



November 6, 2015
TJT:15:037

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
11555 Rockville Pike
One White Flint North
Rockville, MD 20852

Gentlemen:

Subject: Report of Non-Compliance with Condition in Certificates of Compliance 9309 and 9372;
Missing Section of Fillet Weld on the Inner Lid of a Model TN-B1 (former RAJ-II)
Licensed Shipping Container

Attached please find information as required by 10 CFR 71.95(c) relative to the discovery of a short section of missing fillet weld on the inner packaging lid of a Model TN-B1 licensed shipping container. The container has been utilized as both a Model TN-B1 and an RAJ-II packaging and thus the missing section of weld constitutes a non-compliance with the Certificates of Compliance for both containers.

As discussed in the attachment, the short section of missing weld is not safety-significant in that the primary purpose of the weld is to seal the inner packaging lid as opposed to provision of structural strength. As set forth in the attachment, the single implicated container has been repaired and corrective/preventive actions have been identified to fully assess extent of condition and prevent future occurrences.

If you have questions, please feel free to contact me at 509-375-8550.

Sincerely,

A handwritten signature in black ink that reads 'T. J. Tate'.

T. J. Tate, Manager
EHS&L

NHSS01

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Event Information Required by 10 CFR 71.95(c)

- (1) A brief abstract describing the major occurrences during the event, including all component or system failures that contributed to the event and significant corrective action taken or planned to prevent recurrence.

TN-B1 packaging S/N RA/RB-190 was fabricated as an RAJ-II packaging in November 2006 by Columbiana Hi Tech (CHT). During the welding of the lid for inner packaging RB-190, a 1-5/8" long section of fillet weld on the top of the lower side end was not completed by the welder and the subsequent visual inspection by the manufacturer's inspector did not discover that the section of weld was missing.

On December 12, 2006, 34 RAJ-II packagings (including RA/RB-190) were received at AREVA Richland. During the receipt inspection of RA/RB-190 the AREVA inspector failed to detect the 1-5/8" long section of missing fillet weld on the inner container lid. In April of 2007, RAJ-II packaging RA/RB-190 was released for use.

The first shipment of two BWR fuel assemblies using RA/RB-190 occurred in January 2010 to Browns Ferry Unit 3. Since the initial shipment, RA/RB-190 has been used on five different occasions (in December 2010, 2011, 2012, 2013, and 2014) to ship two BWR fuel assemblies per shipment to either Brunswick Unit 1 or Unit 2. Prior to 2014, RA/RB-190 was designated as a Model RAJ-II packaging per NRC Certificate of Compliance (COC) 9309. In the spring of 2014, RA/RB-190 was re-designated as a Model TN-B1 packaging per NRC COC 9372.

On September 29, 2015 during the refurbishment inspection of TN-B1 inner packaging RB-190, an AREVA packaging refurbishment employee noticed that a small length of weld was missing on the end of the inner packaging lid. Packaging RA/RB-190 was taken out of service and an AREVA Condition Report (CR) was written to document the condition. (It should be noted that the unwelded joint was difficult to visually distinguish from the actual fillet weld due to the small size of the weld.)

The missing 1-5/8" section of fillet weld of inner packaging RB-190 is a nonconformance with RAJ-II/TN-B1 license drawing 105E3747 R4 and therefore the five BWR fuel assembly shipments (January 2010 – December 2013) of RA/RB-190 as a Model RAJ-II package were in violation of NRC COC 9309 and the December 2014 shipment of RA/RB-190 as a Model TN-B1 package was in violation of NRC COC 9372. A nonconformance with a condition of the Certificate of Compliance in making a shipment is reportable to the NRC under 10 CFR 71.95(a)(3).

For discussion of corrective actions resulting from this event, see discussion under (4), below.

- (2) A clear, specific, narrative description of the event that occurred so that knowledgeable readers conversant with the requirements of Part 71, but not familiar with the design of the packaging, can understand the complete event. The narrative description must include the following specific information as appropriate for the particular event.

A narrative of the event was provided under (1), above. NRC COC 9309 Revision 9 for the Model RAJ-II, Condition 5(a)(3), requires that the packaging be constructed in accordance with license drawing 105E3747 Rev. 4. NRC COC 9372 Revision 0 for the Model TN-B1, Condition 5(a)(3), also requires that the packaging be constructed in accordance with license drawing 105E3747 Rev. 4. As stated above, five shipments with packaging RA/RB-190 were made in violation of COC 9309 and one shipment of packaging RA/RB-190 was made in violation of COC 9372.

(i) Status of components that were inoperable at the start of the event and that contributed to the event;

There were no inoperable components. As described above, the event involved the shipping of RAJ-II/TN-B1 packaging RA/RB-190 with a small section of fillet weld missing from the inner packaging lid.

