



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

June 17, 2022

Travis Chapman  
Lead Licensing Engineer  
X-Energy, LLC.  
801 Thompson Avenue  
Rockville, MD 20852

SUBJECT: X ENERGY, LLC. - DRAFT SAFETY EVALUATION FOR X ENERGY, LLC -  
XE-100 LICENSING TOPICAL REPORT XE00-R-R1ZZ-RDZZ-L,  
"RISK-INFORMED PERFORMANCE-BASED LICENSING BASIS  
DEVELOPMENT, REVISION 2" (EPID L-2021-TOP-0019)

Dear Travis Chapman:

By letter dated July 7, 2021, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21196A069), X Energy, LLC (X-energy) submitted its Xe-100 Licensing Topical Report (TR) XE00-R-R1ZZ-RDZZ-L, "Risk-Informed Performance-Based Licensing Basis Development," Revision 1 dated June 25, 2021, for the U.S. Nuclear Regulatory Commission (NRC) staff's review. This TR provides a description of the approach taken by X-energy to develop a technology-inclusive, risk-informed, and performance-based process for the selection of licensing basis events (LBEs), safety classification of structures, systems, and components (SSCs) to include associated risk-informed special treatments, and a determination of defense-in-depth (DID) adequacy that will form a portion of the Xe-100 licensing basis. As part of its review, the NRC staff developed a set of preliminary questions to X-energy on November 5, 2021 (ADAMS Accession No. ML21312A166). On November 17, 2021, the NRC staff held a public meeting with X-energy representatives to discuss these questions (ADAMS Accession No. ML21347A947). Subsequently, on March 15, 2022, X-energy submitted Revision 2 of its TR to the NRC staff, addressing the set of preliminary questions (ADAMS Accession No. ML22074A288).

Enclosed is a copy of the NRC staff's draft safety evaluation (SE) for "Risk-Informed Performance-Based Licensing Basis Development, Revision 2."

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 2.390, "Public inspections, exemptions, requests for withholding," the NRC staff is providing the enclosed draft SE for X-energy to identify any proprietary information within the draft SE. If you believe that any information in the enclosure is proprietary, please identify such information line-by-line and define the basis pursuant to the criteria of 10 CFR 2.390. Please provide comments on any proprietary aspects of the draft SE within 20 working days from the date of this letter. If the SE includes proprietary information, there will be both proprietary and non-proprietary versions of the SE, and the non-proprietary version will be made publicly available.

T. Chapman

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If you have any questions or comments concerning this matter, I can be reached at (301) 415-6035 or via e-mail at [Lucieann.VechioliFeliciano@nrc.gov](mailto:Lucieann.VechioliFeliciano@nrc.gov).

Sincerely,



Signed by Kennedy, William  
on 06/17/22

William Kennedy, Acting Chief  
Advanced Reactor Licensing Branch 1  
Division of Advanced Reactors and Non-power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Project No.: 99902071

Enclosure:  
As stated

cc: [inordby@x-energy.com](mailto:inordby@x-energy.com)  
[tchapman@x-energy.com](mailto:tchapman@x-energy.com)

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DATED: JUNE 17, 2022

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**ADAMS Accession Nos.:**

**Package: ML22131A168**

**Letter: ML22131A170**

**Enclosure: ML22131A067**

**NRR-106**

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