



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

February 14, 2023

MEMORANDUM TO: William T. Jessup, Chief  
Advanced Reactor Licensing Branch 1  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

FROM: Stephanie Devlin-Gill, Senior Project Manager  
Advanced Reactor Licensing Branch 1  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

A handwritten signature in black ink, appearing to read "Steph. Devlin-Gill".

Signed by Devlin-Gill, Stephanie  
on 02/14/23

SUBJECT: SUMMARY OF THE OCTOBER 11, 2022, MEETING BETWEEN THE  
U.S. NUCLEAR REGULATORY COMMISSION STAFF AND  
X-ENERGY, LLC REGARDING XE-100 REACTOR DESIGN'S  
PROBABILISTIC RISK ASSESSMENT ADEQUACY APPROACH  
WHITE PAPER

**Meeting Information:**

Applicant: X-Energy, LLC

Project No. 99902071

EPID: L-2022-LRO-0150

Meeting Title: Public Meeting Regarding Xe-100 Reactor Design's Probabilistic Risk  
Assessment Adequacy Approach White Paper

Meeting Type: Observation

Public Meeting Notice: Agencywide Documents Access and Management System (ADAMS)  
Accession No: ML22269A384

Applicant Presentation Slides: ML22322A035

Meeting Attendees: See Enclosure for list of meeting attendees.

**Meeting Summary:**

The U.S. Nuclear Regulatory Commission (NRC) staff held a virtual observation public meeting with representatives from X-Energy, LLC (X-energy). The meeting was conducted in accordance with NRC Management Directive 3.5, "Attendance at NRC Staff-Sponsored Meetings" (ML21180A271). The main points of discussion during the meeting included:

- X-energy indicated that the "Xe-100 Reactor Design's Probabilistic Risk Assessment Adequacy Approach White Paper" will only cover the regulations in Title 10 of the *Code of Federal Regulations* Part 50, "Domestic licensing of production and utilization facilities," since this is the proposed licensing pathway for the Xe-100 reactor design.
- X-energy stated that the white paper outlines the intended approach for demonstrating probabilistic risk assessment (PRA) technical adequacy consistent with the guidance in Regulatory Guide (RG) 1.247 "Acceptability of PRA Results for Non-Light Water Reactors Risk-Informed Activities." X-energy also stated that it plans to follow requirements in the Non-Light Water Reactor (NLWR) PRA standard, ASME/ANS RA-S-1.4-2021, "Probabilistic Risk Assessment Standard for Advanced Non-Light Water Reactor Nuclear Power Plants."
- X-energy stated that the PRA technical adequacy will be determined by assessing the PRA against the technical requirements of the NLWR PRA standard. X-energy stated that conformance to the PRA standard supporting requirements will increase as the design evolves.
- X-energy stated that the Xe-100 PRA will include all radiological sources at the plant and address all internal and external hazards in Appendix B of RG 1.247 for the construction permit application and the operating license application.
- Ian Jung (NRC staff) stated that more detailed feedback will be provided to X-energy once the NRC staff following receipt and review of the white paper.
- X-energy stated that it plans to have future engagement on preliminary safety analysis report chapters that involve PRA.
- X-energy stated that it plans to submit the white paper by October 2022.

CONTACT: Stephanie Devlin-Gill, NRR/DANU  
301-415-5301

Enclosure:  
List of Meeting Attendees

SUBJECT: SUMMARY OF THE OCTOBER 11, 2022, MEETING BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION STAFF AND X-ENERGY, LLC REGARDING XE-100 REACTOR DESIGN'S PROBABILISTIC RISK ASSESSMENT ADEQUACY APPROACH WHITE PAPER DATED: FEBRUARY 14, 2023

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- MHayes, NRR
- HPhan, NRR
- MHart, NRR
- MPohida, NRR
- AGilbertson, NRR
- SVasavada, NRR
- LVechioli, NRR

**ADAMS Accession Nos:**

**Pkg: ML23030A605**

**Letter: ML23030A661**

**Slides: ML22322A035**

**NRR-052**

<b>OFFICE</b>	NRR/DANU/UAL1/PM	NRR/DANU/UAL1/LA	NRR/DANU/UAL1/BC	NRR/DANU/UAL1/PM
<b>NAME</b>	SDevlin-Gill	DGreene	WJessup	SDevlin-Gill
<b>DATE</b>	1/31/2023	2/13/2023	2/14/2023	2/14/2023

**OFFICIAL RECORD COPY**

## List of Attendees

### Public Meeting with X-Energy LLC Regarding Xe-100 Reactor Design's Probabilistic Risk Assessment Adequacy Approach White Paper

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<b>Name</b>	<b>Organization</b>
Lucieann Vechioli	U.S. Nuclear Regulatory Commission (NRC)
Ian Jung	NRC
Donald Palmrose	NRC
Hanh Phan	NRC
Michelle Hart	NRC
Marie Pohida	NRC
Anders Gilbertson	NRC
Shilp Vasavada	NRC
Timothy Stuhldreher	Department of Energy (DOE)
Carl Friesen	DOE
James Breuninger	DOE
Ingrid Nordby	X-Energy LLC (X-energy)
Harry Liao	X-energy
Jessa Hultgren	X-energy
Mark Cursey	X-energy
Alaina Vivanco	X-energy
Charlotte Geiger	X-energy
Raymond Wang	X-energy
Brando Norris	X-energy
Mirko Ascic	Sargent & Lundy
Adam Stein	Self
Luke McSweeney	Self
Stephanie Yazzie	Self
Karl Fleming	Self
Elliot Korb	Self
Wesley Steh	Self
Leigh Lloveras	Self
Glen Lawson	Self
Mihai Aurelian Diaconesa	Self
Edwin Lyman	Union of Concerned Scientists