



HITACHI

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SPM 16-040

October 28, 2016

Attn: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: 10 CFR 71.95- 60 Day Report – Model 2000 Certificate Condition Not Followed

References: 1) NRC Certificate of Compliance (CoC) USA/9228/B(U)F-96, Docket 71-9228
2) GEH Model 2000 Package Authorization Request, 12/12/14 (ML 14351A508)
3) GEH Model 2000 Package Revised Authorization Request, 9/25/15
(ML15268A483, ML15268A480, ML15268A474, ML15268A456, ML15268A449,
ML15268A437, ML15268A438)
4) GEH Model 2000 Package Revised Authorization Request, 10/16/15
(ML15289A176, ML15289A177)
5) GEH Model 2000 Package Authorization Request Revised Pages and RAI
Responses, 1/15/16 (ML15268A437, ML15268A438, ML15268A449,
ML15268A451, ML15268A456, ML15268A474, ML15268A480, ML15268A483)
6) NRC Authorization for Shipment of the Model No. 2000 Package Using the High
Performance Insert to Ship Cobalt 60 Source Rods, 2/11/16

Dear Sir or Madam:

Pursuant to 10 CFR 71.95(a)(3), GE Hitachi Nuclear Energy (GEH) submits this report for discovery of an instance where GEH made a shipment of an NRC approved Type B transportation package that did not conform with conditions of a Letter Authorization dated February 11, 2016 (Reference 6).

On March 10, 2016, GEH made a shipment using the Model 2000 package, serial number 2002 with a package insert that had several nonconformances. The Model 2000 package Letter Authorization (Reference 6) Condition 8 requires acceptance tests that follow the Certificate of Compliance (CoC) and supplemental information in Chapter 8 of the application. The Letter Authorization Condition 9 requires that the package insert be constructed and assembled in accordance with listed licensing drawings. After use and content removal, subsequent inspections beginning on August 31, 2016 indicated that several acceptance tests were not performed in accordance with Condition 8 and several of the package insert characteristics were inconsistent with drawings listed in Condition 9. These nonconformances are associated with the insert and not the Model 2000 package itself.

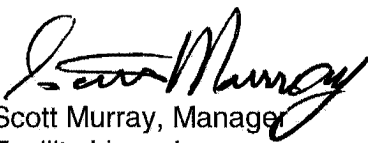
US NRC
SPM 16-040
10/28/16

As discussed in the attached report, there were no identified safety consequences related to this discovery. The package insert and contents remained secured and there was no release of material.

Attachment 1 provides the required details of this report.

If you have any questions regarding this matter, please contact me at (910) 819-5950.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Murray", is written over the typed name and title.

Scott Murray, Manager
Facility Licensing

Commitments: None

Attachment: 1) 10 CFR 71.95- Type B Transportation Package Report (USA/9228/B(U)F-96)

cc: W. C. Allen, USNRC, SFM, Washington, DC

Attachment 1
10 CFR 71.95- Type B Transportation Package Report (USA/9228/B(U)F-96)

ABSTRACT

The Model No. 2000 transportation packaging assembly of interest consists of an overpack and a cask using a High Performance Insert (HPI) and Material Basket to carry Co-60 source rods. Since the HPI and Material Basket are not an authorized content in Certificate of Compliance (CoC) No. 9228, Rev 26, GE Hitachi Nuclear Energy (GEH) requested and received a onetime authorization to ship Co-60 source rods using the Model 2000 containing the HPI and Material Basket. The Model 2000 package Letter Authorization Condition 8 requires acceptance tests in accordance with the CoC and supplemental information in Chapter 8 of the application. The Letter Authorization Condition 9 requires that the HPI and Material Basket be constructed and assembled in accordance with listed licensing drawings.

On March 10, 2016, GEH used the Model 2000 package with an HPI and Material Basket to ship Co-60 source rods to the GEH hot cell facility in Vallecitos, California. After use and content removal, subsequent inspections beginning on August 31, 2016 indicated that several acceptance tests were not performed in accordance with Condition 8 and several of the HPI and Material Basket dimensions exceeded tolerances on drawings listed in Condition 9. There were no component or system failures associated with this event and no identified safety consequences. However, a Condition Report was initiated that contained immediate actions to restrict further use of the HPI and Material Basket and to initiate an investigation into the cause and extent of condition of the identified nonconformances.

A nonconformance with a condition of the authorization in making a shipment was determined to be reportable under 10 CFR 71.95(a)(3).

DESCRIPTION of EVENT

The NRC CoC, Package Identification Number USA/9228/B(U)F-96, Revision 26 issued August 29, 2014 for the Model 2000 package does not include the HPI or Material Basket as an authorized content. On February 11, 2016, NRC issued a onetime authorization to ship Co-60 source rods using the Model 2000 package and the HPI and Material Basket. The Model 2000 package Letter Authorization Condition 8 requires acceptance tests in accordance with the CoC and supplemental information in Chapter 8 of the application. The Letter Authorization Condition 9 requires that the HPI and Material Basket be constructed and assembled in accordance with listed licensing drawings.

In 2015, GEH procured the HPI and Material Basket that were used in first quarter of 2016 with nonconformances which were not evaluated by engineering. Design and fabrication of the HPI and Material Basket were performed under contract between GEH and a prime supplier. Parts of the manufacturing process were further subcontracted by the prime supplier. Contract provisions between GEH and the prime supplier required that any nonconformances with design and manufacturing drawing details be reported to GEH for engineering review and disposition. The prime supplier failed to adequately communicate all identified nonconformances prior to delivery of the purchased product to GEH.

