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XE-FUEL-LTR-0028\_\_1

February 04, 2022

Director, Office of Nuclear Material Safety and Safeguards  
U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Reference: Docket No. 70-7027

Subject: **Request for an Exemption Pursuant to 10 CFR 70.17 and 10 CFR 51.6 from the Requirements of 10 CFR 51.60(a) and 70.21(f) for Timing of Submittal of the Environmental Report for the TRISO-X Fuel Fabrication Facility**

Pursuant to Title 10, Code of Federal Regulations, Part 70.17 (10 CFR 70.17), X Energy, LLC (X-energy) hereby submits a request for an exemption from requirements in 10 CFR 51.60(a) "Environmental Report – Materials Licenses" and 70.21(f) "Filing" in order to submit the Environmental Report (ER) required by 10 CFR 51 separately from and after the remainder of the license application is submitted to the U.S. Nuclear Regulatory Commission (NRC).

10 CFR 70.21(f) states:

*An application for a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery or conversion of uranium hexafluoride, or for the conduct of any other activity which the Commission has determined pursuant to subpart A of part 51 of this chapter will significantly affect the quality of the environment shall be filed at least 9 months prior to commencement of construction of the plant or facility in which the activity will be conducted, and shall be accompanied by an Environmental Report required under subpart A of part 51 of this chapter.*

10 CFR 51.60 (a) states:

*Each applicant for a license or other form of permission, or an amendment to or renewal of a license or other form of permission issued pursuant to parts ... 70 ... of this chapter, and covered by paragraphs (b)(1) through (b)(5) of this section, shall submit with its application ... a separate document, entitled "Applicant's Environmental Report" ...*

An extensive site selection process for the TRISO-X Fuel Fabrication Facility has been completed, with several sites receiving serious consideration before selecting a final site that provides space to meet current market projections for TRISO-based fuel products. As a result, the preparation of the ER is tracking slightly behind the remainder of the license application documents.

The license application documents that will be submitted as per 10 CFR 70.21 "Filing" are on track to be completed and ready to submit to the NRC at the end of March 2022, except for the ER. Site specific environmental data collection activities are well underway with two quarters of data collection complete. Due to the extensive site selection process, data collection activities for

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the remaining two quarters to meet the suggested one year of data are scheduled to be completed in February and May 2022 respectively. Therefore, the ER will need to be submitted in two parts. Part 1 of the ER, which includes the NUREG-1748 required topical content and conclusions based on Summer and Fall seasonal data collected in 2021, is tracking for completion by the end of June 2022. Part 2 of the ER, which includes a Supplement that contains the remaining seasonal data to be collected in 2022 for Winter and Spring, is tracking for completion by the end of August 2022.

X-energy specifically requests that the exemption be granted from 10 CFR 70.21(f) and 10 CFR 51.60(a) such that the environmental report will be submitted to the NRC for review in two parts within 6 months after the submittal of the safety and safeguards portion of the application. X-energy's understanding is that the NRC can begin its review of the ER and preparation of an Environmental Impact Statement (EIS) after submittal of an acceptable Part 1 of the ER. This would include preparation of an EIS schedule with a caveat related to a submittal of an acceptable Part 2 of the ER.

X-energy acknowledges that the NRC notice for an opportunity for a hearing under 10 CFR Part 2, that is published in the Federal Register for a major application, will not occur until after submittal of and NRC acceptance of the complete application including the Environmental Report.

The basis for this exemption request is provided below.

### **Background**

On November 15, 2021, the bipartisan Infrastructure Investment and Jobs Act was signed into law, providing more than \$62 billion for the U.S. Department of Energy (DOE) to support innovation as a critical component for meeting climate change goals of reaching 100% carbon-free electricity by 2035 and a net-zero-carbon economy by 2050. Within the Act's funding for DOE, the Advanced Reactor Demonstration Program (ARDP) is fully funded for \$2.5 billion to help domestic private industry demonstrate two U.S. advanced nuclear reactor designs through cost-shared partnerships with industry by 2028.

