

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D. C. 20555

July 10, 1987

NRC INFORMATION NOTICE NO. 87-31: BLOCKING, BRACING, AND SECURING OF RADIO-
ACTIVE MATERIALS PACKAGES IN TRANSPORTATION

Addressees:

All NRC licensees.

Purpose:

This notice is provided to remind licensees of their responsibilities to ensure the proper blocking, bracing, and securing (tie-down) of radioactive materials packages being offered to a carrier, wherein transport by exclusive-use vehicle is required, or packages being transported by the licensee as a private carrier, whether by an exclusive-use or a non-exclusive-use vehicle.

It is suggested that licensees review this information for applicability to their shipping and transportation program and consider actions, if appropriate, to preclude similar problems with their shipments. However, suggestions contained in this notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

There has been evidence of inadequacies in the blocking, bracing, and securing of packages to the transport vehicle involving packaged shipments of low-specific-activity (LSA) radioactive material (radwaste) in drums or bins. The following are recent, typical examples of such inadequacies:

On April 25, 1986, an exclusive-use shipment of LSA waste from a nuclear power plant in the Midwest arrived at the Barnwell, South Carolina waste disposal site. The inspector for the State of South Carolina who was at the site observed that the three packages on the flatbed trailer had shifted in transit as a result of inadequate blocking and bracing.

On July 7, 1986, a nuclear fuel plant in the southeast made a shipment of two 10-ton uranium hexafluoride cylinders to the gaseous diffusion plant at Paducah, Kentucky. After departure, one cylinder broke free and fell from the vehicle onto the ground when the truck made a sudden stop. Contributing causes of the load separation were a faulty hold-down strap and inadequate bracing and tie-down of the cylinder and cylinder supports.

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On June 5, 1986, an exclusive-use shipment of LSA waste from a nuclear plant in the South arrived at the Barnwell waste disposal site. When the State of South Carolina inspector at the site opened the closed trailer, he observed that the blocking and bracing that had been provided was inadequate to prevent the movement of some drums during transit.

In each of these instances, enforcement action was taken against the shipper for failure to comply with the Department of Transportation (DOT) regulations.

Discussion:

Section 10 CFR 71.5(a) requires that each licensee who transports licensed material outside of the confines of its plant or place of use or who delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the DOT in 49 CFR Parts 170-189 for the mode of transport used. These requirements apply whether the mode of transport is by rail, air, water, or public highway.

Many packages offered for transport by licensees, including waste shipments, qualify as LSA as defined in 49 CFR 173.403(n). When packaged LSA materials are shipped by exclusive-use vehicles, the requirements in 40 CFR 173.425(b) must be met.

~~In addition to the limits for external radiation levels and removable contamination, the other requirements of 49 CFR 173.425(b) should be recognized by all licensees. Specifically, 49 CFR 173.425(b)(4) requires that the shipment must be loaded by the consignor (e.g., the licensee shipper) and unloaded by the consignee. Section 49 CFR 173.425(b)(6) requires that the shipment must be braced to prevent shifting under normal transportation conditions. Bracing of loads may involve blocking, shoring, tie-downs (chains and/or straps), or other restraints.~~

For all shipments of radioactive material requiring an exclusive-use vehicle, the licensee-shipper is responsible for assuring that the shipment is properly loaded and secured; it is not the responsibility of the driver or carrier company. In other words, in such cases, the shipper is assigned the responsibility for certain functions that are normally (for non-exclusive-use shipments) the responsibility of the carrier. Section 49 CFR 173.403(i), states that "all initial, intermediate, and final loading and unloading are to be carried out in accordance with the directions of the consignor or consignee." Blocking, bracing, and tie-downs, therefore, are considered to be a part of the loading process and the responsibility of the consignor-shipper-licensee for exclusive-use shipments. If a load shifts during normal transport, the licensee bears the responsibility and may be subject to enforcement actions under 10 CFR 2 when violations occur. In some cases, the carrier may perform inspections of tie-down provisions during transport. The applicable instruction provided by the shipper to the carrier for maintenance of exclusive-use shipment control may provide guidance on this subject.

