual fuel performance, as well as the willingness of commercial reactor operators and fuel fabricators to adopt a new design, is uncertain. Nuclear power research and development entails significant technological risk. New designs must undergo extensive development and testing necessary for regulatory approval. Our fuel designs are still in the research and development stage and, while certain testing on our fuel technologies has been completed, further testing and experiments will be required in order to achieve commercialization. For example, our proposed metallic fuel uses a helical multi- lobe form to increase its surface area and shorten the distance for heat generated in the fuel rod to reach water, resulting in an improved ability to cool the fuel. However, this proposed shape may also result in non- uniform distribution of heat flux that may have an adverse impact on the critical heat flux and limit power uprate capabilities of our metallic fuel. Additional testing and development may result in changes to the design of our proposed metallic fuel, which could decrease its realizable benefits and impair the ability of nuclear utilities to utilize nuclear fuel incorporating our technology. Furthermore, the fuel technology has yet to be sufficiently demonstrated in operating conditions equivalent to those found in an existing commercial reactor. **Utility companies and reactor operators may hesitate to adopt unproven fuel types due to operational or safety concerns.** Until we are able to successfully demonstrate operation of our fuel designs in commercial reactor conditions, we cannot confirm the ability of our nuclear fuel to perform as expected, including its ability to enable a power uprate, a longer operating cycle, or other anticipated performance and safety benefits **. Safety concerns or incidents during testing, transportation, or use could damage the company' s reputation and lead to liability claims** . In addition, there is also a risk that suitable testing or manufacturing facilities may not be available to us on a timely basis or at a reasonable cost, which could cause development program schedule delays and / or cost overruns. ~~There~~ **16There** is also a risk that fuel fabricators that manufacture and supply commercial nuclear fuel assemblies to nuclear utility customers may not enter into a commercial arrangement with us relating to our metallic nuclear fuel designs **. Unforeseen engineering difficulties may arise during manufacturing or scaling production** . A failure to enter into a commercial arrangement with one or more existing nuclear fuel fabricators could adversely affect our business, financial condition, and results of operations and may result in the failure of the Company. If our fuel designs do not perform as anticipated in commercial reactor conditions, we will not realize revenues from licensing or other use of our fuel designs. Existing commercial nuclear infrastructure in many countries is limited to uranium material in dioxide form with enrichments limited to 5 %. Our nuclear fuel will be in a metallic form and will be enriched to higher levels, which will require modifications to existing commercial nuclear infrastructure and could impede commercialization of our technology. Existing commercial nuclear infrastructure, including conversion facilities, enrichment **facilities, de- conversion** facilities, fabrication facilities, fuel storage facilities, fuel handling procedures, fuel operation at reactor sites, used fuel storage facilities and shipping containers, were in most cases designed and are currently licensed to handle uranium in oxide form with enrichment up to 5 % of the isotope uranium- 235. Our fuel designs are expected to use uranium metal with uranium enrichment levels up to 19. 75 % and would therefore require certain modifications to existing commercial nuclear infrastructure to enable commercial nuclear facilities to handle our fuels. Those nuclear facilities will need to complete a regulatory licensing process and obtain regulatory approvals to be able to process, handle, or ship uranium metal with enrichment levels up to 19. 75 % and operate commercial reactors using our metallic fuel. There is significant risk that some relevant entities within the nuclear power industry may be slow in making any required facility infrastructure modifications or obtaining required licenses or approvals to enable enrichment to 19. 75 %, de- conversion to metallic uranium, fabrication of metallic fuel rods and assemblies, shipment of fresh and irradiated metallic fuel assemblies, interim storage of fresh and irradiated fuel assemblies in spent fuel pools or dry cask storage facilities at reactor sites, or permanent disposal of spent metallic fuel at a high- level repository, or may not make the necessary modifications at all **. Disposal or recycling of our spent fuel may face scrutiny, requiring additional safeguards** . There is also a risk associated with possible negative perception of uranium enrichment greater than 5 % that could potentially delay or hinder regulatory approval of our nuclear fuel designs. ~~16Our~~ -- **Our** nuclear fuel designs rely on fabrication technologies that in certain material ways are different from the fabrication techniques presently utilized by existing commercial fuel fabricators. In particular, our metallic fuel rods must be produced using a co- extrusion fabrication process. Presently, most commercial nuclear fuel is produced using a pellet fabrication technology, whereby uranium dioxide is formed into small pellets which are stacked and sealed inside metallic tubes. Our co- extrusion fabrication technology involves co- extrusion of a composite solid fuel rod from a metallic matrix containing uranium and zirconium alloy. Fabrication of full- length (approximately 12 to 14 feet) PWR metallic fuel rods for large reactors and shorter length for SMRs or CANDUs has yet to be sufficiently demonstrated for our uranium- zirconium fuel. There is a risk that the fuel fabrication process utilized to date to produce our metallic fuel rods