



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

August 19, 2025

George Wilson
Senior Vice President, Regulatory Affairs
TerraPower, LLC
15800 Northup Way
Bellevue, WA 98008

SUBJECT: TERRAPOWER, LLC. – FINAL SAFETY EVALUATION OF TOPICAL REPORT NAT-9394, "DESIGN BASIS ACCIDENT METHODOLOGY FOR EVENTS WITH RADIOLOGICAL RELEASE," REVISION 0 (EPID NO. L-2024-TOP-0009)

Dear George Wilson:

By letter dated March 22, 2024, TerraPower submitted Topical Report (TR) TP-LIC-RPT-0007, "Design Basis Accident Methodology for Events with Radiological Release," Revision 0 (ML24082A262), for the U.S. Nuclear Regulatory Commission (NRC) staff's review. On April 22, 2024, the NRC staff determined that the TR provided sufficient information for the NRC staff to begin its detailed technical review (ML24107B046). On July 15, 2024, the NRC staff transmitted an audit plan to TerraPower (ML24197A156) and subsequently conducted an audit of materials related to the TR from July 23, 2024, to January 29, 2025. The NRC staff issued the audit summary dated June 6, 2025 (ML25157A115). On February 28, 2025, TerraPower submitted a revision of the TR (ML25063A329), which was renumbered from TP-LIC-RPT-0007 to NAT-9394, "Design Basis Accident Methodology for Events with Radiological Release," Revision 0, to clarify portions of the TR as discussed in the audit summary.

The enclosed final safety evaluation (SE) is being provided to TerraPower, because the NRC staff has found NAT-9394, Revision 0, acceptable for referencing in licensing actions to the extent specified and under the limitations and conditions delineated in the TR. The final SE defines the basis for the NRC staff's acceptance of the TR.

The NRC staff requests that TerraPower publish an approved version of this TR within 3 months of receipt of this letter. The approved version should incorporate this letter and the enclosed SE after the title page. The approved version should include a "-A" (designating approved) following the TR identification symbol.

G. Wilson

- 2 -

If you have any questions, please contact Stephanie Devlin-Gill at (301) 415-5301 or via email at Stephanie.Devlin-Gill@nrc.gov.

Sincerely,

/RA/

Joshua Borromeo, Chief
Advanced Reactor Licensing Branch 1
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Project No.: 99902100

Enclosure:
As stated

cc: TerraPower Natrium via GovDelivery

SUBJECT: TERRAPOWER, LLC. – FINAL SAFETY EVALUATION OF TOPICAL REPORT NAT-9394, "DESIGN BASIS ACCIDENT METHODOLOGY FOR EVENTS WITH RADIOLOGICAL RELEASE," REVISION 0 (EPID NO. L-2024-TOP-0009)
DATED: AUGUST 19, 2025

DISTRIBUTION:

PUBLIC

RidsOgcMailCenter Resource

RidsNrrDanu Resource

RidsNrrDanuUal1 Resource

RBrusselmans, NRR

SDevlin-Gill, NRR

MSutton, NRR

DAtkinson, NRR

JBorromeo, NRR

DGreene, NRR

RAnzalone, NRR

CdeMessieres, NRR

ANeller, NRR

ZGran, NRR

MHart, NRR

ADAMS Accession Nos.:**Package: ML25189A082****Letter: ML25189A085****Enclosure (Public): ML25212A054****Enclosure (Non-Public): ML25189A086**

OFFICE	NRR/DANU/UTB2:BC	NRR/DANU/UAL1:PM	NRR/DANU/UAL1:LA
NAME	CdeMessieres	SDevlin-Gill	DGreene
DATE	06/25/2025	07/01/2025	07/02/2025
OFFICE	NRR/DANU/UAL1:BC		
NAME	JBorromeo		
DATE	07/31/2025		

OFFICIAL RECORD COPY