



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

May 1, 2025

Dr. Walter L. Kirchner, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

**SUBJECT: TRIENNIAL REVIEW AND EVALUATION OF NRC SAFETY RESEARCH
PROGRAM**

Dear Dr. Kirchner:

On behalf of the U.S. Nuclear Regulatory Commission (NRC) staff, I am responding to your letter to Chairman Wright dated March 12, 2025 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML25034A080), providing the "Triennial Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program." The Advisory Committee on Reactor Safeguards (ACRS) provides a valued, independent perspective on the agency's research activities.

We appreciate the in-depth review of 11 research projects, and the constructive feedback offered to guide and improve the research program's effectiveness. The Office of Nuclear Regulatory Research (RES) staff values the Committee's insights and recommendations in areas such as source term modeling for non-light water reactors (non-LWR) and high-burnup fuels; use of Level-3 probabilistic risk assessment insights to support risk-informed regulatory decisions; human factors research for advanced reactors and remote and autonomous operations; challenges in analyzing fuel behavior under accident conditions; and the emerging roles of advanced manufacturing and artificial intelligence in inspection and regulatory preparedness.

The report identified several areas for continued focus prior to the next triennial review, including enhancing readiness for emerging technologies and anticipated licensing submittals; updating and consolidating guidance on source term evaluations, especially for non-LWR technologies; engaging stakeholders through public workshops on forward-looking topics such as artificial intelligence and digital twins; and reinforcing knowledge management and staff development through plant demonstration modeling. We will thoughtfully reflect on the Committee's observations and recommendations as we work with our partners in planning future activities.

RES looks forward to continued interactions with the ACRS and future reviews of our research activities.

Sincerely,

A handwritten signature in dark ink, appearing to read "J R Tappert", is written over a light blue horizontal line.

Signed by Tappert, John
on 05/01/25

John R. Tappert, Acting Director
Office of Nuclear Regulatory Research

cc: Chairman Wright
Commissioner Caputo
Commissioner Hanson
Commissioner Crowell
Commissioner Marzano
SECY

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