may not be feasibly adapted to the fabrication of full- length metallic fuel rods usable in commercial reactors. The cost of production of our nuclear fuel could be prohibitively expensive. In order for our metallic fuel to succeed, we will need to be able to produce our nuclear fuel at a price that is economically viable. We have received estimates that production of our nuclear fuel could be achieved at a commercial scale for approximately $ 5, 000 to $ 10, 000 per kilogram using known metallization / de- conversion technologies. To bring the cost of metallization / de- conversion further down, we estimate that it would require a new government- funded research and development program that could take 15- 20 years or longer and cost several billion dollars. **In October 2024, DOE launched a HALEU program whereby DOE is funding production of 250 metric tons of HALEU in both oxide and metallic forms in the United States over the next 10 years to facilitate establishment of a U. S. supply chain for HALEU.** There can be no assurance that we will be able to produce our nuclear fuel at a price that is economically feasible or that future research efforts will lower the cost of production. If we are unable to produce our nuclear fuel at a price that is economically viable, the market for our nuclear fuel may never develop and

our current business model will fail. We are part of the nuclear power industry, which is highly regulated. Our fuel designs differ from fuels currently licensed and used by commercial nuclear power plants. The regulatory licensing and approval process for nuclear power plants to operate with our nuclear fuels may be delayed and made more costly, and industry acceptance of our nuclear fuels may be hampered. The nuclear power industry is a highly regulated industry **. Evolving regulations may impose additional compliance costs or require design modifications** . All entities that operate nuclear facilities and transport nuclear materials are subject to the jurisdiction of the NRC or its counterparts around the world. Our fuel designs differ significantly in some aspects from the fuel used today by commercial nuclear power plants. **Extensive testing and performance demonstration may delay approvals or reveal deficiencies.** ~~These~~ **17These** differences will likely result in more prolonged and extensive review by the NRC and its counterparts around the world that could cause fuel development program delays and delays in commercialization. Entities within the nuclear industry may be hesitant to be the first to use our nuclear fuel, which currently has no history of commercial use. Furthermore, our fuel development timeline relies on the relevant nuclear regulator to accept and approve technical information and documentation about our nuclear fuel that is generated during the fuel qualification program. There is a risk that regulators may require additional information regarding the fuel' s behavior or performance which necessitates additional, unplanned analytical and / or experimental work which could cause program schedule delays and require more research and development funding. Successful execution of our business model is dependent upon public support for nuclear power and overcoming public opposition to nuclear energy. Successful execution of our business model is dependent upon public support for nuclear power in the United States and other countries. Nuclear power faces strong opposition from certain competitive energy sources, individuals, and organizations. The accident that occurred at the Fukushima nuclear power plant in Japan beginning on March 11, 2011 increased public opposition to nuclear power in some countries, resulting in a slowdown in or, in some cases, a complete halt to new construction of nuclear power plants, early shut down of existing power plants, or dampening of the favorable regulatory climate needed to introduce new nuclear technologies. As a result of the Fukushima accident, some countries that were considering launching new domestic nuclear power programs have delayed or cancelled preparatory activities they were planning to undertake as part of such programs. Furthermore, nuclear fuel fabrication and the use of new nuclear fuels in reactors must be licensed by the NRC and equivalent governmental authorities around the world. In many countries, the licensing process includes public hearings in which opponents of the use of nuclear power might be able to cause the issuance of required licenses to be delayed or denied. Upon commercialization, a reduction or elimination of customer contracts or future customer contracts resulting from lower public support, less raw materials, lower demand, increased regulation, and increased costs could adversely affect our business model and future prospects. ~~17Our~~ -- **Our** nuclear fuel fabrication process is dependent on outside suppliers of nuclear and other materials and any difficulty by **us and / or** a **future** fuel fabricator **partner** in obtaining these materials could be detrimental to our ability to eventually market our nuclear fuel **either directly or** through a **future** fuel fabricator **partner** . Production of **Lightbridge Fuel ™ rods and / or** fuel assemblies ~~using our nuclear fuel designs~~ is dependent on the ability of **the Company and / or our future** fuel ~~fabricators~~ **fabricator partners** to obtain supplies of nuclear material utilized in our fuel assembly design. Our proposed nuclear fuel products require HALEU in metallic form, enriched between 5 % and 19. 