



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

August 5, 2024

Dr. Jeff Waksman
Strategic Capabilities Office
U.S. Department of Defense
4755 Meadow Wood Lane
Chantilly, VA 20151

**SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION REVIEW OF THE RISK
ASSESSMENT APPROACH FOR TRANSPORTATION PACKAGE APPROVAL
OF THE PROJECT PELE TRANSPORTABLE NUCLEAR POWER PLANT FOR
DOMESTIC HIGHWAY SHIPMENT**

Dear Dr. Waksman:

By request dated February 20, 2023 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML23066A201), as supplemented on September 18, 2023 (ML23268A328), on behalf of the Strategic Capabilities Office (SCO) within the U.S. Department of Defense (DoD), Pacific Northwest National Laboratory (PNNL) asked the U.S. Nuclear Regulatory Commission (NRC) to review the PNNL document "Development and Application of Risk Assessment Approach for Transportation Package Approval of a Transportable Nuclear Power Plant for Domestic Highway Shipment."

The NRC staff determined that the risk-informed methodology is generally acceptable for a future applicant to use in its application for transport approval of either the Project Pele demonstration transportable micro-reactor or a potential future DoD tri-structural isotropic-based micro-reactor to the extent specified and limited in this letter and in the enclosed evaluation of the risk-informed methodology. Specifically, the NRC review of the risk-informed methodology includes the frequency-consequence plots and the steps needed to determine accident frequency and their consequences (see items 1 through 5 in the "Summary" in the enclosure), along with defense-in-depth and sensitivity analyses.

At this time, the NRC reviewed the risk-informed methodology consistent with the demonstration probabilistic risk assessment, for two transports one per year, one away from and one back to the Idaho National Laboratory (INL). The NRC review did not consider the risk associated with additional transports. Therefore, the NRC endorsement of the methodology is limited to scenarios with one transport per year, one away from and one back to specified location. The methodology may be able to be used in scenarios where there are multiple shipments per year, but it would require additional considerations and/or justifications to support the additional transports. If an application were to be submitted using the risk-informed methodology in the future, an independent peer review of the future applicant's probabilistic risk assessment would be beneficial and make for a more efficient review.

In its letter dated April 15, 2024 (ML24113A069), SCO stated its reasons for discontinuation of work on the Project Pele transportation application and expressed its continued interest in the NRC endorsement of the risk-informed methodology. SCO, through its contractor PNNL, indicated that the future package application for a DoD transportable micro-reactor may include a request for exemptions from the dose rate and containment criteria in 10 CFR 71.51(a)(2) after being evaluated for tests for hypothetical accident conditions specified in 10 CFR 71.73, "Hypothetical accident conditions." If the application for a future package application for a DoD transportable micro-reactor seeks exemptions, the package application would need to be accompanied by an environmental report, unless one of the categorical exclusions in 10 CFR 51.22(c) is applicable. Under the NRC's regulations, the categorical exclusion in 10 CFR 51.22(c)(13) for "package designs for packages to be used for the transportation of licensed materials" generally does not apply to packages that rely on exemptions from the specific package approval regulations. If the applicant only requests a review of the package application, without the NRC authorizing transportation, then an environmental report is not needed.

The NRC requests that SCO publish the risk-informed methodology as a PNNL document. In publishing the document, consider including an appendix in the PNNL document containing all historical review information (i.e., responses to the request for additional information and slides for the meetings with the Advisory Committee on Reactor Safeguards). After publication of the risk-informed methodology as a final PNNL document, the NRC will issue an endorsement of the PNNL document.

If you have any questions regarding this approval, please contact Bernard White of my staff at (301) 415-6577 or send an email to Bernard.White@nrc.gov.

Sincerely,



Signed by Diaz-Sanabria, Yoira
on 08/05/24

Yoira Diaz-Sanabria, Chief
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9396
EPID No. L-2022-NFN-0009

Enclosure:
Risk-Informed Methodology Evaluation

cc w/encl:
Steve Schilthelm, BWXT
Harold Adkins, PNNL
Steve Maheras, PNNL
Jeff England, NAC International, Inc.

SUBJECT: APPROVAL OF THE RISK ASSESSMENT APPROACH FOR TRANSPORTATION
PACKAGE APPROVAL OF THE PROJECT PELE TRANSPORTABLE NUCLEAR
POWER PLANT FOR DOMESTIC HIGHWAY SHIPMENT, DATED: August 5, 2024

DISTRIBUTION:

DMelendez-Colon, NMSS/DFM
NGarcia-Santos, NMSS/DFM
TMcCartin, NMSS/DFM
JMarcano, NMSS/DFM
BWagner, NMSS/DFM
JLopez, NMSS/DFM
LHowe, NMSS/DFM
CBajwa, NMSS/DFM
ABarto, NMSS/DFM
JTapp NMSS/DFM
MHumberstone, RESDRA
JWeil, OCA
DMcIntyre, OPA
SBurnell, OPA
CBrown, ACRS

ADAMS Accession No.: ML23321A132**SECY-24-0062 (ML23320A124)**

OFFICE	NMSS/DFM	NMSS/DFM	NMSS/DFM	QTE	NMSS/DFM
NAME	BWhite	BWagner	DForsyth	JDougherty	WWheatley
DATE	12/11/2023	12/14/2023	12/12/2023	12/01/2023	12/13/2023
OFFICE	NMSS/DFM	NMSS/DFM	NMSS/DFM	OGC	NMSS/DFM
NAME	DJohnson	YDiaz-Sanabria	SHelton	TJones	YDiaz-Sanabria
DATE	12/14/2023	12/15/2023	12/19/2023	02/09/2024	08/05/2024

OFFICIAL RECORD COPY