

June 22, 2012
REL:12:029



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

Gentlemen:

Subject: Report of Non-Compliance with Conditions in Certificate of Compliance 9248, Revision 19 for the Model No. SP-1, SP-2, and SP-3 Licensed Shipping Containers; AREVA NP Inc. Richland Facility

Attached please find information as required by 10 CFR 71.95(c) pursuant to AREVA's discovery of shipments made from its Richland fuel fabrication facility that did not fully comply with the applicable revision of NRC Certificate of Compliance (COC) 9248 for its Model SP-1, SP-2, and SP-3 licensed shipping containers. Specifically, AREVA discovered three SP-2 inner shipping containers that did not comply with a dimensional characteristic called out on license drawing EMF-304, 416 R14 (a different characteristic for each particular container). These inner containers have been used on multiple occasions to ship enriched uranium fuel assemblies from Richland to its customer in Taiwan. The applicable US Department of Transportation Competent Authority Certification under which these shipments were made is a revalidation of the underlying NRC COC 9248.

As detailed in the attachment, the discrepancies did not materially impact the safety function or performance of the containers during shipment; no component failures or exposures of individuals to radiation or radioactive materials were involved. As such the safety significance of the reported instances of non-compliance is low. The issue has been entered into, and addressed within, AREVA's corrective action program.

If you have questions, please feel free to contact me at 509-375-8409.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Robert L. Link', written over a circular scribble.

R. E. Link, Manager
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Attachment

Event Information Required by 10 CFR 71.95(c) Relative to Shipments of Three SP-2 Packages That Did Not Meet the Requirements of License Drawing EMF-304,416 Rev. 14 in NRC COC 9248

- (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.

As a result of the 1998 NRC audit of the AREVA Richland (Siemens Power Corporation at the time) 10 CFR Part 71 packaging quality program, every NRC licensed shipping container owned or maintained by Richland had to be inspected and found compliant to the applicable license drawings (reconciliation inspections). These 100% inspections included the Taipower-owned (now AREVA-owned) SP-2 inner containers. It was only after a container passed the reconciliation inspection that it was supposed to be released for use.

On May 10, 2012, during a review of the reconciliation paperwork of all SP inner and outer containers, it was discovered that the reconciliation inspection record for SP-2 inner container RI-0561 showed that the container was rejected due to inadequate body stringer height on one side of the container. Also during the review, it was discovered that no reconciliation inspection records could be found for SP-2 inner containers RI-0656 and RI-1168. As a result of these conditions, all three of the SP-2 inner containers underwent a new 100% reconciliation inspection to the requirements of license drawing EMF-304,416 R14. This new inspection confirmed that RI-0561 had a non-conforming body stringer height condition (1.97" compared to the required minimum of 1.997") and as a result the container was scrapped. The inspections of RI-0656 and RI-1168 revealed that each container had an obvious non-conforming condition. RI-0656 was rejected for having end cap lugs on the body of the container that were wider than the maximum 1-5/8" width allowed on the license drawing. RI-1168 was rejected for having non-complaint 1/16" fillet welds (slightly short) on the angle iron pieces on the non-end cap end of the container. The license drawing requires a continuous or intermittent 1/16" fillet weld with a minimum of 3" of weld per side of each angle; the 1/16" fillet weld lengths on the angles for RI-1168 did not add up to 3" per side. The non-conforming conditions for RI-0656 and RI-1168 are easily reworkable. Additional 1/16" weld length has already been added to the non-conforming angles on SP-2 inner container RI-1168, with the container having been reinspected and released for use. SP-2 inner container RI-0656 will have the non-conforming lugs removed and conforming lugs welded on the container to correct the non-conformance.

It appears that SP-2 inner container RI-0561 was inadvertently released in October 1999, when it should have been rejected. In May 2001 it appears that SP-2 inner containers RI-0656 and RI-1168 were inadvertently released without the reconciliation inspections having been performed. New quality releases for all SP inner and outer containers are being required due to these discoveries and only inner and outer SP containers with acceptable reconciliation inspection records will be released for use.

There is little to no safety impact due to the three non-conforming conditions. For SP-2 inner container RI-0561, even though the stringer height on one side (1.97") does not

meet the requirements of license drawing EMF-304,416 R14 for an SP-2 container (1.997" minimum), the stringer height is greater than that required for an SP-3 inner container (1.685" minimum). Since SP-2 containers are only used to ship the allowable SP-3 inner container contents, the fact that the stringer height for RI-0561 was only 1.97" on one side still means that the container met the criticality analysis for the fuel being shipped, which is based on the SP-3 minimum stringer height of 1.685". The wider than allowable end cap attachment lugs on the body of SP-2 inner container RI-0656 had no safety impact, since the wider lugs still performed their safety function of keeping the end cap attached to the body of the inner container. The slightly short total length of the 1/16" fillet welds on the non-end cap end of inner SP-2 container RI-1168 had minimal safety impact. The attached angles on the end of the inner container would still have performed their function during an accident condition.

