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Bulletin 97-02: Puncture Testing of Shipping Packages Under 10 CFR Part 71

OMB No. 3150-0012
NRCB: 97-02

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

September 23, 1997

NRC BULLETIN 97-02: PUNCTURE TESTING OF SHIPPING PACKAGES UNDER
10 CFR PART 71

Addressees

For Action - All holders of Nuclear Regulatory Commission
Certificates of Compliance for shipping packages

For Information - Department of Transportation

All "Users and Fabricators" of transportation packages
[as defined in 10 CFR 171.16(10)(B)]

Purpose

NRC is issuing this bulletin to: (1) notify addressees of issues related to the performance of the puncture test as specified in 10 CFR 71.73(c)(3); (2) request that all action addressees implement the actions described herein; and (3) require that all action addressees provide NRC with a written response to this bulletin.

Background

On June 27, 1997, NRC Information Notice 97-47 was issued as notification regarding the performance of the puncture test specified in 10 CFR Part 71 for radioactive material shipping packages.

Description of Circumstances

Recently, NRC became aware that two holders of NRC Certificates of Compliance for packages under Part 71 had performed the puncture test using a bar that was not mounted as specified in 10 CFR 71.73(c)(3). The incorrect performance

of these tests and questions concerning the application of Quality Assurance (QA) programs to package testing activities resulted in issuance of NRC Confirmatory Action Letters to the two certificate holders, which documented their suspension of fabrication of further packagings until retesting was performed to verify compliance with the requirements of Part 71.

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Discussion

The hypothetical accident conditions in 10 CFR 71.73 specify tests that are to be conducted for Type B and fissile material shipping packages. The tests are to be applied sequentially, in the order indicated, so that damage from the test sequence is cumulative. A separate water immersion test is also to be performed for all packages, using an undamaged specimen, as provided in 10 CFR 71.73(c)(6).

Under 10 CFR 71.73 (c)(3), the puncture test consists of a free drop of the specimen through a distance of 1 meter (40 inches) in a position for which maximum damage is expected, onto the upper end of a solid, vertical, cylindrical, mild steel bar mounted on an essentially unyielding horizontal surface. The bar must be 15 cm (6 in.) in diameter, with the top horizontal and its edge rounded to a radius of not more than 6 mm (0.25 in.), and of a length as to cause maximum damage to the package, but not less than 20 cm (8 in.) long. The long axis of the bar must be vertical.

The bar must be fastened or attached such that it will not move during the test to ensure that maximum damage to the packaging would be expected to occur, as provided in 10 CFR 71.73(c)(3). Failure to fasten or attach the bar during testing may not result in maximum cumulative damage to the package as a result of the hypothetical accident condition test sequence.

Requested Actions

- (1) All holders of NRC Certificates of Compliance for packages are requested to review their puncture test assessment for each of their certified package designs. The method used to assess the effects of the puncture test (e.g., physical testing of a full-size specimen, physical testing of a scale-model specimen, engineering analyses, or comparison to a similar package design) should be determined. For package designs whose puncture test assessment was based on physical tests, including comparison to a similar design that was physically tested, the certificate holder should determine whether the puncture test was performed in accordance with 10 CFR 71.73(c)(3).
- (2) For any package design whose puncture test assessment was based upon physical tests that were not in accordance with 10 CFR 71.73(c)(3), the certificate holder is requested to identify any special precautions or operational controls that are needed to assure safe use of the package, pending retesting and reassessment of the package design. In addition, the Certificate holder for any such package design should prepare a justification showing why there are no health and safety concerns that would require immediate removal of packages of that design from service.
- (3) Further, for any package design whose puncture test assessment was based

on physical tests that were not in accordance with 10 CFR 71.73(c)(3), the certificate holder is requested to prepare a plan and schedule for demonstrating the adequacy of the design for the hypothetical accident conditions specified in 10 CFR 71.73. Certificate holders are requested to justify the timeliness of their schedule.

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The demonstration of compliance may be made by subjecting a specimen or scale model of the package to the hypothetical accident test sequence, by calculation and reference to other suitable documented tests, by a combination of testing and calculation, or by another method of demonstration acceptable to the Commission. The plan for demonstrating the adequacy of the packages should incorporate the applicable QA requirements specified in Subpart H of Part 71.

Required Responses

Pursuant to 10 CFR 2.204 and 10 CFR 71.39, in order to determine whether any license or certificate should be modified, suspended, revoked, or other action taken, each action addressee is required to submit, within 30 days of the date of this bulletin, a response indicating whether the addressee will implement the requested actions above within the time frames specified below.

If an addressee intends to implement the requested actions:

- (i) Within 45 days from the date of this bulletin, provide a report confirming completion of the actions requested in Items 1 and 2, above, including a description of the evaluations performed, any special precautions or operational controls that are needed, and any health and safety justification prepared in response to the requested actions.
- (ii) Within 90 days from the date of this bulletin, provide a report confirming completion of the actions requested in Item 3, above, including the plan and schedule for demonstrating the adequacy of the design and justification of the timeliness of the schedule.

If an addressee chooses not to take the requested actions, within 30 days of the date of this bulletin, provide; a description of any proposed alternative course of action; the schedule for completing the alternative course of action, if applicable; and the safety basis for determining the acceptability of the planned alternative course of action.

Within 30 days of completion of the actions requested above, provide a report confirming completion of all of the actions requested in this bulletin (the report confirming completion may be included with the information requested in item (ii), above).

Address the required written responses to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, under oath or affirmation, under the provisions of Section 182a, Atomic Energy Act of 1954, as amended. In addition, submit a copy to the Director of the Spent Fuel Project Office.

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Paperwork Reduction Act Statement

The information collections contained in this request are covered by the Office of Management and Budget clearance number 3150-0012, which expires June 30, 2000. The public reporting burden for this collection of information is estimated to average 15 hours per Certificate of Compliance, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Information and Records Management Branch, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0012), Office of Management and Budget, Washington, D.C. 20503.

Information Addressees

NRC is issuing this bulletin to information addressees to alert them to issues related to the performance of the puncture test as specified in 10 CFR 71.73(c)(3). It is expected that recipients will review the information for applicability and consider actions, as appropriate, to avoid similar problems. However, the requested actions and required responses applicable to the action addressees are not applicable to information addressees; therefore, no specific action or written response is required from them.

If you have any questions about this matter, please contact one of the technical contacts listed below.

signed by

Charles J. Haughney, Acting Director
Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards

Technical contacts:	David Tiktinsky, NMSS	Ross Chappell, NMSS
	301-415-8523	301-415-8510
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Attachments:

1. List of Recently Issued NMSS Bulletins
2. List of Recently Issued NRC Bulletins

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