

March 25, 2013

Dr. J. Sam Armijo, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: RESPONSE TO THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
REGARDING DRAFT NUREG-2125, "SPENT FUEL TRANSPORTATION RISK
ASSESSMENT"

Dear Dr. Armijo:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your February 14, 2013, letter that provided the conclusions and recommendations of the Advisory Committee on Reactor Safeguards (ACRS) for Draft NUREG-2125 "Spent Fuel Transportation Risk Assessment".

ACRS Conclusions

The staff agrees with the ACRS conclusions that:

- (1) NUREG-2125 should be published after the responses to our comments are incorporated;
- (2) NUREG-2125 provides a more complete and realistic assessment than earlier risk studies. However, NUREG-2125 does not contain a systematic assessment of the potential for phenomena that may not occur in design basis accidents, but could become important under the more extreme conditions associated with beyond design basis accidents; and
- (3) Despite the lack of a systematic assessment of the range of phenomena that could result in failure and releases, the results in NUREG-2125 continue to support the conclusion that risks from accidents involving spent fuel casks certified under the current regulatory framework are very low.

To address the ACRS' conclusion regarding topic number two, the staff plans to assemble a panel of structural, thermal, and materials experts with experience in spent fuel cask accident condition analysis, testing, and certification at Oak Ridge National Laboratory. The panel will conduct a systematic assessment of the potential for phenomena under extreme transportation impact and fire accident conditions that could significantly affect cask performance. In particular, the NRC staff will ask the panel to focus on any phenomena that do not already fall under the regulatory guidance of Title 10 of the *Code of Federal Regulations* Part 71, "Packaging and Transportation of Radioactive Material." Draft NUREG-2125 shows that, due to significant safety margins, the as-built casks provide protection against more extreme conditions associated with beyond (the transport equivalent of) design basis accidents. Noting that global

operational experience with thousands of spent fuel shipments and extensive testing and analysis (including beyond (the transport equivalent of) design basis accident conditions) have not identified or indicated any significant unevaluated phenomena, the systematic assessment should confirm the potential for such phenomena. The NRC staff will update Draft NUREG-2125 with the outcome from the panel's assessment.

ACRS Comments

The staff agrees with the ACRS' comments that:

- (1) It is important to ensure that input data are appropriate for the predicted range of conditions. Staff believes it has addressed this comment through revisions to Draft NUREG-2125;
- (2) A clear definition of collective dose and how it is used in NUREG-2125 should be provided. Staff will revise Draft NUREG-2125 to clearly explain how collective dose is used in the report and to explain that collective dose is probability weighted for the accident results; and
- (3) The public summary section in Draft NUREG-2125 Appendix F, "Public Summary," should be given more prominence in the report. Staff plans to revise the Draft NUREG-2125 to make the public summary section more prominent.

The NRC staff appreciates the ACRS' time and effort in undertaking its review, its comments and recommendations to improve the NUREG report, and its commendation to staff for efforts to improve understanding of the risks of spent nuclear fuel transportation accidents.

Sincerely,

/RA/

R. W. Borchardt
Executive Director
for Operations

cc: Chairman Macfarlane
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff
SECY

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