75 % in the isotope uranium- 235, with presently no commercial supply of HALEU available in the U. S. Currently HALEU can only be sourced in limited quantities from the DOE. **The Company and / or our future** ~~Fabricators~~ **fabricator partners** 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~~ -- **the** ability to market fuel based on our technology. We rely on a limited number of suppliers for HALEU or other key source materials and / or key components and / or key equipment necessary for the development and fabrication of our nuclear fuel, which could, under certain circumstances, adversely delay our research and development activities. If the supply of a single- sourced or limited- sourced material and / or key component and / or key equipment is delayed or ceases, we may not be able to produce the related test fuel rod, which could adversely delay our research and development activities. In addition, a single- source or limited- source supplier of a key component or a key piece of equipment could potentially exert significant bargaining power over price, quality, or other terms relating to these materials or equipment, which could have a material adverse effect on our financial condition, results of operations and cash flows. Labor shortages and supply chain disruptions could prevent us from meeting our R & D timelines and have a negative impact on our financial results. Shipping delays exist worldwide, as there is much greater demand for shipping and reduced capacity. Additionally, certain material and equipment prices are expected to remain at high levels due to inflationary cost pressures and global transportation complexities. We may experience supply chain disruptions related to third- party vendors negatively impacted by the availability of qualified labor, restrictions on employees' ability to work, facility closures, disruptions to ports and other shipping infrastructure, border closures and other travel or health- related restrictions. These disruptions may impact our supply chain and delay the development of our nuclear fuel technology, which could negatively impact our financial results and our ability to execute timely on our R & D strategy, should they persist. ~~If~~ **18If** the price of non- nuclear energy sources falls, whether as the result of government policy or otherwise, there could be an adverse impact on nuclear energy, which would have a material adverse effect on our operations. In certain markets with a diversified energy base, decisions on new- build power plants are largely affected by the economics of various energy sources. If prices of non- nuclear energy sources fall, it could limit the deployment of new- build nuclear power plants in such markets. This could reduce the size of the potential markets for our nuclear fuel technology. In addition, the U. S. federal government and many states have adopted a variety of government subsidies and utility incentives to allow renewable energy sources, such as biofuels, wind, and solar energy, to compete with conventional sources of energy that have historically been less expensive, such as fossil fuels and nuclear power. We may face additional indirect competition from providers of renewable energy sources, particularly in wind and solar energy, if government subsidies and utility incentives for those sources of energy remain or increase or if such sources of energy are mandated. Additionally, the

availability of subsidies and other incentives from utilities or government agencies to install alternative renewable energy sources may negatively impact our potential customers' desire to purchase our products and services, or may be utilized by our existing or new competitors to develop a competing business model or products or services that may be potentially more attractive to customers than ours, any of which could have a material adverse effect on our results of operations or financial condition. We are dependent on management and key personnel for our success, and the loss of which could have a material adverse effect on our business. Our business depends upon the recruitment and continued service of our highly skilled, educated, and trained employees, and the loss of, or the inability to attract and retain, qualified personnel could have a material adverse effect on our business. Our ability to attract, motivate, compensate, and retain highly qualified and diverse employees is necessary to support and achieve business objectives. Competition for skilled and diverse employees in our industry can be intense, and any uncertainty surrounding future employment opportunities, organizational and reporting structures and related concerns may impair our ability to attract and retain qualified employees. ~~18The~~ -- **The** loss of the services of qualified employees and any inability to recruit effective replacements or to otherwise attract, motivate, train, or retain highly qualified and diverse employees could have a material adverse effect on our business, financial condition, and results of operations. Also, any significant leadership change and accompanying senior management transition involves inherent risk, and any failure to ensure a smooth transition could hinder our strategic planning, execution, and future performance. While we strive to mitigate the negative impact associated with changes to our senior management team, such changes may cause uncertainty among investors, employees, and others concerning our future direction and performance. If we fail to effectively manage any leadership changes, including organizational and strategic changes, such failure could have a material adverse effect on our ability to successfully attract, motivate and retain highly qualified employees, as well as our business, financial condition, and results of operations. We may not be able to receive or retain authorizations that may be required for us to sell or license our technology internationally. The sales and marketing of our technology internationally may be subject to U. S. export control regulations and the export control laws of other countries. Governmental authorizations may be required before we can export our technology. If authorizations are required and not granted, our international business could be materially affected. The export authorization process is often time- consuming. Violation of export control regulations could subject us to fines and other penalties, such as losing the ability to export for a period of years, which would limit our revenue growth opportunities and significantly hinder our attempts to expand our business internationally. Potential competitors could limit opportunities to license our technology. Other companies may develop new nuclear fuel designs **for** ~~that can be used~~ - **use** in the same types of reactors ~~as those~~ that we target. These nuclear fuel designs include, but are not limited to, the ATFs currently being developed and tested by several U. S. and international nuclear fuel suppliers ~~,~~**(** some with the support of the DOE ~~, which~~**). Such competitor ATF designs** could undermine our nuclear fuel' s economic value proposition if **they** ~~ATFs are proven to~~ extend the operating cycle length ~~from~~ **beyond** 18 ~~to 24~~ months. **Recently, the Nuclear Regulatory Commission (NRC) approved an increase in the burnup limit for a different manufacturer' s ATFs design, which could eventually allow that design to achieve a cycle length beyond 18 months.