



Department of Energy
National Nuclear Security Administration
Service Center



MAY 22 2003

Richard W. Boyle,
Radioactive Materials Transportation,
Office of Hazardous Materials Technology,
Research and Special Programs Administration,
Department of Transportation,
400 Seventh Street S. W.,
Washington D. C. 20590-0001

Dear -Mr. Boyle:

The Department of Energy (DOE)/National Nuclear Security Administration (NNSA) Service Center, National Security Department (NSD), Albuquerque, New Mexico, has identified a safety issue with the Department of Transportation (DOT) Specification 6M and 6L (49 CFR 173.416 and 417) and other packages that use a bolted-ring closure mechanism used to ship Class 7 materials. The safety issue concerns a family of specification containers that, according to the information contained in *Drop Test Results for the Combustion Engineering Model No. ABB-2901 Fuel Pellet Shipping Package, UCRL-ID-149067 (July 2002)*, *Response of Conventional Ring Closure of Drum Type Packages to Regulatory Drop Tests with Application to the 9974/9975 Package, WSRC-MS-2002-00452 (August 2002)*, and *The DT-22 30-Foot Oblique Drop Test Detailed Examination, LMES-Y-12-YME-93-23 (November 5, 1993)*, have the potential for bolted-ring closure failure in a Hypothetical Accident Condition. These documents appear to indicate that the containers that use a bolted-ring drum closure may be unsafe for use in the transport of radioactive material. The Service Center is working with the DOE/NNSA Headquarters Organizations to evaluate the impacts of the potential failures in these types of packagings and to determine appropriate alternatives.

The NRC sponsored the testing of the Combustion Engineering ABB-2901 drum-type shipping package performed by Lawrence Livermore National Laboratory (LLNL). LLNL performed a single 30-foot drop test at a shallow drop angle to determine if the bolted-ring closure device was susceptible to failure. The LLNL documented the results of this testing in *Drop Test Results for the Combustion Engineering Model No. ABB-2901 Fuel Pellet Shipping Package, UCRL-ID-149067 (July 2002)* in which it indicates that the test package's bolted-ring drum-closure and drum lid separated completely from the drum. This Report also notes that the *Response of Conventional Ring Closure of Drum Type Packages to Regulatory Drop Tests with Application to the 9974/9975 Package, WSRC-MS-2002-00452 (August 2002)* reported the bolted-ring closure mechanism failures of the Westinghouse Savannah River Corporation's SR9974 and SR9975 packages during their drop tests in the top-down orientation. The certification process for the SR9974 was terminated. The SR9975 package was redesigned with a bolted-lid closure as a direct result of the bolted-ring closure mechanism failure.

The Lockheed Martin Energy Systems (LMES) Y-12 Packaging Program observed failures in the 1993 timeframe with the stainless steel Model DT-18 design and the Model DT-22 design during 30-

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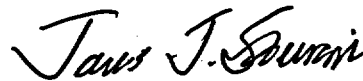
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foot drop testing performed for DOE recertification of these packages. These failures were reported in *The DT-22 30-Foot Oblique Drop Test Detailed Examination, LMES-Y-12-YME-93-23 (November 5, 1993)*. Both of these NNSA packages utilized bolted-ring drum closures. Subsequently, both designs were immediately removed from service due to the failure of the bolted-ring closure mechanism. The Model DT-22 was redesigned to incorporate a bolted flange drum closure, retested, certified and returned to service after thorough review.

NNSA is forwarding this information because the DOE/NNSA does not have the authority to regulate shipments of Class 7 materials in commerce; however, the NNSA believes that the results of the DOE testing experience should be of interest to your office.

Please feel free to contact Glenn Binns of my staff at (505) 845-4607 with any questions or if additional information is required.

Sincerely,



James J. Szenasi
Manager
National Security Department

cc:

Larry W. Camper, NRC
D. S. "Tyler" Przybylek, NA-2, HQ
Ronald Haeckel, Brigadier General, USAF, NA-10, HQ
Bill Newton, NA-125.2, HQ
Ray Corey, SC/OTS
Jim Szenasi, SC/NSD
Steve Nunley, SC/PCD
Stephen Thompson, SC/PCD
M. Barela, SC/PCD
Martin J. Virgillio,
Office of Nuclear Material Safety and Safeguards,
U. S. Nuclear Regulatory Commission,
Washington, DC, 20555-0001