

June 21, 2012  
REL:12:028



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 both to and 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 AREVA-owned Model 30B UF<sub>6</sub> cylinders EX225 and EN3737 were shipped with valve thread engagements that did not meet the requirements of ANSI N14.1-2001. The first shipment involved UF<sub>6</sub> cylinders EX225 and EN3737 being shipped by an AREVA affiliate to Richland while full of 4.8% enriched UF<sub>6</sub>. The second occasion involved these same two cylinders being shipped by AREVA Richland to the USEC Paducah plant while containing 4.8% enriched heel quantities of UF<sub>6</sub>.

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 valves in cylinders EX225 and EN3737 were 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 couplings during transportation or use of these cylinders. 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 'R. E. Link'.

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

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## Attachment

### Event Information Required by 10 CFR 71.95(c) Relative to Two Shipments of Two 30B Cylinders 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.

*March 17, 2011, AREVA NP Richland installs a Cameron valve from SAP Release No. 27589 in AREVA NP-owned cylinder EX225 during recertification; per the Recertification Follower for EX225, 8 valve threads were engaged in the cylinder.*

*April 6, 2011, AREVA NP Richland installs a Cameron valve from SAP Release No. 33703 in AREVA NP-owned cylinder EN3737 in the cylinder wash area; per the Wash Only Follower for EN3737, 7 valve threads were engaged in the cylinder.*

*May 1, 2011, AREVA NP Richland ships empty cylinders EX225 and EN3737 to AREVA NC enrichment plant in France.*

*August 24, 2011, AREVA NC in France ships full cylinders EX225 and EN3737 (with 4.80% enrichment  $UF_6$ ) in UX-30 overpacks to AREVA NP Richland.*

*September 27, 2011 AREVA NP Richland receives cylinders EX225 and EN3737 (in UX-30 overpacks) from the AREVA NC French enrichment facility.*

*December 17, 2011, cylinder EN3737 processed in Richland  $UF_6$  autoclave with no problems being reported.*

*December 19, 2011, cylinder EX225 processed in Richland  $UF_6$  autoclave with no problems being reported.*

*April 26, 2012, cylinders EX225 and EN3737, each with a heel, shipped from Richland to the USEC Paducah, KY site in UX-30 overpacks.*

*On May 10, 2012, USEC informed AREVA NP Richland that they had determined during receipt inspection that AREVA NP-owned cylinders EX225 and EN3737 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. The AREVA NC shipment from France to AREVA NP Richland in 2011 and the AREVA NP Richland shipment to USEC on April 26, 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 cylinders EX225 and EN3737 had inadequate valve thread engagement and did not meet the ANSI standard. One shipment from AREVA NC in France to AREVA NP Richland of full 30B cylinders EX225 and EN3737 in Model UX-30 packagings and one shipment of UF<sub>6</sub> heels in the same cylinders in UX-30 overpacks 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 two 30B cylinders in Model UX-30 overpacks with noncompliant valve thread engagement in the cylinders. Despite the inadequate valve thread engagement, no leakage at the valve coupling of either cylinder was reported during transport or processing.*

(ii) Dates and approximate times of occurrences;

*It appears that two noncompliant AREVA shipments of 30B cylinders EX225 and EN3737 in a Model UX-30 packaging were made:*

- (1) August 24, 2011, AREVA NC shipment (full cylinders) from France with 4.80% enriched UF<sub>6</sub> to AREVA NP Richland.*
- (2) April 26, 2012, AREVA NP Richland shipment with 4.80% enriched UF<sub>6</sub> heels 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 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 cylinders EX225 and EN3737 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 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.*

- (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 August 2011 AREVA NC shipment, the contents for cylinder EX225 was 2,102 kg of 4.80% enriched UF<sub>6</sub> and for cylinder EN3737 was 2,203 kg of 4.80% enriched UF<sub>6</sub>.*

*For the April 2012 AREVA NP shipment, the contents for cylinder EX225 was 1 kg of 4.80% enriched UF<sub>6</sub> and for cylinder EN3737 was 0.2 kg of 4.80% 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 or foreign user of the UX-30 overpack. Even though the valve thread engagements in cylinders EX225 and EN3737 were 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 will replace the valves in cylinders EX225 and EN3737.*
- *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 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.*

*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 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.*