



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

September 19, 2025

MEMORANDUM TO: Samantha Lav, Chief
Fuel Facility Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

FROM: Stephen Poy, Project Manager
Fuel Facility Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

A handwritten signature in black ink, appearing to read "Stephen Poy", is located to the left of the signature line.

Signed by Poy, Stephen
on 09/19/25

SUBJECT: TRIP REPORT FOR HORIZONTAL VERTICAL SLICE MEETING
HELD ON MAY 20 AND 21, 2025, WITH TRISO-X, LLC
(ENTERPRISE PROJECT IDENTIFIER NUMBER
L-2022-PMP-0005)

The U.S. Nuclear Regulatory Commission (NRC) conducted a horizontal vertical meeting at the TRISO-X, LLC (TRISO-X) site on May 20 and 21, 2025.

The TRISO-X license application (LA) for a new fuel fabrication facility located in Oak Ridge, Tennessee was submitted via letter dated April 5, 2022 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML22101A200), and supplemented by letters dated October 13, 2022 (ML22286A144), November 4, 2022 (ML22308A251), and revised LA submitted by letters dated December 30, 2024 (ML24365A254), January 31, 2025 (ML25031A449), and March 28, 2025 (ML25090A027).

Consistent with NUREG-1520, Revision 2, "Standard Review Plan for Fuel Cycle Facilities License Application," section 3.5.2.3, "Onsite Integrated Safety Analysis Review," the NRC staff conducted an onsite review of the integrated safety analysis (ISA), which included a horizontal and vertical slice review (H/V Slice). The H/V Slice audit was conducted on site to facilitate access to internal documents, interact with the applicant's ISA team to discuss issues, and to allow the NRC technical staff to get a complete understanding of the ISA process.

The H/V Slice site visit included review of the following technical areas: Project Management, Structural Safety, ISA, Human Factors, Electrical/Digital Instrumentation and Control, Management Measures and Quality Assurance, Oversight & Inspection. Several technical reviewers participated virtually and reviewed documents on the TRISO-X portal. These technical areas included the following: Radiological Safety, Criticality Safety, Chemical Safety, and Fire Safety.

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301-415-7135

Enclosure 2 transmitted herewith contains security related information. When separated from the sensitive conditions in Enclosure 2, this document and Enclosure 1 are decontrolled.

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The NRC staff reviewed the following items as part of the H/V Slice review, consistent with NUREG 1520, Revision 2, page 3-35.

Horizontal Slice review items included:

- the items relied on for safety, such as schematics and descriptive lists;
- the example boundary of the IROFS systems;
- management measures specified by the applicant; and
- a few processes to confirm that all accident sequences were considered

Vertical Slice review items included:

- a selected subset of facility processes with relatively higher risk;
- the onsite documentation for the safety design;
- the underpinnings of calculations, conclusions, and the design of safety programs;
- the adequacy of the applicant's consequence and likelihood determinations, IROFS, and management measures;
- several processes and/or accident sequences that were not included in the ISA Summary; and
- specific questions the reviewers had related to the ISA methods

Additional information on the H/V Slice is provided in the enclosures.

In accordance with Title 10 of the *Code of Federal Regulations*, Part 2, "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document room (PDR) or from the Publicly Available Records component of the NRC's ADAMS. ADAMS is accessible from the NRC website site at <http://www.nrc.gov/reading-rm/adams.html>. The PDR is open by appointment. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

Docket No. 07007027

Enclosures:

1. Regional Trip Report Input (public)
2. Detailed Meeting Summary (non-public)

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SUBJECT: TRIP REPORT FOR HORIZONTAL VERTICAL SLICE MEETING HELD ON MAY 20 AND 21, 2025, WITH TRISO-X, LLC (ENTERPRISE PROJECT IDENTIFIER NUMBER L-2022-PMP-0005) DATED: September 19, 2025

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