



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, DC 20555 - 0001

July 30, 2004

The Honorable Nils J. Diaz
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: NUCLEAR REGULATORY COMMISSION'S PACKAGE PERFORMANCE
STUDY – DEMONSTRATION TEST

Dear Chairman Diaz:

During the 152nd meeting of the Advisory Committee on Nuclear Waste (ACNW), July 20-22, 2004, the Committee met with the NRC staff to discuss the package performance study (PPS) plans for spent fuel rail shipment casks. After hearing the staff's presentation, the ACNW recommends that:

The staff should clarify the results expected from the tests and should specify results that the test is not expected to provide.

The staff provided a brief history of the PPS and an overview of the proposed test, but provided insufficient detail on current test plans for the ACNW to make further recommendations at this time.

The cask to be tested will be representative of those casks now certified by the NRC to ship spent nuclear fuel (SNF) and high level waste (HLW) by rail. The test may consist of a locomotive striking the cask at a high but not unrealistic impact speed, after which the cask will be subjected to a fully engulfing fire. These conditions are believed to be "realistically conservative." The staff plans to use this test as a demonstration of cask integrity.

During the past 30 years demonstrations of shipping cask integrity have been conducted in the United States¹ and in other countries, notably the United Kingdom.² The tested casks survived with minimal or no damage. Tests also demonstrated that the impacts experienced by casks struck by vehicles moving at high speeds were less severe than the impact caused by a 30-foot drop onto an unyielding surface. Validated mathematical models have also been used to predict cask performance.

¹ R.M. Jefferson and, H.R. Yoshimura. "Crash Testing of Nuclear Fuel Shipping Containers. SAND77-1462C. Sandia National Laboratories, Albuquerque, MN, December 1977.

² The Institution of Mechanical Engineers (U.K.). "The Resistance to Impact of Spent Magnox Fuel Transport Flasks (Project Smash Hit)." London, England, 1985.

The ACNW conducted two working group sessions on transportation. The results including the conclusions, and recommendations of these sessions were reported to the Commission in letters dated January 7 and June 4, 2003. The ACNW concluded that transportation packages for SNF and HLW that meet the regulatory requirements are adequate to protect public health and safety, and that several tests using scale models would be preferable to a single full-scale test for purposes of code validation. The ACNW concluded further that current analysis techniques are adequate to demonstrate that transportation packages meet current regulations.

The ACNW has not seen any compelling science-based justification for the proposed test. In the Committee's opinion the proposed demonstration will add little new information of technical value. If a full-scale demonstration is deemed necessary, it should be justified on grounds other than technical needs.

Sincerely,

/RA/

B. John Garrick
Chairman