The design and manufacturing drawings contain typical dimensional tolerances for welded and machined components and many of these tolerances were also repeated in the licensing drawings. The intent of tolerances on license drawings is to describe an acceptable range of dimensions and do not necessarily determine safety margin unless a dimension/tolerance is critical to performance of a safety function.

On August 31, 2016, after use and content removal, dimensions taken on the HPI and Material Basket were determined to be outside tolerances shown on licensing drawings. In addition, records for the verification of welds and shielding adequacy did not conform with the process described in Condition 8 of the Letter Authorization. As result, preliminary inspections were initiated to confirm nonconformances improperly noted by the supplier. The identified nonconformances include dimensions, weld design, weld procedures, weld inspections, and acceptance testing.

To date, the following nonconformances have been identified:

- 1) HPI dimensions exceeded tolerances identified on licensing drawings listed in Condition 9 of Reference 6.
- 2) HPI weld design, procedures and inspections did not conform with licensing drawings listed in Condition 9 of Reference 6.
- 3) HPI shielding did not conform with acceptance criteria listed in Condition 8 of Reference 6.
- 4) Material Basket dimensions exceeded tolerances identified on licensing drawings listed in Condition 9 of Reference 6.
- 5) Material Basket weld procedures and inspections did not conform with licensing drawings listed in Condition 9 of Reference 6.

INVESTIGATION RESULTS

An internal GEH investigation determined the HPI and Material Basket supplier did not implement the quality program, as previously reviewed and accepted by GEH. Specifically, nonconformances identified during fabrication were not properly communicated to GEH for disposition and approval prior to use. GEH reviewed and accepted specific designs and procedures, from which the supplier deviated without the concurrence of GEH. GEH supplier oversight and source inspection were inadequate to detect these supplier issues.

The investigation has required development and implementation of non-routine inspection techniques as the HPI and Material Basket were contaminated by use. This has delayed the investigation such that the extent of condition is not complete. A supplemental report will be provided as necessary once full extent of condition is known.

A causal analysis determined the supplier did not fabricate the HPI and Material Basket assemblies in full accordance with a 10 CFR 71 QA Program approved by the USNRC. The supplier did not maintain adequate control of nonconformance reports or design documents. Non-conformances involving tolerances, design changes, repairs and testing were not fully documented or reported to GEH for dispositioning. These specific deficiencies in compliance with 10 CFR 71.113, "Document Control" and 10 CFR 71.115, "Control of Purchased Material, Equipment, and Services" directly contributed to the unauthorized conditions of the transportation package existing at the time of use.

The Control of Purchased Items and Services was not effectively implemented by GEH as the "buyer." Purchase order management and supplier interfaces did not follow the guidance provided in NUREG-6407. The procurement specifications relied on to establish the proper level of quality control during the fabrication of components for the Model 2000 Type B packaging container were inadequate for a first of kind fabrication, with a first use supplier. This problem stems directly from the safety classification of the component. The GEH personnel lacked experience and training in the classification of transportation packaging and the safety classifications for container components. This lack of experience and knowledge resulted in differing and non-conservative interpretations of the extent of quality assurance requirements to invoke; GEH did not request any witness, check or audit during any phases of fabrication. Also, contrary to GEH internal procedures, QA Requirements for Non-Safety Items, was omitted as an attachment. This omission may also have impacted the effectiveness of the source inspection plan and omitted the detailed requirement to notify GEH of non-conformances and to request disposition approvals. Supplier meetings did not include a standing agenda item for the discussion of non-conformances. The supplier was not queried by GEH and did not verbally report non-conformances.

In addition, the supplier did not have the HPI quality package ready for the GEH final source inspection review. The supplier's QA package was compiled during the inspection as the inspector worked through the source inspection plan list. This may have led to the inspector confirming but not verifying the completion of quality documentation, such as the supplier's product quality certification. The GEH inspector missed that non-conformances were identified on the supplier certification and failed to discover the nonconformance reports in the record package.

ASSESSMENT OF SAFETY CONSEQUENCES

There was no identified impact on safety as a result of the event. The package insert and contents remained secured, the containment of the package was not compromised and there was no release of material. Pre-shipment dose measurements were taken before the Model 2000 shipment and showed the measured dose rates were in compliance with 10 CFR 71.47(b).

CORRECTIVE ACTIONS

1. GEH has initiated a condition report (CR) to document the event, investigation and corrective actions.
2. Use of the Model 2000 package with the HPI assembly has been discontinued until resolution of the identified nonconformances is complete.
3. GEH has taken an interim action in accordance with internal supplier approval procedures, to prohibit use of the supplier from future fabrication procurements until such time as the supplier demonstrates the ability to meet regulatory and quality requirements.
4. GEH has issued a temporary instruction to assure personnel are adequately trained and mechanisms are in place to provide management oversight through a purchase order review panel.
5. GEH has completed numerous preliminary inspections of the HPI and Material Basket and will continue those efforts until all necessary inspections are complete.

6. GEH is addressing all identified deviations from licensing drawings listed in Condition 9 of Reference 6 and will revise as necessary.
7. GEH will weld repair the HPI and Material Basket components as necessary.
8. GEH will conduct a gamma scan to confirm the HPI is free of cracks, pinholes, uncontrolled voids, or other defects that could reduce the effectiveness of the HPI shielding. The gamma scan will be completed in accordance with the acceptance testing for uranium shielding specified in Sections 3.1.2 and 3.2.1 of NUREG/CR-3854.

SIMILAR EVENTS

None