



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

5/09/2024

MEMORANDUM TO: Michael Wentzel, Chief  
Advanced Reactor Licensing Branch 2  
Division of Advanced Reactors and Non-power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

FROM: Ondra Dukes, Project Manager **/RA/**  
Advanced Reactor Licensing Branch 2  
Division of Advanced Reactors and Non-power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE MARCH 19, 2024, OBSERVATION  
MEETING WITH X ENERGY, LLC., REGARDING THE XE-100  
REACTOR CORE DESIGN METHODS AND ANALYSIS  
TOPICAL REPORT SUBMITTAL

**Meeting Information:**

Applicant: X Energy, LLC. (X-energy)

Project No.: 99902071

Public Meeting Notice Agencywide Documents Access and Management System (ADAMS)  
Accession No.: ML24066A174

Meeting Attendees: See the enclosure for a list of meeting attendees.

CONTACT: Ondra Dukes, NRR/DANU  
301-415-0537

**Meeting Summary:**

The U.S. Nuclear Regulatory Commission (NRC) staff conducted the meeting in accordance with NRC Management Directive 3.5, "Attendance at NRC Staff-Sponsored Meetings" (ADAMS Accession No. [ML21180A271](#)). The meeting's objective was for X-energy to discuss its planned Xe-100 reactor core design analysis and methods topical report (TR) submittal. The main points of discussion during the meeting included:

- The NRC staff noted the need to further understand the energy group structures associated with cross-section libraries and calculational methods during the review of the TR.
- The NRC staff also inquired whether graphite reflector density changes would be reflected in the model, and X-energy stated that they are not currently accounted for but can be modeled.
- The NRC staff discussed the need to understand what method is used to calculate resonance integrals and why it is appropriate for the application. X-energy stated that these details would be defined in the TR.
- The NRC staff inquired regarding the meshes used in the calculational methods. X-energy discussed that the neutronic and thermal-hydraulic meshes within the VSOP model are the same, and that further information requested by NRC staff is detailed in the TR.
- The NRC staff discussed the need for X-energy to submit a complete validation and verification for review and approval. X-energy expressed its understanding that the TR would be subject to limitations until the V&V is complete.
- A member of the public, representing the Union of Concerned Scientists, discussed concerns with the timing of the upcoming construction permit application considering the current stage of code validation and requested detail regarding the type of information that will be required regarding transient calculations and how uncertainties for functional containment will be addressed. The NRC staff noted the difference in the level of detail required for the construction permit application versus the operating license application. The NRC staff also indicated that the transient analysis topic will be covered in a future TR submittal pertaining to transient and safety analyses.

No regulatory decisions were made during this meeting.

Project No.: 99902071

Enclosure: List of Meeting Attendees

cc: X-energy Xe-100 via GovDelivery

SUBJECT: SUMMARY OF THE MARCH 19, 2024, OBSERVATION MEETING WITH X ENERGY, LLC., PERTAINING TO THE XE-100 REACTOR CORE DESIGN METHODS AND ANALYSIS TOPICAL REPORT SUBMITTAL DATED: MAY 09, 2024

**DISTRIBUTION:**

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- IBaek, NRR
- ABielen, RES
- TZaki, RES
- SBajorek, RES
- NHudson, RES
- NTehrani, RES
- AMuñiz, NRR
- ODukes, NRR
- JHernandez, NRR

**ADAMS Accession Number: ML24128A082**

OFFICE	NRR/DANU/UAL2:PM	NRR/DANU/UAL2:LA	NRR/DANU/UAL2:BC	NRR/DANU/UAL2:PM
NAME	ODukes	CSmith	MWentzel	ODukes
DATE	05/08/2024	05/08/2024	05/09/2024	05/09/2024

**OFFICIAL RECORD COPY**

**LIST OF MEETING ATTENDEES**

**OBSERVATION MEETING WITH X ENERGY, LLC., REGARDING THE XE-100 REACTOR  
CORE DESIGN METHODS AND ANALYSIS TOPICAL REPORT SUBMITTAL**

**March 19, 2024**

<b><u>Name</u></b>	<b><u>Organization</u></b>
Ondra Dukes	U.S. Nuclear Regulatory Commission (NRC)
Adrian Muñiz	NRC
Dan Beacon	NRC
Benjamin Parks	NRC
Inseok Baek	NRC
Lance Kingsbury	NRC
Greg Oberson	NRC
Kenneth Armstrong	NRC
Andrew Bielen	NRC
Derek Widmayer	NRC
Tarek Zaki	NRC
Ian Jung	NRC
Lisa L. Williams	NRC
Steve Bajorek	NRC
Jorge Hernandez Munoz	NRC
Nathanael Hudson	NRC
Nazila Tehrani	NRC
Maggie Staiger	X Energy, LLC. (X-energy)
Jessica Maddocks	X-energy
Sonat Sen	X-energy
Wian Van Der Merwe	X-energy
Doug Kalinousky	X-energy
Herman van Antwerpen	X-energy
Patrick Robinson	X-energy
Steve Vaughn	X-energy
Mike Melton	X-energy
Jim Fogarty	X-energy
Feltner, Mark	X-energy
Eben Mulder	X-energy
Michael Pearce	NextEra
Leigh Lloveras	The Breakthrough Institute
Lisa Bruedigan	TX Department of State Health Services
Edwin Lyman	Union of Concerned Scientists
Kaz	Core Solutions
Christian Borchert	

Enclosure

Yan Gao	
Mark Paul	
Jana Bergman	
Barry Lee Myers	
Ruben Rodriguez	
Jose Garcia	
Dominik Muszynski	
Blake Cole	
William Maher	
Matthew Harris	
Sohaib Malik	
Tu Le	
Michael Howard	
Brian E Jelke	
Atilla Kurt	