In October 2020, DOE selected X-energy under ARDP to deliver a commercial TRISO fuel fabrication facility and a four-module version of its Xe-100 high temperature gas-cooled reactor by 2027. For project funding to continue as planned, and in order to secure necessary private capital investments, it is important to continue demonstrating forward progress and achievement of project milestones. A key milestone for the TRISO-X facility is submittal of license application documents to the NRC for review.

### **10 CFR 70.17(a) and 10 CFR 51.6 Evaluation**

#### *Regulatory Requirements*

- 10 CFR 51.20, *Criteria for and identification of licensing and regulatory actions requiring environmental impact statements*, (b)(7) states that a type of action that requires an environmental impact statement is issuance of a license to possess and use special nuclear material for processing and fuel fabrication pursuant to 10 CFR 70.



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- 10 CFR 51.60, *Environmental report – material licenses*, states “(a) Each applicant for a license ... issued pursuant to parts ... 70 ... shall submit with its application ... a separate document, entitled “Applicant’s Environmental Report ...”
- 10 CFR 51.6, *Specific Exemptions*, states “The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and are otherwise in the public interest.
- Part 70.21, *Filing*, states “(f) An application for a license to possess and use special nuclear material for processing and fuel fabrication ... shall be accompanied by an Environmental Report required under Subpart A of part 51 of this chapter.”
- Part 70.17, *Specific exemptions*, states “(a) The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.”

#### *Authorized by Law*

The scope of 10 CFR 51 implements Section 102(2) of the National Environmental Policy Act (NEPA) of 1969, as amended. The proposed exemption would allow for the NRC to begin the review of the safety and safeguards portions of the license application while the ER preparation is completed. NRC review of the safety and safeguards portions of the application and the environmental report are typically scheduled in parallel. The proposed exemption would allow for the start of the reviews to be staggered for a few months. The review of the safety and safeguards portion of the application is a separate and distinct activity from the review of the environmental report. The Part 51.20(b)(7) requirement will be met in full through submittal of an Environmental Report, and NRC’s preparation of an Environmental Impact Statement. A licensing decision will not be made by the NRC on X-energy’s application to possess special nuclear material and operate the TRISO-X facility under 10 CFR 70 until after the NRC has completed a NEPA review based on the proposed application and environmental report, and the appropriate regulatory findings are made. Granting of the proposed exemption which relates to the timing of the submittals will not result in a violation of the Atomic Energy Act of 1954, as amended, or the NRC’s regulations. Therefore, the exemption is authorized by law.

#### *Will Not Endanger Life or Property or the Common Defense and Security*

Since the exemption request relates to the timing of when license application documents are submitted and thus when reviews may begin, it would not endanger life or property and does not: (a) impact the probabilities of evaluated accidents; (b) affect margins of safety; (c) affect effectiveness of programs contained in licensing documents; (d) increase effluents; (e) increase occupational radiological exposures; or (f) impact operations or decommissioning activities.

The proposed exemption also will not have an impact on common defense and security since the exemption only relates to the timing of when license application documents are submitted and thus when reviews may begin.



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*Otherwise In the Public Interest*

The purpose of the TRISO-X facility is to produce TRISO-based particle fuel products to support a variety of advanced reactors being considered and planned by the energy and chemical sectors, the Department of Defense, and the National Aeronautics and Space Administration. Advanced reactors are being designed to provide clean, reliable energy and provide a viable alternative to the aging, economically challenged, existing nuclear and fossil reactor fleets.

According to the January 2021 Strategic Vision report published by the DOE Office of Nuclear Energy (DOE NE), the U.S. fleet of nuclear power plants supplies approximately 20 percent of the electricity generated in the United States, while avoiding millions of tons of carbon dioxide emissions each year. Nuclear power is the largest source of clean, carbon-free energy and the most reliable, operating at a capacity factor of more than 93 percent. Four of the five goals cited in DOE NE Strategic Vision report include enabling continued operation of existing U.S. nuclear reactors, enabling deployment of advanced nuclear reactors, developing advanced nuclear fuel cycles to include addressing gaps in the domestic nuclear fuel supply chain, and maintaining U.S. leadership in nuclear energy technology.