** Some ~~of these~~ companies have existing long- term commercial contracts with nuclear power utilities that we do not have. If another company were to successfully develop a new nuclear fuel that competes with our nuclear fuel design technology, opportunities to commercialize our technology ~~would~~ **might** be **more** limited, and our business would suffer. Moreover, many of these other companies have substantially greater financial, technological, managerial and research and development resources and experience than we do. These larger companies may be better able to handle the corresponding long-term financial requirements to successfully develop new nuclear fuel and bring it to market **. 19Industry groups have proposed initiatives that seek to relax existing licensing constraints, which could potentially result in conventional uranium dioxide and / or ATFs designs achieving additional cycle length extensions and / or extended power uprates in operating light water reactors. Such initiatives, if approved by the NRC, could limit the competitive advantages and market opportunities for Lightbridge Fuel ™. Competitors may also challenge our patents, leading to costly litigation or loss of exclusivity** . If the DOE were to successfully assert that an invention claimed within our 2007 or 2008 Patent Cooperation Treaty, or PCT, patent applications was first conceived or actually reduced to practice under a contract with the DOE, then our intellectual property rights in that invention could become compromised and our business model could become significantly impeded. Work on finite aspects and / or testing of some subject matter disclosed in our 2007 and 2008 Russian PCT patent applications was done under a government contract with the DOE. If the DOE asserted that an invention claimed in the 2007 and / or 2008 Russian PCT applications was first conceived or actually reduced to practice under such a contract, and a U. S. court agreed, the DOE could gain an ownership interest in such an invention outside of the Russian Federation and our intellectual property rights in that claimed invention could become compromised and our business model may then be significantly impeded. If we infringe or are alleged to infringe intellectual property rights of third- parties, our business, financial condition, and results of operations could be adversely affected. Our nuclear fuel designs may infringe, or be claimed to infringe, patents or patent applications under which we do not hold licenses or other rights. Third- parties may own or control these patents and patent applications in the United States and elsewhere. Third- parties could bring claims against us that would cause us to incur substantial expenses and, if successfully asserted against us, could cause us to pay substantial damages. If a patent infringement suit were brought against us, we could be forced to stop or delay commercialization of our 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. **The occurrence of** ~~19We are exposed to risks related to~~ cybersecurity ~~and protection~~ **incidents, or a deficiency in our cybersecurity or the cybersecurity** of **our service providers, could negatively impact our business by causing disruptions to our operations, a compromise or corruption of our** confidential information **, regulatory enforcement and other legal proceedings, and / or damage to our business, all of which could negatively impact our financial results** . We retain highly confidential information in our systems and databases on third- party network providers. Although we maintain security features in our systems designed to protect proprietary information and prevent data loss and other ~~security~~ **cybersecurity** ~~breaches~~ **incidents,** , such measures cannot provide absolute security and our operations may be susceptible to ~~breaches on~~ **incidents affecting** our third- party networks, including from circumvention of security systems, denial of service attacks or **ransomware** ~~other cyber- attacks~~ , hacking, computer viruses or malware, technical malfunction, employee error **or noncompliance** , malfeasance, physical breaches, **or** system disruptions ~~or~~ **. Evolving technologies, such as** ~~other~~ -- **the** ~~disruptions~~ **use of artificial intelligence, also pose new threats to cybersecurity** . We outsource certain functions, including IT functions, and these relationships allow for the storage and processing of our information, as well as customer, counterparty, and employee information. While we engage in actions to reduce our exposure resulting from outsourcing, ongoing threats may result in unauthorized access, loss, exposure or destruction of data, or other cybersecurity incidents, with increased costs and other consequences, including those described below. The third- parties with which we outsource certain of our IT functions utilize a variety of systems and cybersecurity capabilities, and such third- parties may not be successful in preventing a ~~breach~~ **cybersecurity incident** that exploits a weakness in their cybersecurity systems. In some cases, we may not be aware of ~~cyber~~ **cybersecurity** incidents immediately