April 24, 2002

The Honorable Harry Reid
United States Senate
Washington, D.C. 20510

Dear Senator Reid:

This letter supplements my response on behalf of the U.S. Nuclear Regulatory Commission (NRC) to your request for information of March 12, 2002, regarding testing of casks used to transport spent nuclear fuel. Enclosure 1 provides details of physical testing performed for certain newer cask designs that were identified in our earlier letter.

You recently expressed concern about NRC's reliance on computer models and scale model tests of transportation casks. We have a great deal of confidence in this approach. These casks are not complicated structures and the physics and mechanical properties of the casks under accident conditions can be accurately predicted by scale model testing and computer analysis. Reliance on computer models and scale model testing for such structures is good engineering practice, just as the seismic, wind and fire performance of bridges, for example, is modeled rather than tested in a full-scale mockup. Nonetheless, the NRC is considering certain full-scale testing focused on cask performance in severe accidents in order to contribute to public confidence in transportation casks. Our staff is currently seeking partners both in the U.S. and abroad to share the costs of such testing and our intent is to include a request for NRC's share of the funding in our fiscal year 2004 budget.

If you have any comments or questions, please contact me.

Sincerely,

/RA/

Richard A. Meserve

Enclosure: "Test Details for Certain
Spent Fuel Transport Casks"

TEST DETAILS FOR CERTAIN SPENT FUEL TRANSPORT CASKS

Cert. No./ Model No.	Type of Physical Tests	Details of Physical Tests	Results of Physical Tests
9226 GA-4	Static tests of 1/4-scale impact limiters.	Test orientations: side (horizontal orientation); 15°, 30°, 45°, 60°, and 75° from horizontal; and end (vertical orientation).	Force-deflection curves were consistent with analysis.
	Drop tests of 1/2-scale package.	Hypothetical accident conditions--free-drop-test orientations: side drop (horizontal orientation); 30° from horizontal (oblique orientation); and 78° from horizontal (center-of-gravity over corner orientation). Puncture-test orientations: side drop (horizontal orientation); 78° from horizontal (center-of-gravity over corner orientation); and 83° from horizontal.	Test results were consistent with analytic predictions. Maximum deceleration from testing was 51.5 g for the corner-drop. Cask analysis was performed using both the deceleration values derived from tests and analysis. Impact limiters remained attached. Puncture-test results were acceptable.
9235 NAC-STC	Static tests of 1/8-scale impact limiters.	Test orientations: side (horizontal orientation); 66° from horizontal (center-of-gravity over corner orientation); and end (vertical orientation).	Force-deflection curves were consistent with analysis.
	Drop tests of 1/4-scale package.	Hypothetical accident conditions--free-drop-test orientations: side drop (horizontal orientation); 25° from horizontal (oblique orientation); 66° from horizontal (center-of-gravity over corner orientation); and end drop (vertical orientation). Puncture-test orientations: side drop (horizontal orientation) and end drop (vertical orientation).	Test results for final design were consistent with analytic predictions. Maximum deceleration from testing was for the end drop (54.8 g for the static test and 55.6 g for the dynamic test). Cask analysis was performed using deceleration value (56 g) that bounds both the analytic and test values. Impact limiters remained attached. Puncture-test results were acceptable.

Cert. No./ Model No.	Type of Physical Tests	Details of Physical Tests	Results of Physical Tests
9255 NUHOMS MP-187	Static tests of 1/4-scale impact limiters.	Test orientations: side (horizontal orientation); and 30° and 60° from horizontal.	Force-deflection curves were consistent with analysis.
	Dynamic tests of 1/4-scale impact limiters.	Hypothetical accident conditions--free-drop-test orientations: 30° from horizontal and 72° from horizontal (center-of-gravity over corner orientation). Puncture-test orientations: side drop (horizontal orientation) and end drop (vertical orientation).	Test results were consistent with analytic predictions. Maximum deceleration from testing was 89.8 g for the side-drop. Cask analysis was performed using maximum deceleration value. Impact limiters remained attached. Puncture-test results were acceptable.
9261 HI-STAR 100 System	Static tests of 1/8-scale impact limiters.	Test orientations: side (horizontal orientation); 30° and 60° from horizontal; and end (vertical orientation).	Force-deflection curves for final design were consistent with analyses.
	Dynamic tests of 1/4-scale impact limiters.	Hypothetical accident conditions--free-drop-test orientations: side drop (horizontal orientation); 67.5° from horizontal (center-of-gravity over corner orientation); 15° from horizontal (oblique orientation); and end drop (vertical orientation).	Test results for final design were consistent with analytic predictions. Maximum deceleration from testing was 59 g for the oblique-drop. Cask analysis was performed using 60 g. Impact limiters remained attached.
9293 TN-68	Static tests of scale-model impact limiters.	Test orientations: side (horizontal orientation); 15°, 45°, 60°, and 80° from horizontal; and end (vertical orientation).	Force-deflection curves were consistent with analysis.
	Dynamic tests of 1/3-scale impact limiters.	Hypothetical accident conditions--free-drop-test orientations: side drop (horizontal orientation); 15° from horizontal (oblique orientation); and end drop (vertical orientation). Puncture-test orientation: end drop (vertical orientation).	Test results were consistent with analytic predictions. Maximum deceleration from testing was 75 g for the end drop. Cask analysis was performed using 80 g. Impact limiters remained attached. Puncture-test results were acceptable.