

August 17, 2012  
REL:12:039



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: Supplemental Reporting of Additional Instances 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**

Ref. 1. Letter, RE Link to USNRC; 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; June 21, 2012

Via the referenced letter, AREVA NP Inc. (AREVA) conveyed a report per 10 CFR 71.95 of two shipments of Model 30B UF<sub>6</sub> cylinders that did not fully comply with the applicable revision of the NRC Certificate of Compliance (COC) 9196 for the Model UX-30 licensed overpack container. This current report is being provided as a supplement to the June 21, 2012 referenced report to inform the NRC of AREVA's discovery of an additional four shipments involving one or more of six different Model 30B cylinders that did not fully comply with the COC for the Model UX-30 overpack being utilized. As in the case of the prior two reported shipments in the referenced report, the cause of the non-compliance was inadequate valve thread engagement in the Model 30B UF<sub>6</sub> cylinders per the criteria in ANSI N14.1-2001, "Uranium Hexafluoride Packaging for Transport."

The cause and corrective actions for these non-compliant shipments are consistent with those reported in the earlier referenced report. Once again, the safety significance of this issue is low in that in no case was there any leakage of UF<sub>6</sub> at the valve cylinder couplings during transportation or use of the implicated cylinders. These most recent instances of this issue are being managed within AREVA's corrective action program. The attachment to this letter provides the information required by 10 CFR 71.95(c) relative to these non-compliant shipments.

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'.

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

NM5524

**AREVA NP INC.**

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## Attachment

### Event Information Required by 10 CFR 71.95(c) Relative to Four Shipments Involving Six Different 30B Cylinders with Inadequate Valve Thread Engagement in UX-30 Packagings (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.

#### Cylinder AGIP7948

- *May 20, 2010 valve installed in Wash Facility, 7 threads engaged per follower.*
- *June 24, 2010 cylinder shipped from Richland as empty to USEC.*
- *December 8, 2010 cylinder received as full (4.8% enriched) from USEC.*
- *January 13, 2011 cylinder processed in autoclave without problem.*
- *May 31, 2012 heeled cylinder shipped from Richland in UX-30 overpack to USEC.*
- *June 26, 2012 USEC informs AREVA that AGIP7948 has inadequate valve thread engagement.*

#### Cylinder ANF921

- *June 30, 2010 valve installed in Wash Facility, 7 threads engaged per follower.*
- *July 15, 2010 cylinder shipped from Richland as empty to USEC.*
- *January 4, 2011 cylinder received as full (2.6% enriched) from USEC.*
- *May 13, 2011 cylinder processed in autoclave without problem.*
- *June 28, 2012 heeled cylinder shipped from Richland in UX-30 overpack to USEC.*
- *July 13, 2012 USEC informs AREVA that ANF921 has inadequate valve thread engagement.*

#### Cylinder EN3720

- *June 30, 2010 valve installed in Wash Facility, 7 threads engaged per follower.*
- *July 15, 2010 cylinder shipped from Richland as empty to USEC.*
- *January 4, 2011 cylinder received as full (3.2% enriched) from USEC.*
- *March 2, 2011 cylinder processed in autoclave without problem.*
- *June 26, 2012 heeled cylinder shipped from Richland in UX-30 overpack to USEC.*
- *July 13, 2012 USEC informs AREVA that EN3720 has inadequate valve thread engagement.*

#### Cylinder EX212

- *April 9, 2010 valve installed in Wash Facility, 7 threads engaged per follower.*
- *April 30, 2010 cylinder shipped from Richland as empty to USEC.*
- *October 11, 2010 cylinder received as full (4.6% enriched) from USEC.*
- *June 6, 2012 cylinder processed in autoclave without problem.*

- *June 26, 2012 heeled cylinder shipped from Richland in UX-30 overpack to USEC.*
- *July 13, 2012 USEC informs AREVA that EX212 has inadequate valve thread engagement.*

Cylinder EX806

- *March 17, 2011 valve installed in Recert Facility, 8 threads engaged per follower.*
- *May 1, 2011 cylinder shipped from Richland as empty to USEC.*
- *September 26, 2011 cylinder received as full (2.1% enriched) from USEC.*
- *June 6, 2012 cylinder processed in autoclave without problem.*
- *June 29, 2012 heeled cylinder shipped from Richland in UX-30 overpack to USEC.*
- *July 13, 2012 USEC informs AREVA that EX806 has inadequate valve thread engagement.*

Cylinder EX847

- *March 7, 2011 valve installed in Wash Facility, 7 threads engaged per follower.*
- *May 1, 2011 cylinder shipped from Richland as empty to USEC.*
- *September 26, 2011 cylinder received as full (4.8% enriched) from USEC.*
- *December 12, 2011 cylinder processed in autoclave without problem.*
- *May 31, 2012 heeled cylinder shipped from Richland in UX-30 overpack to USEC.*
- *June 26, 2012 USEC informs AREVA that EX847 has inadequate 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 four AREVA NP Richland shipments to USEC listed above 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 AGIP7948, ANF921, EN3720, EX212, EX806 and EX847 had inadequate valve thread*

engagement and did not meet the ANSI standard. Four separate shipments of UF<sub>6</sub> heels involving one or more of the above 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 six 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 any of the cylinders was reported during transport or processing.*

(ii) Dates and approximate times of occurrences;

*It appears that the four noncompliant AREVA shipments involving one or more of the six non-compliant 30B cylinders in a Model UX-30 packaging were made:*

- (1) May 31, 2012, AREVA NP shipment of 4.8% enriched UF<sub>6</sub> heels to USEC Paducah, KY facility (cylinders AGIP7948 and EX847).*
- (2) June 26, 2012, AREVA NP shipment of 3.2% and 4.6% enriched UF<sub>6</sub> heels to USEC Paducah, KY facility (cylinders EN3720 [3.2%] and EX212 [4.6%]).*
- (3) June 28, 2012, AREVA NP shipment of 2.6% enriched UF<sub>6</sub> heel to USEC Paducah, KY facility (cylinder ANF 921).*
- (4) June 29, 2012, AREVA NP Richland shipment with 2.1% enriched UF<sub>6</sub> heel to USEC Paducah, KY facility (cylinder EX806).*

(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 the six cylinders during receipt inspection of the cylinders.*

(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 May 31, 2012 AREVA NP shipment, the contents for cylinder AGIP7948 was 1.6 kg of 4.8% enriched UF<sub>6</sub> and for cylinder EX847 was 1 kg of 4.8% enriched UF<sub>6</sub>.*

*For the June 26, 2012 AREVA NP shipment, the contents for cylinder EN3720 was 1.4 kg of 3.2% enriched UF<sub>6</sub> and for cylinder EX212 was 2.2 kg of 4.8% enriched UF<sub>6</sub>.*

*For the June 28, 2012 AREVA NP shipment, the contents for cylinder ANF921 was 2.6 kg of 2.6% enriched UF<sub>6</sub>.*

*For the June 29, 2012 AREVA NP shipment, the contents for cylinder EX806 was 0.6 kg of 2.1% 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 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 the six cylinders 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 the six affected cylinders.*
- *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.*

*On June 21, 2012 AREVA reported a similar event to the NRC dealing with AREVA NP owned cylinders EX225 and EN3737 (this current report is a supplement to the June 21, 2012 report).*

*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.*