as we rely on such third- parties to inform us of a ~~cyber~~ **cybersecurity** incident that could affect our information contained in their systems. ~~Disruptions from cybersecurity~~ **Cybersecurity** ~~events~~ **incidents** may jeopardize the security ~~of information~~ , trade secrets, ~~or~~ confidential data **, or other information** stored in and transmitted through our systems or the systems of ~~outsourcing~~ **third** parties. **In addition** ~~An increasing number of websites~~ , ~~including those owned by several other large internet and offline companies, have disclosed breaches of their security~~ **cybersecurity incidents may cause extended disruptions to** ~~, some of which have involved sophisticated and highly targeted attacks on portions~~ **operations** ~~of their websites~~ **and thus could impact** ~~or~~ **our** ~~infrastructure~~ **ability to develop products and conduct research and development** . The techniques used to obtain unauthorized access, disable, or degrade service, or sabotage systems, change frequently, may be difficult to detect for a long time, and often are not recognized until ~~launched against a target~~ **after data has been taken or significant systems are compromised** . Certain efforts may be **nation-** state sponsored and supported by significant financial and technological resources and therefore may be even more difficult to detect. We, or the third- parties with whom we contract, may not anticipate these techniques or implement adequate preventive measures. We currently expend and may be required to **further** expend significant additional capital and other resources to protect against ~~such~~ **or respond to** ~~security~~ **cybersecurity incidents** ~~breaches or to alleviate problems caused by such breaches~~ . Our insurance coverage may be inadequate to compensate us for any related losses we incur and, in some cases, our insurance coverage may not cover the ~~cyber~~ **cybersecurity** incident at all. ~~These~~ **20These** issues are likely to become more difficult as we expand our operations. Any breach of our security measures, or even a perceived breach of our security measures, could cause us to lose potential customers **, investors** , government contracts and governmental approvals; suffer material harm to our business, financial condition, operating results, and reputation; or be subject to regulatory actions, litigation, sanctions, or other statutory penalties. Technological changes could render our technology and products uncompetitive or obsolete, which could prevent us from achieving market share and sales. Our failure to refine or advance our fuel technologies could cause our nuclear fuel to become uncompetitive or obsolete, which could prevent us from achieving market share and sales. We may need to invest significant financial resources in research and product development to keep pace with technological advances in the industry and to compete in the future; we may be unable to secure such financing. A variety of competing alternative technologies may be in development by other companies that could result in lower manufacturing costs and / or higher fuel performance than those expected for our fuel products. Our development efforts may be rendered obsolete by the technological advances of others, and other technologies may prove more advantageous for commercialization. We may acquire other companies or technologies, which could divert our managements' attention, result in dilution to our stockholders and otherwise disrupt our operations and adversely affect our operating results. We may in the future seek to acquire or invest in businesses, applications and services or technologies that we believe could complement or expand our Company, enhance our technical capabilities, or otherwise offer growth opportunities. The pursuit of potential acquisitions may divert the attention of management and cause us to incur various expenses in identifying, investigating, and pursuing suitable acquisitions, whether or not they are consummated. ~~20If~~ **If** we acquire additional businesses, we may not be able to integrate the acquired personnel, operations, and technologies successfully, or effectively manage the combined business following the acquisition. We also may not achieve the anticipated benefits from the acquired business due to a number of factors, including: · **the effect of any potential acquisition on our financial and strategic positions and our reputation; · the** inability to **successfully** integrate or benefit from acquired technologies or services ~~in a profitable manner~~ ; · **risk that we are unable to obtain the anticipated benefits of any potential acquisition, including synergies or economies of scale; · any** unanticipated costs or liabilities associated with the acquisition; · **any** difficulty integrating the accounting systems, operations, and personnel of the acquired business; · **the** diversion of management' s attention from other business concerns; · adverse effects to our existing business relationships with business partners as a result of the acquisition; · the potential loss of key employees **and challenges in**

