



Westinghouse

Westinghouse Electric Company
Nuclear Fuel
Columbia Fuel Site
P.O. Drawer R
Columbia, South Carolina 29250
USA

Attn: Document Control Desk
Director, Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Direct tel: (803) 647-3167
Direct fax: (803) 695-4164
e-mail: vescovpj@westinghouse.com

Your ref:

Our ref: UAM-07-11

April 2, 2007

SUBJECT: Docket 71-6078, Certificate of Compliance No. USA/6078/AF, 927A1/927C1
Shipping Package – Event Report

A written report is hereby submitted in compliance with 10 CFR 71.95. The written report is for an instance in which the conditions of approval in the Certificate of Compliance for Model **927A1/927C1** (USA/6078/AF) were not observed in making a shipment. The Certificate of Compliance requires that the package be operated in accordance with the application for approval. The specific condition not observed is paragraph 10 of the CoC as follows:

10. In addition to the requirements of Subpart G of 10 CFR Part 71:
 - (a) Each package shall be prepared for shipment and operated in accordance with the "Routine Shipping Container Utilization Summary Operating Procedures," in Chapter 7 of the application, as supplemented; and

During the new fuel receipt the consignee observed the following package conditions:

- (1) Container C5827 had seven (7) loose cover bolts and about a gallon of water on the bottom of the container in a shipment received on February 5, 2007
- (2) Radioactive material label did not contain the transport index (TI) entry for radiation level on all six (6) containers received in a shipment February 2, 2007.

The Certificate of Compliance No. 6078 for the model numbers 927A1 and 927C1 packages specifies that the consignor shall comply with any requirements of the regulations of the U.S. Department of Transportation. The CoC is also conditional upon fulfilling the requirements of 10 CFR Part 71 and conditions specified in the CoC.

** Electronically approved records are authenticated in the Electronic Document Management System.*

Nmss01

After the investigation and examination of internal records and the completion of actions associated with the implementation of the shipment, it was determined that these incidents were limited to a single event with container serial number C5827 and a single shipment of six packages. The package proper shipping name for this package was **Radioactive Material, Type A package, fissile**. The contents was unirradiated uranium dioxide (Uranium enriched less than 20%) nuclear reactor fuel assemblies, normal form material packaged in USA/6078/AF packaging.

A specific, narrative description of the events is included as enclosures. I hereby affirm that the statements made in this report are true and correct to the best of my knowledge and belief. Please contact Peter Vescovi at (803) 647-3167 for any additional information.

Please direct any questions to Peter Vescovi at (803) 647-3167.

Sincerely,

Peter J. Vescovi
WESTINGHOUSE ELECTRIC COMPANY, LLC
Global Supply Chain Management
Transport Licensing and Compliance

Enclosures

1. Event description for 927A1/927C1 (USA/6078/AF) - Loose cover bolts and water inside package
2. Event description for 927A1/927C1 (USA/6078/AF) - Failure of label to contain the transport index

cc with enclosures

Brian Bayley, Director, Transportation Logistics
Norman Kent, Manager, Transport Licensing and Compliance
Mark Rosser, Manager, Environment, Health, and Safety
Cary Alstadt, Operations Manager, Columbia Fuel Fabrication Facility
Dave Petrarca, Manager, Fuel Fabrication
Stuart Brown, Project Manager, NRC Office of Material Safety & Safeguards

Event description for 927A1/927C1 (USA/6078/AF)
Loose cover bolts and water inside package

(1) Summary of event

The CoC does require the package be prepared for shipment and operated in accordance with the Operating Procedures in Chapter 7 of the application. Operating procedures for the package require that the container cover bolts are fastened, but both the Operating Procedures in Chapter 7 of the application and specification for site allow a small amount of water in the package.

The criticality safety case assumes water leakage into the package. Preventing leakage into the package or excluding water from being inside the package is not a condition of the CoC. Cover fasteners that were not fully tightened is a failure to observe conditions of approval in the CoC.

(2) Description of Event

(i) Event Chronology

On Thursday, January 18, 2007, the packing area operator packed shipping container C5827 using approved operating procedures. Shipping Container C5827 was shipped on January 29, 2007 and arrived at the customer's site on January 31, 2007.

On February 5, 2007 during the new fuel receipt the customer observed that shipping container C5827 had seven loose flange bolts on the container. Two of the loose bolts were on the vent end, and five were on the left side facing the vent. Approximately one gallon of water was also observed in the bottom of the shipping container. The responsible Engineer created a Field Anomaly Report and the customer submitted a Vendor Corrective Action Report.

(ii) Process Description

A checklist requires the operator to torque the T-bolts as well as verify that the T-bolts are tight. The operator initialed both of the sections which indicated these actions were completed. A second transport operator independently checked the same bolts for tightness prior to shipping the package.

(iii) Causal Factors

The apparent cause of the loose bolts is that some flanges are warped to the extent that no amount of applied torque will compress the spacers. In transport, due to the excess weight of containers stacked on top of others combined with the forces applied by the hold-down straps, the flange is compressed more, potentially reducing the original torque applied when packed. This could result in the bolts being loosed during

transport. The water in the bottom of the shipping container is possibly due to the loose bolts.