(ii) Dates and approximate times of occurrences;

January 2010, AREVA shipment of RAJ-II packaging RA/RB-190 containing two BWR fuel assemblies enriched up to 5.00% to Browns Ferry Unit 3.

December 2010, AREVA shipment of RAJ-II packaging RA/RB-190 containing two BWR fuel assemblies enriched up to 5.00% to Brunswick Unit 2.

December 2011, AREVA shipment of RAJ-II packaging RA/RB-190 containing two BWR fuel assemblies enriched up to 5.00% to Brunswick Unit 1.

December 2012, AREVA shipment of RAJ-II packaging RA/RB-190 containing two BWR fuel assemblies enriched up to 5.00% to Brunswick Unit 2.

December 2013, AREVA shipment of RAJ-II packaging RA/RB-190 containing two BWR fuel assemblies enriched up to 5.00% to Brunswick Unit 1.

December 2014, AREVA shipment of TN-B1 packaging RA/RB-190 containing two BWR fuel assemblies enriched up to 5.00% to Brunswick Unit 2.

(iii) The cause of each component or system failure or personnel error, if known;

The missed section of fillet weld by the fabricator's welder and subsequent inspector's failure to detect the missing section appears to have been caused by an inadequate self-verification process.

The AREVA receipt inspector failed to detect the missing section of weld due to an inadequate scope of the receipt inspection plan.

(iv) The failure mode, mechanism, and effect of each failed component, if known;

There was no failed component; the small section of missing weld was of minor consequence since the weld was primarily to seal the inner lid and provided little structural value.

(v) A list of systems or secondary functions that were also affected for failures of components with multiple functions;

There were no secondary failures associated with this event.

(vi) The method of discovery of each component failure or procedural error.

An AREVA packaging refurbishment employee visually discovered the condition during routine work activities.

(vii) For each human performance-related root cause, a discussion of the causes and circumstances;

The failure of the fabricator to complete the weld or for their visual inspector to detect the missing section of weld appears to have been caused by an inadequate self-verification process at the fabricator.

The failure of the AREVA receipt inspector to detect the missing section of weld was caused by the inadequate scope of the inspection plan which only called for particular welds to be visually inspected 100%, the inner lid welds not being among those inspected.

(viii) The manufacturer and model number (or other identification) of each component that failed during the event;

There were no component failures during the event.

(ix) For events during the use of a packaging, the quantities and chemical and physical forms(s) of the package contents;

The content of RA/RB-190 during each shipment was two BWR fuel assemblies with each assembly containing 181 kg U (362 kg U total) of solid UO₂ pellets enriched to a maximum of 5.0 weight % U-235.

(3) An assessment of the safety consequences and implications of the event. This assessment must include the availability of other systems or components that could have performed the same function as the components and systems that failed during the event.

There were no safety consequences as a result of this event. The fillet weld in question is used to seal the inner packaging lid and the minor amount missing weld did very little to reduce the strength of the inner lid.

(4) A description of any corrective actions planned as a result of the event, including the means employed to repair any defects, actions taken to reduce the probability of similar events occurring in the future;

On October 15, 2015 the missing section of fillet weld was completed on the lid of inner packaging RB-190 by a certified welder per an approved weld procedure, and visually inspected and accepted by an AWS Certified Weld Inspector. TN-B1 inner packaging

RB-190 is now compliant to the TN-B1 license drawing 105E3747 R4 and COC 9372 R0.

All TN-B1 inner packagings are being inspected for the condition during normal refurbishment and loading. No other TN-B1 inner packagings have been found with the condition.

If any new TN-B1 packagings are purchased in the future, the receipt inspection plan will be revised to require visual inspection of all accessible welds during receipt inspection.

(5) Reference to any previous similar events involving the same packaging that are known to the licensee or certificate holder.

AREVA (the certificate holder for COC 9372) is aware of two previous events that occurred when the packagings were licensed under COC 9309. In 2005, CHT reported that certain welds on the rope slings of the RAJ-II outer packagings were undersize. (The license drawing was revised to allow the undersized weld.) In 2006 GNF reported receiving new RAJ-II packagings from CHT with the four inner clamp assemblies missing the four clamp blocks required to be welded to the clamp assemblies. (No RAJ-II packagings received by AREVA from CHT had the reported condition.)

(6) The name and telephone number of the person within the licensee's organization who is knowledgeable about the event and can provide additional information.

*Timothy J. Tate, Manager
Environmental, Health, Safety, & Licensing
AREVA Richland Fuel Fabrication Plant
(509) 375-8550*

(7) The extent of exposure to individuals to radiation or radioactive materials without identification of individuals by name.

This event did not involve the exposure of individuals to radiation or radioactive materials.