assimilating and training new employees ; · **the potential failure of the due diligence processes to identify significant problems, liabilities or other shortcomings or challenges of an acquired company or assets, which could result in unexpected litigation, regulatory exposure, financial contingencies, and known and unknown liabilities; · the** use of resources that are needed in other parts of our business; and · **the** use of substantial portions of our available cash to consummate the acquisition. In addition, a significant portion of the purchase price of companies we acquire may be allocated to acquired goodwill and other intangible assets, which must be assessed for impairment at least annually. In the future, if our acquisitions do not yield expected returns, we may be required to take charges to our operating results based on this impairment assessment process, which could adversely affect our results of operations. **Large or costly acquisitions or investments may also diminish our capital resources and liquidity or limit our ability to engage in additional transactions for a period of time. 21We may require significant financing to complete an acquisition or investment through bank loans, raising of debt, issuance of equity securities or the incurrence of debt.** Acquisitions could also result in dilutive issuances of equity securities or the incurrence of debt, which could adversely affect our operating results. **We cannot be assured that such financing options will be available to us on reasonable terms, or at all.** In addition, if an acquired business **or assets** ~~fails~~ **fail** to meet our expectations, our operating results, business, and financial position may suffer **. The foregoing risks may be magnified as the cost, size or complexity of a potential acquisition or acquired company increases, or where the acquired company' s market or business are materially different from ours, or where more than one integration is occurring simultaneously or within a concentrated period of time** . If we are unable to obtain or maintain intellectual property rights and trade secrets relating to our technology, the commercial value of our technology may be adversely affected, which could in turn adversely affect our business, financial condition, and results of operations. Our success and ability to compete depends in part upon our ability to obtain protection in the United States and other countries for our nuclear fuel designs by establishing and maintaining intellectual property rights relating to or incorporated into our fuel technologies and products. We own a variety of patents and patent applications in the United States, as well as corresponding patents and patent applications in several other jurisdictions. We have not obtained patent protection in each market in which we plan to compete. Furthermore, our patents, trade secrets, information and intellectual property may be the subject of infringement by third ~~-~~parties. We do not know how successful we would be should we choose to assert our patents or other intellectual property rights 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 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. Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets, and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our intellectual property and proprietary rights generally. Proceedings to enforce our intellectual property and proprietary rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly, could put our patent applications at risk of not issuing, and could provoke third ~~-~~parties to assert claims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property and proprietary rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license. ~~21Additionally~~ **Additionally** , sanctions or other restrictions on payments made to Russia imposed by the United States government in response to Russia' s invasion of Ukraine may make it more difficult for us to maintain patent protection in certain foreign jurisdictions. Certain of our patents are maintained by the Eurasian Patent Office and the Russian patent office, Rospatent. Each of the Eurasian Patent Office and Rospatent use the Russian Central Bank to process patent annuity payments. The U. S. Office of Foreign Assets Control (OFAC) has identified the Russian Central Bank as a sanctioned entity. Paying a Russian firm or agent to make payments that will be processed by the Russian Central Bank could be deemed an act of evading or avoiding sanctions. On May 5, 2022, OFAC published General License 31, which created an exemption to such sanctions for payments made to maintain intellectual property rights. However, there can be no assurance that this exemption will be made permanent, and if it is rescinded, we may be unable to make the required annuity or other maintenance payments with respect to our Russian and Eurasian patents. If we are unable to make the required annuity or other maintenance payments, there can be no assurance that our Russian and Eurasian patents will continue to receive adequate protection in the applicable jurisdictions, which could have a material adverse effect on our patent portfolio. Further, in response to the sanctions imposed by OFAC, the Russian government issued a decree in March 2022 stating that patent holders associated with foreign states that commit " unfriendly actions against Russian legal entities and individuals " will be entitled to no renumeration from the unsanctioned use of such patent holders' intellectual property. While the impact of this decree has yet to be determined, it may significantly undermine intellectual property protection in Russia. Because of this significant uncertainty with respect to the treatment of foreign owned patents maintained in Russia, there can be no assurance that we will be able to maintain adequate protection of our Russian patents. ~~We~~ **22We** intend to apply for additional patents for our nuclear fuel technologies as we deem appropriate. We may, however, fail to apply for patents on important technologies or products in a timely fashion, if at all. Our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from practicing our technologies or from developing competing products and technologies. Also, our portfolio of patents evolves as new patents are issued and older patents expire and the expiration of patents could have a negative effect on our ability to prevent competitors from duplicating certain or all of our products. In general, the patent positions of energy

