

August 17, 2012  
REL:12:038



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 9196, Revision 26 for the Model UX-30 Licensed Shipping Container; AREVA NP Inc. Richland Facility**

Attached please find information as required by 10 CFR 71.95(c) pursuant to AREVA's discovery of a shipment made from its Richland fuel fabrication facility that did not fully comply with the applicable revision of NRC Certificate of Compliance (COC) 9196 for the Model UX-30 licensed shipping container. Specifically, AREVA discovered that AREVA-owned Model 30B UF<sub>6</sub> cylinder RSB307 had been shipped from Richland with a cylinder plug thread engagement that did not meet the requirements of ANSI N14.1-2001. The attachment further notes that cylinder RSB307 was also shipped in this condition to Richland from USEC (Paducah, KY) in April 2009 and from URENCO (UK) in May 2010. USEC has separately reported to the NRC its April 2009 non-compliant shipment of RSB307.

As detailed in the attachment, NRC Certificate of Compliance 9196, Revision 26, requires in part that the contained 30B cylinder be inspected and maintained in conformance with ANSI N14.1-2001. The cylinder plug in cylinder RSB307 was determined by USEC not to conform to the thread engagement criterion in Section 6.10.6 of the ANSI Standard requiring a minimum of five threads engaged. The safety significance of this issue is low since there was no reported leakage of UF<sub>6</sub> at the plug coupling during the transportation or use of this cylinder. The plug thread engagement 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 'R. E. Link'.

R. E. Link, Manager  
Environmental, Health, Safety, & Licensing

**AREVA NP INC.**

2101 Horn Rapids Road, Richland, WA 99354  
Tel.: 509 375 8100 - [www.aveva.com](http://www.aveva.com)

NM5524

cc: Mary Thomas  
Fuel Facility Inspection Branch 3  
Division of Fuel Facility Inspection  
USNRC Region II  
245 Peachtree Center Avenue, Suite 1200  
Atlanta, GA 30303-1257

Marilyn Diaz  
US Nuclear Regulatory Commission  
6003 Executive Blvd.  
Mail Stop E2C40M  
Rockville, MD 20852

Bernard H. White  
Office of Nuclear Material Safety and Safeguards  
Division of Spent Fuel Storage and Transportation  
6003 Executive Blvd.  
Mail Stop E3 DM2  
Rockville, MD 20852

/mah

Attachment

Event Information Required by 10 CFR 71.95(c) Relative to Shipment of One Model 30B Cylinder with Inadequate Plug Thread Engagement in a UX-30 Packaging (NRC COC 9196)

(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.

*December 17, 1998, AREVA NP Richland installs a plug from Release No. 41687 in AREVA NP-owned cylinder RSB307 during recertification.*

*October 1, 2008, AREVA NP Richland recertifies cylinder RSB307; the plug is not changed during the recertification process.*

*October 22, 2008, AREVA NP Richland ships empty cylinder RSB307 to USEC Paducah, KY site.*

*April 29, 2009, AREVA NP receives full (2218 kg UF<sub>6</sub>) cylinder RSB307 (with 0.71% enrichment) in a UX-30 overpack from USEC. (Reported by USEC to the NRC in GDP 12-1027 dated August 3, 2012.)*

*July 1, 2009, cylinder RSB307 processed in Richland UF<sub>6</sub> autoclave with no problems being reported.*

*November 13, 2009, cylinder RSB307 washed in Richland wash facility; the valve was replaced but the rear plug was not.*

*November 22, 2009, AREVA NP Richland ships empty cylinder RSB307 to URENCO, UK.*

*May 14, 2010, AREVA NP Richland receives full (2235 kg UF<sub>6</sub>) cylinder RSB307 (with 4.8% enrichment) in a UX-30 overpack from URENCO, UK.*

*June 25, 2010, cylinder RSB307 processed in Richland UF<sub>6</sub> autoclave with no problems being reported.*

*May 31, 2012, cylinder RSB307 with a heel, shipped from Richland to the USEC Paducah, KY site in a UX-30 overpack.*

*On June 26, 2012, USEC informed AREVA NP Richland that they had determined during receipt inspection that AREVA NP-owned cylinder RSB307 did not have adequate cylinder plug thread engagement. A minimum of five threads engaged is a requirement of ANSI N14.1-2001, "Uranium Hexafluoride Packaging for Transport," Section 6.10.6. Conformance to this standard is required by Condition 6 of NRC Certificate of Compliance 9196 Revision 26 for the Model UX-30 transportation package. The URENCO shipment from the UK to AREVA NP Richland in 2010 and the AREVA NP Richland shipment to USEC on May 31, 2012 were made in nonconformance with a*