Also in the DOE NE Strategic Vision report, one of the performance indicators cited is to demonstrate two U.S. advanced reactor designs through cost-shared partnerships with industry by 2028. The ARDP, managed by DOE NE, is designed to help domestic private industry demonstrate advanced nuclear reactors in the U.S. These advanced nuclear energy systems hold great potential to lower emissions, create new jobs, and build a strong economy. In 2020 under the ARDP, the DOE selected X-energy to deliver a commercial TRISO fuel fabrication facility and a four-module version of its Xe-100 high temperature gas-cooled reactor by 2027.

Additionally, as part of the bipartisan Infrastructure Investment and Jobs Act that was signed into law in November 2021, the ADRP was fully funded to help domestic private industry demonstrate two U.S. advanced nuclear reactor designs through cost-shared partnerships with industry.

The production of TRISO fuel, which DOE has called “the most robust fuel on Earth,” will contribute substantially to the fuel supply chain, making the U.S. a global leader in safe, reliable, and economically feasible nuclear energy. The granting of the proposed exemption to allow a staggered start to the NRC review of the safety and safeguards and the environmental portions of the application by a few months will support the TRISO-X facility schedule goal of bringing its fuel fabrication facility online in 2025, contributing to the development of domestic nuclear fuel providers and ultimately toward improving the overall economic outlook for the U.S. nuclear power industry.

*Environmental Evaluation*

The granting of the proposed exemption will not have a significant effect on the quality of the human environment as it is procedural in nature and relates to the timing of the submittals of the Environmental Report and the safety and safeguards portions of the application.

The proposed exemption request meets the criteria in 10 CFR 51.22(c)(25) for a licensing action that is categorically excluded from an environmental assessment because the granting of this



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exemption: (1) Neither involves a significant reduction in the margin of safety nor creates a possibility of an accident, thus resulting in no significant hazards consideration; (2) would not result in the release of effluents, thus resulting in no significant change in the types or significant increase in the amounts of any effluents that may be released offsite; (3) neither introduces new radiological hazards nor increases existing radiological hazards, thus resulting in no significant increase in individual or cumulative public or occupational radiation exposure; (4) would not involve construction, thus resulting in no significant construction impact; (5) would occur prior to any radiological components being in place at the facility and would not create any new accident precursors, thus resulting in no significant increase in the potential for or consequences from radiological accidents; and (6) would allow the submission of the required Environmental Report, in 2 parts, up to 6 months after the remainder of the license application submittal, which is related to a scheduling requirement and is administrative in nature in accordance with 10 CFR 51.22(c)(25)(G) and (I), respectively.

#### *Conclusion*

X-energy is requesting an exemption from requirements in 10 CFR 51.60(a) "Environmental Report – Materials Licenses" and 70.21(f) "Filing" in order to submit the Environmental Report required by 10 CFR 51 (in 2 parts) separately from and up to 6 months after the remainder of the license application is submitted to the NRC. Approval of this proposed exemption is warranted since it "will not endanger life or property or the common defense and security and are otherwise in the public interest" per 10 CFR 70.17 and 10 CFR 51.6 as evaluated above.

X-energy also requests that the NRC perform an expedited review of this exemption request and requests a completion date of March 31, 2022.

If there are questions or if additional information is required, please contact me at (865) 850-0893 or [jwheeler@x-energy.com](mailto:jwheeler@x-energy.com).

Sincerely,

DocuSigned by:  
A handwritten signature in cursive script that reads "Jennifer Wheeler".

3894B6E8041A46D...

Jennifer K. Wheeler, P.E.

X Energy, LLC

Director, Regulatory Affairs, Fuel Production

Copy: Mr. Matt Bartlett, US NRC, NMSS