RI-0561 was used to make eight shipments of BWR fuel assemblies from Richland, Washington to Taiwan since October 1999. RI-0656 was used to make six shipments of BWR fuel assemblies from Richland to Taiwan since September 2003. RI-1168 was used to make four shipments of BWR fuel assemblies to Taiwan since May 2002.

For further 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 Certificate of Compliance (COC) 9248 Revision 19 for the Model Numbers SP-1, SP-2, and SP-3 lists license drawing EMF-304,416 Rev. 14. As described above, SP-2 inner containers RI-0561, RI-0656, and RI-1168 each were non-conforming to the license drawing in a different way when shipments of enriched fuel assemblies were made in violation of COC 9248.

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

As described above, the event involved shipping enriched Type A BWR fuel assemblies in Model SP-2 packagings that were not compliant to license drawing EMF-304,416 Rev. 14. The noncompliances were minor and each package was fully operational during all of the shipments.

(ii) Dates and approximate times of occurrences;

SP-2 inner container RI-0561 was used to ship two BWR fuel assemblies from AREVA NP's Richland, Washington site to Taiwan in October 1999, March 2001, April 2002, September 2004, April 2006, September 2007, May 2009, and November 2010.

SP-2 inner container RI-0656 was used to ship two BWR fuel assemblies from Richland, Washington to Taiwan in September 2003, October 2004, October 2005, September 2007, May 2009, and November 2010.

SP-2 inner container RI-1168 was used to ship two BWR fuel assemblies from Richland, Washington to Taiwan in May 2002, September 2004, September 2007, and May 2009.

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

The exact cause is unknown, but in each case it appears that human error led to the non-compliant inner SP-2 container being mistakenly released. In October 1999, the AREVA release Works Inspector added RI-0561 to the SP-2 and SP-3 container release list when the inspection record shows it was rejected. In May 2001, it appears that an AREVA release Works Inspector added RI-0656 and RI-1168 to the SP-2 and SP-3 container release without having an acceptable inspection record. It should be noted that in each instance multiple SP-2 and SP-3 inner containers were released, which may have contributed to the errors.

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

No failed components were involved in this event.

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

There were no component failures associated with this event.

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

The conditions were found during a review of the SP inner and outer reconciliation inspection records as part of the transition of ownership of the SP container fleet from AREVA NP to Transnuclear.

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

The exact causes are unknown and in all cases appear to be isolated human errors. The cause for inadvertent release of rejected SP-2 inner container RI-0561 may have been due to an on the job distraction. The Works Inspector's desk was located out with the other receipt inspection technicians in an area which could be very noisy at times; the Works Inspector was the area lead so he was prone to be interrupted by the other technicians while he was doing his work; and a large number of SP-2 and SP-3 inner container inspection records were being reviewed at the time the release was made. The cause for the inadvertent release of SP-2 inner containers RI-0656 and RI-1168 without reconciliation records may have been a lack of information validation or verification in that at the time of release, 17 inner SP-2 and SP-3 inner containers were added to the release list without properly verifying that all 17 had acceptable reconciliation inspection records.

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

There were no component failures associated with this event.

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

For the each shipment, the contents consisted of two BWR fuel assemblies, with each assembly containing a maximum of 203 kg of ≤ 5 weight percent ^{235}U solid uranium oxide pellets meeting the requirements of 5(b)(1)(ix) of COC 9248.

(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 little or no safety consequences as a result of these events. The non-compliant stringer height dimension for SP-2 inner container RI-0561 was still within the boundary of the criticality analysis which was based on the smaller SP-3 inner container stringer height. The wider than allowed lugs on SP-2 inner container RI-0656 had no effect on the safety function of the lugs. The slightly shorter 1/16" fillet welds on the angles of the non-end cap end of SP-2 inner container RI-1168 had minimal safety consequences and the angles would have performed their intended function in an accident situation.

(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;

- *SP-2 inner container RI-0561 was taken out of service and scrapped*
- *SP-2 inner container RI-0656 has been taken out of service and the non-compliant lugs will be replaced to meet the requirements of license drawing EMF-304,416 R14, and the container will then be 100% inspected to the reconciliation requirements and be released if acceptable.*
- *SP-2 inner container RI-1168 was reworked to add the required additional 1/16" fillet weld length to the angles. The container was then reinspected to the reconciliation requirements, found acceptable, and released for use.*
- *All of the old SP-1, SP-2, and SP-3 inner and outer container release lists have been cancelled. New release lists have been issued based on, among other things, that each inner and outer SP container released have acceptable reconciliation inspection records.*

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

AREVA NP is unaware of any previous similar events involving the SP-1, SP-2, and SP-3 packagings since the original reconciliation inspections had been completed.

(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.

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(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.