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From: "Lisa Gue" <lisa_gue@citizen.org>
To: <nrcrep@nrc.gov>
Date: Fri, May 30, 2003 11:40 AM
Subject: PPS comments

Please find attached Public Citizen's comments on the Package Performance Study Draft Test Protocols, pursuant to the Feb. 21, 2003 notice in the Federal Register.

Thank you.

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FEDS=ADM-03
add=A. Snyder (AMS3)
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Public Citizen

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Joan Claybrook, President

May 30, 2003

Spent Fuel Project Office, Attn. Ms. Amy Snyder
Mail Stop O14-D13
U.S. Nuclear Regulatory Commission
Washington, DC 20555-001

Re: Comments on the Package Performance Study draft test protocol

To Whom it May Concern:

This is in response to the 02/21/03 Federal Register Notice inviting public comment on NRC's draft test protocol for the Package Performance Study. Public Citizen maintains its longstanding concerns with proposed nuclear waste transportation to Yucca Mountain, Nev., and Skull Valley, Utah, and with the adequacy of NRC high-level nuclear waste transportation cask licensing regulations in general. We applaud the NRC's recognition of the need for full-scale, physical cask testing. However, as currently proposed, the Package Performance Study (PPS) does not go far enough to address our concerns. In particular, we offer the following comments on the scope of this study and the draft test protocol.

- The proposed one-time "confirmatory tests" are no substitute for dynamic testing as a condition of cask licensure. NRC cask licensing regulations should be strengthened to require full-scale physical testing of *every* cask design.
- The proposed extra-regulatory confirmatory tests of a train cask should be expanded to include testing of cask models contemplated for use in the Yucca Mountain shipping campaign, in addition to the Holtec HI-STAR 100 (proposed for Private Fuel Storage shipments). Train casks for Yucca Mountain shipments may carry significantly larger loads and may not feature a multi-purpose canister.
- A confirmatory thermal test should test casks to failure, not just to the extra-regulatory standards proposed for the PPS. It is not enough to study, for example, cask response to a 90-minute fire if a 92-minute fire would cause failure. To validate assumed safety margins, NRC should study cask failure points through full-scale physical tests to destruction.
- A confirmatory crash test should be designed to involve impact forces that test expected cask failure points. The NRC staff's reliance on probability-weighted annual accident rates to justify proposed impact speeds is inappropriate, given the relatively limited history of high-level nuclear waste transportation, the unprecedented magnitude of proposed shipments to Yucca Mountain and Skull Valley over several decades, and the potentially devastating consequences of even just one high-speed accident. At a minimum, impact test speeds

should not be lower than maximum speed limits along potential nuclear waste transportation routes or the surface impact speed that would result from a cask falling off the highest bridge along potential Yucca Mountain and PFS transport routes.

- The PPS should include an extra-regulatory puncture test to evaluate cask response to a free drop onto an unyielding spike. The height of the drop in this test should be consistent with the maximum height of bridges along nuclear waste transportation routes.
- The PPS should include an extra-regulatory crush test, to evaluate cask response to the crushing impact of a heavy weight falling onto a nuclear waste cask.
- The PPS should include immersion testing, especially since the DOE has indicated that nuclear waste shipments to Yucca Mountain could include barge shipments on both inland and coastal waterways. Immersion tests should study cask failure (and potential radioactive releases) as a function of water pressure and time, as well as criticality risks. Deep immersion tests should be performed on both damaged and undamaged casks and should test to destruction.
- The PPS should test impact, crush, puncture, thermal, and immersion criteria in sequence. The NRC should review the sequencing required under 10 CFR 71.73 and consider alternative sequences, reflecting real or hypothetical accident conditions, that may result in greater cask damage. For instance, initial fire damage may weaken the cask and affect its performance in a subsequent impact.
- The PPS should include explosive testing. Nuclear waste shipments could be attractive terrorist targets, especially in populated areas. Independent analyses indicate that NRC-licensed casks may be vulnerable to explosive attacks, suggesting devastating consequences. Given the current context for national security concerns, NRC's PPS risks irrelevance if it does not include a credible evaluation of cask response to explosive attack.
- The PPS should test actual full-scale casks, not scale models. Thermal tests and seals in particular do not scale well. In addition, scale models do not lend themselves to sequential testing; impact and thermal tests would likely require differently scaled models.
- The PPS test casks should be loaded to most closely represent a fully loaded transport cask. NRC's proposal is unclear in this respect. Surrogate fuel should be used in place of actual irradiated fuel. Conclusions drawn from cask testing should take into account the results of separate tests of fuel response to accident conditions.
- The PPS should monitor and evaluate the integrity of the cask under test conditions in terms of shielding (including neutron shielding), as well as containment. Shielding failure could result in increased radiation doses and impede emergency response activities.
- The NRC's single-minded reliance on probabilistic risk-informed regulation is inappropriate and misleading. What was the probability of the 9/11 attacks before they occurred? the Davis-Besse debacle? the space shuttle Columbia failure? The inadequacy of regulatory standards to safeguard against transportation accident scenarios with very low or undefined probabilities but potentially catastrophic consequences should not be ignored. Furthermore,

various factors in an accident scenario may have cumulative or synergistic consequences beyond the predicted impact of any one factor studied in isolation.

- Having recognized the need for extra-regulatory, physical testing of nuclear waste transportation casks, the NRC should suspend review of the Private Fuel Storage license application until the results of this study are final and can be taken into consideration. (Private Fuel Storage would initiate an unprecedented nuclear waste shipping campaign. Yet the company intends to begin shipments before the PPS scheduled completion date of 2005.)
- NRC's determination that Sandia National Laboratories is the most appropriate facility to conduct these tests was premature, given that the test protocol have not yet been finalized. The contract competition for the PPS testing phase should be re-opened once public comments have been taken into account and the test protocol has been finalized. Also, Sandia's contracts in support of the DOE's Yucca Mountain Project suggest a potential conflict of interest. The NRC should take steps to ensure the independence and reliability of the PPS test results.
- The PPS, if it is truly a generic study, should not be funded from the Nuclear Waste Fund. As specified in the Nuclear Waste Policy Act, the Nuclear Waste Fund – monies collected from ratepayers – is to be used *only* for the government's radioactive waste "disposal" activities. A study to support general licensing of nuclear waste casks, which are used by licensees for activities unrelated to the government's radioactive waste management program, should not be funded from this source. If, on the other hand, the PPS is actually a Yucca Mountain activity, this should be clearly presented and reflected in the test protocol.
- Reliability and validity of the PPS would improve if multiple tests on each cask were conducted. The cost of obtaining additional casks once the testing infrastructure is in place would likely be marginal.
- The explicit suggestion that the PPS "is not intended to involve the development of new standards for transportation casks" (in the executive summary of the draft test protocols document and elsewhere) is absurd and undermines the integrity of this study by implying a predetermined outcome. The PPS should not be conducted merely as a public relations exercise, and NRC regulations should be responsive to the results of this study.
- The NRC should issue a comment resolution document in response to public comments on the draft test protocol. Public confidence in the NRC's processes is undermined to the extent that comments appear to disappear into a "black hole."

Thank you in advance for you attention to these issues.

Sincerely,

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