technology companies are highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. As a result, the validity and enforceability of our patents cannot be predicted with certainty. We also rely on trade secrets to protect some of our technology, especially where it is believed that patent protection is undesirable for the Company or unobtainable. We generally require our employees, consultants, advisors, and collaborators to execute appropriate agreements with us regarding the safeguarding of confidential information. If any of these agreements are violated, or if any of our employees, consultants, advisors or collaborators unintentionally or willfully disclose our proprietary information to competitors, we may not be able to fully perfect our rights to the technologies in question, and in some instances, we may not have an appropriate remedy available for the damages that we may incur as a result of any such violation. Enforcement of claims that a third- party has illegally obtained and is using trade secrets is expensive, time consuming and uncertain. In addition, courts outside the U. S. are sometimes less willing than U. S. courts to protect trade secrets. If our competitors independently develop equivalent knowledge, methods, and know- how, we would not be able to assert our trade secrets against them and our business could be harmed. Applicable Russian intellectual property law may not protect some of our intellectual property, which could have a material adverse effect on our business. Intellectual property rights have been evolving in Russia, and are trending towards international norms, but are still developing. We have worked closely with employees in Russia and other Russian contractors and entities to develop some of our material intellectual property. Some of our earlier intellectual property rights originate from our patent filings in Russia. Our worldwide rights in some of this intellectual property, therefore, may be affected by Russian intellectual property laws, including laws adopted in response to international sanctions against Russia or otherwise. In particular, in response to the sanctions imposed by OFAC as a result of Russia' s invasion of Ukraine, the Russian government issued a decree in March 2022 stating that patent holders associated with foreign states that commit " unfriendly actions against Russian legal entities and individuals " will be entitled to no renumeration from the unsanctioned use of such patent holders' intellectual property. If the application of Russian laws to some of our intellectual property rights proves inadequate, or if the rights of foreign holders of intellectual property in Russia adversely change as a result of hostilities between Russia and other countries or otherwise, we may not be able to fully avail ourselves of all of our intellectual property, and our business model may be impeded. The laws of certain foreign jurisdictions do not protect intellectual property rights to the same extent as the laws of the United States, and many companies have encountered significant challenges in protecting and defending such rights in such foreign jurisdictions. The legal systems of certain countries, particularly developing countries, do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business. ~~22~~We have identified a material **Material** ~~weakness~~ **weaknesses** in our internal control over financial reporting **may be identified, which could adversely affect our ability to provide accurate and timely financial statements and harm investor confidence** . **Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal controls are designed to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements in accordance with generally accepted accounting principles (GAAP). However, internal controls have inherent limitations and may not prevent or detect misstatements, errors, or fraud. Failure to address identified weaknesses effectively and in a timely manner could result in: · non- compliance with Section 404 of the Sarbanes- Oxley Act of 2002; · delays in filing our periodic reports with the SEC; and / or · potential enforcement actions or penalties. As reported on the Annual Report on Form 10- K for the year ended December 31, 2023, we previously identified a material weakness in our internal control over financial reporting and may identify additional material weaknesses in the future or otherwise fail to maintain an effective system of internal controls, which may result in material misstatements of our financial statements or cause us to fail to meet our periodic reporting obligations. Specifically, management identified a material weakness related to the design of our controls over logical access and segregation of duties, at the application control level, in certain information technology environments. The Company' s management, under the oversight of the Audit Committee, took measures and remediated these deficiencies.** ~~Management~~ **23Management** , including our Chief Executive Officer **(CEO)** and our Chief Financial Officer (CFO), assessed the effectiveness of our internal control over financial reporting as of December 31, ~~2023~~ **2024** and concluded that we ~~did not maintain effective~~ **remediated the material weakness in our** internal control over financial reporting **from** ~~. Specifically, management identified a material weakness related to~~ the **prior year** ~~design of our controls over logical access and segregation of duties, at the application control level, in certain information technology environments. We previously identified a material weakness in our internal control over financial reporting and may identify additional material weaknesses in the future or otherwise fail to maintain an effective system of internal controls, which may result in material misstatements of our financial statements or cause us to fail to meet our periodic reporting obligations~~ . See ~~Part II.~~ Item 9A. ~~,~~ Controls and Procedures ~~, below~~ **in this Annual Report on Form 10- K** for additional information about the material weakness. ~~While certain actions have been taken to implement a remediation plan to address this material weakness and to enhance our internal control over financial reporting, if this material weakness is not remediated, it could adversely affect our ability to report our financial condition and results of operations in a timely and accurate manner, which could negatively affect investor confidence in our Company, and, as a result, the value of our common stock could be adversely affected.~~ Risks Related to the Ownership of Our Common Stock **.** ~~The~~ **23The** issuance of additional stock in connection with financings,acquisitions,investments,our stock incentive plans or otherwise will dilute all other stockholders.Our amended and restated certificate of incorporation authorizes the Company to issue up to 25,000,000 shares of common stock and up to 10,000,000 shares of preferred stock with such rights and preferences as may be determined by our board of directors.Subject to compliance with applicable rules and regulations,we may seek to expand the number of authorized common shares,and issue shares of common stock or securities convertible into our common stock from time to time in connection with a financing,acquisition,investment,our stock incentive plans or otherwise.Any such issuance could result in