*condition of the Certificate of Compliance for the Model UX-30 overpack, making the shipments reportable 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 Certificate of Compliance (COC) 9196 Revision 26 for the Model UX-30, Condition 6, requires that 30B cylinders be fabricated, inspected and maintained in accordance with American National Standard N14.1-2001. As stated above, USEC determined that AREVA NP-owned cylinder RSB307 had inadequate plug thread engagement and did not meet the ANSI standard. One shipment from URENCO in the UK to AREVA NP Richland of the full 30B cylinder RSB307 in a Model UX-30 packaging and one shipment with a UF<sub>6</sub> heel in the same cylinder in a UX-30 overpack from AREVA NP's Richland, Washington site to USEC in Paducah, KY, were made in violation of COC 9196.*

(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 UF<sub>6</sub> in one 30B cylinder in a Model UX-30 overpack with noncompliant plug thread engagement in the cylinder. Despite the inadequate plug thread engagement, no leakage at the plug coupling of the cylinder was reported during transport or processing.*

(ii) Dates and approximate times of occurrences;

*It appears that two unreported noncompliant shipments of 30B cylinder RSB307 in a Model UX-30 packaging were made:*

- (1) May, 2010, URENCO shipment (full cylinder) from the UK with 4.80% enriched UF<sub>6</sub> to AREVA NP Richland.*
- (2) May 31, 2012, AREVA NP Richland shipment with a 4.80% enriched UF<sub>6</sub> heel to USEC Paducah, KY facility.*

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

*The cause has been determined to be a non-conservative plug thread marking process in that the technique used to mark the fifth thread on the plug did not guarantee that five full threads would actually be engaged when the plug was installed in the cylinder.*

(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.

*USEC discovered the inadequate plug thread engagement in cylinder RSB307 during receipt inspection of the cylinder.*

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

*The cause has been determined to be a non-conservative plug thread marking process in that the technique used to mark the fifth thread on the plug did not guarantee that five full threads would actually be engaged when the plug was installed in the cylinder.*

- (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 May 2010 URENCO UK shipment, the content for cylinder RSB307 was 2,235 kg of 4.80% enriched UF<sub>6</sub>.*

*For the May 2012 AREVA NP shipment, the content for cylinder RSB307 was 1.8 kg of 4.80% enriched UF<sub>6</sub>.*

- (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. At no time was there an indication of leakage of UF<sub>6</sub> during transport or during processing. AREVA NP is not aware of any reports of cylinder plug leakage due to thread engagement issues during transit for any domestic or foreign user of the UX-30 overpack. Even though the plug thread engagement in cylinder RSB307 was outside the required five to eight thread range, the plug installation performed its intended safety function and there were no safety consequences.*

- (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;

*As a result of valve thread engagement instances where AREVA NP Richland had installed the valves, AREVA NP Richland has revised its valve and plug thread marking technique to assure that at a minimum seven full valve threads and five full plug threads are engaged.*

*Note: USEC cannot replace the plug and cannot ship the cylinder in its current nonconforming state without a special permit issued by the US Department of Transportation (DOT). At some time in the future AREVA NP will request a special permit from DOT to allow shipment of the cylinder in its nonconforming state.*

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

*AREVA NP is aware of at least six instances where USEC has identified six 30B cylinders that had inadequate valve thread engagements in which AREVA NP had installed the valves in non-AREVA owned cylinders. The valve installation dates for these cylinders range from August 10, 2007 to November 25, 2008.*

*On February 29, 2012 AREVA reported a similar event to the NRC dealing with AREVA NP owned cylinder EX775.*

*On June 21, 2012 AREVA reported a similar event to the NRC dealing with AREVA NP owned cylinders EX225 and EN3737; this report is being supplemented to add AREVA NP cylinders AGIP7948, ANF921, EN3720, EX212, EX806, and EX847.*

*This is the only known event involving an AREVA NP owned cylinder with an inadequate plug thread engagement.*

*AREVA NP is currently unaware of any other 30B cylinders, full or with a heel, having been shipped from Richland in a UX-30 overpack with a non-compliant thread engagement plug.*

(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.

*Robert E. Link, Manager  
Environmental, Health, Safety, & Licensing  
AREVA Richland Fuel Fabrication Plant  
(509) 375-8409*

(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.*