Pursuant to 49 CFR 177.842(d), radioactive materials packages must be blocked and braced such that they cannot change position during conditions normally incident to transportation. This requirement applies to common or contract

(i.e., "for-hire" carriers) and private carriers. Therefore, whether or not the shipment is by exclusive-use vehicle, the requirement applies to licensees that are transporting packages and acting as both a shipper and a private carrier; e.g., radiographers, well logging companies, radiopharmacy suppliers, waste brokers, etc.

For shipments offered by a licensee-shipper to a common carrier; e.g., partial loads in a vehicle that is not for exclusive-use, the carrier is ultimately responsible for the proper blocking, bracing, and securing of the package. All too frequently, incidents occur wherein packages are thrown onto the roadway and lost because of the carrier's failure to properly secure the load and/or failure to secure the cargo door. In such cases, the carrier may be subject to enforcement actions by the DOT or a State regulatory authority.

Actions taken by licensees to ensure that shipments are properly loaded and braced have included written loading procedures with detailed checklists and quality control oversight and release requirements. When a licensee ships several types of packages, detailed procedures with a checklist have been prepared for each. The applicable certificate-of-compliance for an NRC-certified package may sometimes contain prescriptions for package tie-down arrangements.

Specific regulatory and technical standards for tie-down of packages to transport vehicles may be found in:

§49 CFR 393.100, 393.102, and 393.104 - for motor vehicles;

§10 CFR 71.45(b) - applicable to tie-down attachment points that are structural components of radioactive packages that are subject to the Package Approval Standards of Subpart E of 10 CFR 71;

ANSI N-14.2 - Proposed American National Standard "Tie-down for Truck Transport of Radioactive Materials" (currently in the form of Draft 5, Revision 2, September 2, 1986, and available from the Secretary, N14 Committee, International Energy Associates Limited, 3211 Jermantown Road, Fairfax, Virginia 22030).

No written response to this information notice is required. If you have any questions regarding this matter, please contact the Regional Administrator of the appropriate NRC regional office or this office.

Elizabeth G. Ten Eyck
for Robert F. Burnett, Director
Division of Safeguards and Transportation
Office of Nuclear Material Safety
and Safeguards

Technical Contact: A. W. Grella, NMSS
(301) 427-4709

Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED
INFORMATION NOTICES 1987

Information Notice No.	Subject	Date of Issuance	Issued to
87-30	Cracking of Surge Ring Brackets in Large General Electric Company Electric Motors	7/2/87	All nuclear power reactor facilities holding an OL or CP.
87-29	Recent Safety-Related Incidents at Large Irradiators.	6/26/87	All NRC licensees authorized to possess and use sealed sources in large irradiators.
87-28	Air Systems Problems at U.S. Light Water Reactors	6/22/87	All nuclear power reactor facilities holding an OL or CP.
87-27	Iranian Official Implies Vague Threat to U.S. Resources	6/10/87	All nuclear power reactor facilities holding an OL or CP, research and nonpower reactor facilities, and fuel fabrication and processing facilities using or possessing formula quantities of special nuclear material.
87-26	Cracks in Stiffening Rings on 48-Inch Diameter UF ₆ Cylinders.	6/11/87	All uranium fuel fabrication and conversion facilities.
87-25	Potentially Significant Problems Resulting from Human Error Involving Wrong Unit, Wrong Train, or Wrong Component Events.	6/11/87	All nuclear power reactor facilities holding an OL or CP.
87-24	Operational Experience Involving Losses of Electrical Inverters.	6/4/87	All nuclear power reactor facilities holding an OL or CP.
87-23	Loss of Decay Heat Removal During Low Reactor Coolant Level Operation	5/27/87	All PWR facilities holding an OL or CP.

OL = Operating License
CP = Construction Permit

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For shipments offered by a licensee-shipper to a common carrier; e.g., partial loads in a vehicle that is not for exclusive-use, the carrier is ultimately responsible for the proper blocking, bracing, and securing of the package. All too frequently, incidents occur wherein packages are thrown onto the roadway and lost because of the carrier's failure to properly secure the load and/or failure to secure the cargo door. In such cases, the carrier may be subject to enforcement actions by the DOT or a State regulatory authority.

Actions taken by licensees to ensure that shipments are properly loaded and braced have included written loading procedures with detailed checklists and quality control oversight and release requirements. When a licensee ships several types of packages, detailed procedures with a checklist have been prepared for each. The applicable certificate-of-compliance for an NRC-certified package may sometimes contain prescriptions for package tie-down arrangements.

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By D. Drake
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