substantial dilution to our existing stockholders and cause the trading price of our common stock to decline . –We may issue preferred stock with rights senior to our common stock. We can issue preferred stock in one or more series and can set the terms of the preferred stock without seeking any further approval from the holders of our common stock. Any preferred stock that we issue may rank ahead of our common stock in terms of dividend priority or liquidation premiums, may have greater voting rights than our common stock, and may have consent rights over certain fundamental transactions. The interests of the holders of the preferred stock may as a consequence be different from the interests of the holders of our common stock, including in certain fundamental transactions in which the preferred stockholders would receive distributions before any distributions may be made to our common stockholders. In addition, such preferred stock may contain provisions allowing it to be converted into shares of common stock, which could dilute the value of our common stock to the then current stockholders and could adversely affect the market price of our common stock. There may be volatility in our stock price, which could negatively affect investments, and our stockholders may not be able to resell their shares at or above the value they originally purchased such shares. The market price of our common stock may fluctuate significantly in response to a number of factors, some of which are beyond our control, including: · trading volume of our common stock; · quarterly variations in operating results; · actual or anticipated variations in our results of operations or those of our competitors; · failure to obtain or maintain analyst coverage of our common stock, changes in earnings estimates or recommendations by securities analysts, or our failure to achieve analyst earnings estimates; · future sales of our common stock or other securities by us or our stockholders; · general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors; and · the risks discussed elsewhere in this Annual Report on Form 10- K. ~~The~~ **24The** 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 the Company' s performance . 23The issuance of additional stock in..... price of our common stock to decline . Our ability to utilize our net operating loss carryforwards to offset future taxable income will be limited and may also expire. Our ability to fully utilize our existing net operating losses (NOLs) generated after the tax year 2017 will be limited and the use of our NOLs generated prior to the 2018 tax year are severely limited, due to ownership changes in prior years as defined under Section 382 of the Internal Revenue Code. An " ownership change " is generally defined as a greater than 50 % change in equity ownership by value over a rolling three- year period. Future NOLs generated will be limited if (i) we undergo an " ownership change " as described under Section 382, (ii) we do not reach profitability or are only marginally profitable, or (iii) there are changes in U. S. government laws and regulations. We did not perform a complete Section 382 study to determine the limitation on prior year NOLs, due to the long timeline for developing our nuclear fuel to commercialization to generate taxable income. Further, based on the results of our phase I Section 382 study in 2022, it' s likely our NOLs generated prior to the 2018 tax year will expire unused given the 20- year carry forward period for these NOLs. Future ownership changes, some of which may be beyond our control, as well as differences and fluctuations in the value of our equity securities may adversely affect our ability to utilize our current and future NOLs and could reduce our flexibility to raise capital in future equity financings or other transactions, or we may decide to pursue transactions even if they would result in an ownership change and impair our ability to use our NOLs. We also may decide to pursue transactions even if they would result in an ownership change and impair our ability to use our NOLs. In addition, any changes to tax rules and regulations or the interpretation of tax rules and regulations could negatively impact our ability to recognize any potential benefits from our NOLs or net unrealized built- in losses. Shareholder activism could cause us to incur significant expense, hinder execution of our business strategy and impact our stock price. Shareholder activism, which can take many forms and arise in a variety of situations, could result in substantial costs, and divert management and our board' s attention and resources from our business. Additionally, such shareholder activism could give rise to perceived uncertainties as to our future, adversely affect our relationships with our employees or service providers and make it more difficult to attract and retain qualified personnel. Also, we may be required to incur significant fees and other expenses related to activist shareholder matters, including for third- party advisors. Our stock price could be subject to significant fluctuation or otherwise be adversely affected by the events, risks, and uncertainties of any shareholder activism.