



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

September 28, 2022

MEMORANDUM TO: Steven Lynch, Chief
Advanced Reactors Policy Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

FROM: Michael Orenak, Project Manager
Advanced Reactor Licensing Branch 1
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Michael Orenak

Signed by Orenak, Michael
on 09/28/22

SUBJECT: SUMMARY OF THE AUGUST 3, 2022, CLOSED MEETING TO
DISCUSS THE INDUSTRY DEVELOPED OBSERVATIONS AND
ACTIONS TAKEN FROM THE X-ENERGY AND NATRIUM
TIRICE TABLETOP EXERCISES (EPID N-2022-ADV-0004)

On August 3, 2022, a closed meeting was held to discuss the industry's observations and actions taken from the X-energy TIRICE tabletop exercises held June 13-15, 2022, and the Natrium TIRICE tabletop exercises held July 18-20, 2022. These tabletop exercises were held to exercise the Title 10 *Code of Federal Regulations* (CFR) 50.59-like process outlined in Revision D of the white paper, "Technology Inclusive Risk Informed Change Evaluation (TIRICE) for Non-Light Water Reactors," that is to be applied by reactor applicants using a risk-informed, performance-based licensing strategy outlined in Nuclear Energy Institute (NEI) 18-04, Revision 1, "Risk-Informed Performance-Based Guidance for Non Light Water Reactor Licensing Basis Development." Revision D of the TIRICE white paper was submitted to the NRC on July 7, 2022 and can be found in the Agencywide Documents Access and Management System (ADAMS) at Accession Nos. ML22244A035. The U.S. Nuclear Regulatory Commission (NRC) staff provided comments to industry on Revision D of the TIRICE paper on August 2, 2022 and those comments can be found at ML22244A046. NEI 18-04, Revision 1, can be found at ML19241A336.

The closed meeting notice and agenda, dated June 27, 2022, are available at ML22208A170. The industry's presentation slides are available at ML22242A286. The Enclosure provides the list of meeting attendees.

Meeting Summary

After introductions, the meeting proceeded into the discussion of the X-energy tabletop observations and actions taken. For slide 2 of the presentation, a discussion arose around when a probabilistic risk assessment (PRA) change should be controlled by a PRA standard and when it should be controlled by the TIRICE process. The NRC asked if changes in computer codes used in a PRA analysis are considered a change to methods of evaluation under 10 CFR 50.59. The industry responded the change in methods would be applicable to design basis

accidents (DBAs), but changes to methods for other licensing basis events would be controlled under the PRA standard American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) RA-S-1.4-2021, "Probabilistic Risk Assessment Standard for Advanced Non-Light Water Reactor Nuclear Power Plants." Industry also reiterated that changes to PRAs should be controlled differently than other changes in licensing documents. The NRC commented that a possible solution to controlling changes to PRAs (since they are more important in plants licensed using NEI 18-04, Revision 1, process) is to have a separate program document to specify how changes to methods, key insights, results for the PRA, parts of the PRA, etc. are identified and analyzed for the need for a license amendment before implementation. The industry disagreed with the NRC's proposal because they said scope creep would occur. The industry concluded the discussion by stating that they continued to desire to have all PRA changes occur using ASME/ANS RA-S-1.4-2021 change control process and provided a reminder that just because an aspect of the licensing basis is in the FSAR, it doesn't mean that it's under a change control process.

For slide 3, an NRC contractor asked if a change in reliability would be considered a PRA assumption in the TIRICE process. The industry responded that a change in reliability would not be considered a PRA assumption in the same way that assumptions are treated in deterministic analyses for a DBA.

Slide 5 was the start of the discussion of the Sodium tabletop exercises. For slide 5, industry stated that they were trying to develop non-light water reactor examples to put into the TIRICE guidance document to support the end users. The NRC staff agreed that examples are very valuable for the end users and also help the NRC staff.

For slide 7, item 9, industry stated that they are still developing their response to this item. Industry is unsure if a change from non-safety related with special treatment to non-safety related with no special treatment would require a TIRICE evaluation because of the lower safety impact of the change.

Enclosure:
List of Attendees

CONTACT: Michael Orenak, NRR/DANU
301-415-3229

SUBJECT: SUMMARY OF THE AUGUST 3, 2022, CLOSED MEETING TO DISCUSS THE INDUSTRY OBSERVATIONS AND ACTIONS TAKEN FROM THE X-ENERGY AND NATRIUM TIRICE TABLETOP EXERCISES (EPID N-2022-ADV-0004) DATED SEPTEMBER 28, 2022

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NAME	MOrenak	DGreene	SLynch	MOrenak
DATE	9/1/2022	9/14/2022	9/28/2022	9/28/2022

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List of Attendees

CLOSED MEETING TO DISCUSS THE INDUSTRY OBSERVATIONS AND ACTIONS TAKEN FROM THE X-ENERGY AND NATRIUM TIRICE TABLETOP EXERCISES

Wednesday, August 3, 2022

Name	Organization
Michael Orenak	U.S. Nuclear Regulatory Commission (NRC)
Bill Reckley	NRC
Chris VanWert	NRC
Joe Sebrosky	NRC
Steve Lynch	NRC
Amy Cabbage	NRC
Scott Tonsfeldt	NRC
Michelle Hart	NRC
Eric Bowman	NRC
Jim Kinsey	Idaho National Labs (INL)
Thomas Hicks	INL
Tom King	INL
Michael Tschiltz	Consultant to Southern Company
Steve Nesbit	LMNT Consulting
Justin Wheat	Enercon
Amir Afzali	Southern Company
Pete Lablond	LeBlond & Associates
Brandon Chisolm	Southern Company Services
Steve Vaughn (X-energy portion only)	X Energy, LLC
Dennis Henneke (Natrium portion only)	GE Power