(3) Safety Consequences and Implications of the Event

Approval of the Model 927 package is based on tests conducted to demonstrate compliance with 10 CFR 71 Subpart F-Package, Special Form, and LSA-III Tests. These tests were done using a 927 packaging and contents to simulate an actual fuel assembly. Closure bolts for the container were tightened for normal conditions of transport and hypothetical accident condition tests.

Requirements of 10 CFR Part 71.43, General standards for all packages, specify a package must be designed, constructed, and prepared for shipment so that under the tests specified in § 71.71 ("Normal conditions of transport") there would be no loss or dispersal of radioactive contents, no significant increase in external surface radiation levels, and no substantial reduction in the effectiveness of the packaging.

Improper securing of seven of the fifty-four closure bolts, as occurred for this event, did not significantly reduce the effectiveness of the packaging in preventing damage incident to accident conditions of transport. Though loose, all of the bolts and nuts were in place.

The package would be subcritical for normal transport conditions and hypothetical accident conditions with the seven loose closure bolts. This event did not alter assumptions about the geometric form of the fuel assemblies, spacing between fuel assemblies with the packaging, and spacing between the fuel assemblies and outer surface of the packaging that are assumed in the evaluation of the package.

(4) Corrective Actions

(i) Remedial Actions

Packing operators checked other 927 containers as they were packed and applied torque and found that many of the spacers would spin after the bolts had the required torque applied. (February 12 - 14, 2007)

(ii) Interim Actions

Container C5827 was decommissioned.

(iii) Corrective Actions to Prevent Recurrence

An Apparent Cause Analysis has been performed. (ACA 07-037-C003). Corrective actions are in the process of being determined and will be reported in a supplement to this report.

(5) Previous similar events involving the same packaging

No events have been previously reported involving incorrect configuration of an MCC packaging that are known to Westinghouse Electric Company.

(6) Contact Information

Peter J. Vescovi
WESTINGHOUSE ELECTRIC COMPANY, LLC
Global Supply Chain Management
Transport Licensing and Compliance
Phone: (803) 647-3167
Fax: (803) 695-4164
E-mail: vescovpj@westinghouse.com

(7) Exposure of individuals to radiation or radioactive materials

This event did not result in exposure of individuals to radiation or radioactive material other than allowed for routine transport of radioactive materials in a Type A fissile material package.

Event description for 927A1/927C1 (USA/6078/AF)
Failure of label to contain the transport index

(1) Summary of event

The Radioactive Yellow-II label affixed to six packages failed to contain a value for the transport index.

(2) Description of Event

(i) Event Chronology

On January 31, 2007, a fresh fuel shipment was made to a customer. During fuel receipt on February 2, 2007, the customer reported from the site that the Transport Index (TI) numbers were missing from the radioactive labels on the packages. Container serial numbers C5969, C5962, C5956, C5895, C5879, and C5840 were missing TI on Yellow II labels.

(ii) Process Description

U.S. DOT regulations (49 CFR Part 172, Subpart E-Labeling) require a Radioactive Yellow-II label with the transport index as defined in 49 CFR 173.403 on the label. The transport index designates the maximum radiation level in millirem per hour at 1 m (3.3 feet). A transport index of not more than 10 is allowed for Radioactive Yellow-II label. Transport index determined by direct measurement and documented on the shipping papers for the packages was 0.3.

(iii) Causal Factors

Operator failed to follow procedure that requires recording TI on Radioactive Yellow-II label.

(3) Safety Consequences and Implications of the Event

In addition to identifying the radioactive properties of the contents, the labels also carry more specific information regarding the contents, i.e. the name of the nuclide, or the most restrictive nuclides in the case of a mixture of radionuclides, and the activity. In the case of fissile contents, the mass of fissile material may be substituted for the activity. This information is important in the event of an incident or accident where content information may be needed to evaluate the hazard. Yellow labels also show the TI of the cargo unit (i.e. package, overpack, tank and freight container). The TI information is essential in terms of storage and stowage in that it is used to control the accumulation and assure proper separation of cargo units. The Regulations prescribe limits on the total sum of TIs in such groups of cargo units.

(4) Corrective Actions

(i) Remedial Actions

Peer checking initiated to assure labels are properly completed.

(ii) Interim Actions

Employees responsible for fuel shipment preparation were retrained relative to US DOT requirement for inclusion of transport index information for shipments requiring radioactive II and III labels.

(iii) Corrective Actions to Prevent Recurrence

Review and revise shipping procedure to ensure that TI is on Yellow II labels prior to shipping.

(5) Previous similar events involving the same packaging

No events have been previously reported involving incorrect configuration of an MCC packaging that are known to Westinghouse Electric Company.

(6) Contact Information

Peter J. Vescovi
WESTINGHOUSE ELECTRIC COMPANY, LLC
Global Supply Chain Management
Transport Licensing and Compliance
Phone: (803) 647-3167
Fax: (803) 695-4164
E-mail: vescovpj@westinghouse.com

(7) Exposure of individuals to radiation or radioactive materials

This event did not result in exposure of individuals to radiation or radioactive material other than allowed for routine transport of radioactive materials in a Type A fissile material package.