

February 29, 2012  
REL:12:014



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 shipments 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 on two occasions an AREVA-owned Model 30B UF<sub>6</sub> cylinder EX775, with valve thread engagement that did not meet the requirements of ANSI N14.1-2001, was shipped with a heel quantity of UF<sub>6</sub> in an NRC approved UX-30 packaging from AREVA's Richland facility. EX775 is one of the cylinders covered in the United States Enrichment Corporation's (USEC) February 24, 2012 10 CFR 71.95 report letter GDP 12-1010 to the NRC (identified as EX0775 in the letter).

As detailed in the attachment, NRC Certificate of Compliance 9196 Revision 26, Condition 6, requires in part that the contained 30B cylinder be inspected and maintained in conformance with ANSI N14.1-2001. The valve in cylinder EX775 was determined by USEC not to conform to the thread engagement criterion in Section 6.10.6 of the ANSI Standard in that at least eight threads were exposed, indicating that less than the minimum seven threads were engaged. The safety significance of this issue is low since there was no reported leakage of UF<sub>6</sub> at the valve cylinder coupling during transportation or use of this cylinder. This 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 Link', written over a horizontal line.

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

NH5501

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

Stan Echols  
US Nuclear Regulatory Commission  
6003 Executive Blvd.  
Mail Stop E2C40  
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

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## Attachment

### Event Information Required by 10 CFR 71.95(c) Relative to Shipments of a 30B Cylinder with Inadequate Valve 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.

*June 17, 2010, AREVA NP Richland installs a Cameron valve in AREVA NP-owned cylinder EX775 during recertification; per the Recertification Follower for EX775, 8 valve threads were engaged in the cylinder.*

*July 2, 2010, cylinder EX775 shipped as a UN2908 empty cylinder to an AREVA enrichment facility in France.*

*October 12, 2010, the AREVA enrichment facility in France ships cylinder EX775 full with natural UF<sub>6</sub> in a Model UX-30 packaging to the AREVA NP Richland, WA site.*

*November 12, 2010, cylinder EX775 received full (in a UX-30 overpack) with natural UF<sub>6</sub> from the AREVA French enrichment facility.*

*February 23, 2011, cylinder EX775 processed in Richland UF<sub>6</sub> autoclave with no problems being reported.*

*March 23, 2011, cylinder EX775 with a natural heel shipped from Richland to the USEC Paducah, KY site in a UX-30 overpack.*

*July 20, 2011, cylinder EX775 received full with natural UF<sub>6</sub> from USEC (in a UX-30 overpack).*

*October 12, 2011, cylinder EX775 processed in Richland UF<sub>6</sub> autoclave with no problems being reported.*

*December 17, 2011, cylinder EX775 with natural heel shipped from Richland to USEC in a UX-30 overpack.*

*On December 30, 2011, USEC informed AREVA NP Richland that they had determined that AREVA NP-owned cylinder EX775 (identified as EX0775 in USEC letter GDP 12-1010, dated February 24, 2012 to the NRC) did not have adequate cylinder valve thread engagement. A minimum of seven 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. As determined by USEC, cylinder EX775 was shipped by USEC in certain of the above mentioned shipments (identified in USEC letter GDP-12-1010) with more than seven valve threads exposed, indicating that less than a minimum of seven threads were engaged. A nonconformance with a condition of the Certificate of Compliance in making a shipment is reportable under 10 CFR 71.95(a)(3).*

*It should be noted that USEC informed AREVA that the valve with inadequate thread engagement in cylinder EX775 was a Cameron valve however the Cameron lot number for the non-compliant valve does not match the Cameron valve lot number installed by AREVA NP in Richland when last recertified or any other Richland purchased Cameron valve lot, it is unknown when or where the non-compliant valve was installed in cylinder EX775.*

*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 EX775 had inadequate valve thread engagement and did not meet the ANSI standard. Two natural UF<sub>6</sub> heel shipments of 30B cylinder EX775 in Model UX-30 packagings were made from AREVA NP's Richland Washington site to USEC in Paducah, KY, both 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 natural UF<sub>6</sub> in a 30B cylinder in a Model UX-30 overpack with noncompliant valve thread engagement in the cylinder. Despite the inadequate valve thread engagement, no leakage at the valve coupling of the cylinder was reported.*

(ii) Dates and approximate times of occurrences;

*It appears that two noncompliant AREVA NP shipments of 30B cylinder EX775 in a Model UX-30 packaging were made:*

*(1) March 23, 2011, AREVA NP shipment with natural UF<sub>6</sub> heel to USEC Paducah, KY facility.*

*(2) December 17, 2011. AREVA NP shipment with natural 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 exact cause is unknown; the Cameron valve in question was not installed by AREVA NP Richland. Richland has been involved in instances where valves were installed in cylinders and it had been determined later that they had inadequate thread*

*engagement. The cause in all these cases has been determined to be a non-conservative valve thread marking process in that the technique used to mark the seventh thread on the valve did not guarantee that seven full threads would actually be engaged when the valve 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 thread engagement in cylinder EX775 during receipt inspection of the cylinder.*

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

*The cause for the inadequate thread engagement for cylinder EX775 is unknown since AREVA NP did not install the valve.*

(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 each AREVA shipment the contents of cylinder EX775 was 1 kg (a heel) of natural 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 valve leakage due to thread engagement issues during transit for any domestic user of the UX-30 overpack. Even though the valve thread engagement in cylinder EX775 was outside the required seven to twelve thread range, the valve 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;

- *With AREVA NP's permission, USEC replaced the valve in cylinder EX775 on January 18, 2012.*
- *As a result of other valve thread engagement instances where AREVA NP Richland had installed the valves, AREVA NP Richland has revised its valve thread marking technique to assure that at a minimum seven full valve threads are engaged.*

(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 the non-AREVA owned cylinders. The valve installation dates for these cylinders range from August 10, 2007 to November 25, 2008.*

*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 valve.*

(6) The name and telephone number of the person with 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.*