



December 9, 2014  
E-40448

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852

**Subject:** Application for Revision 8 to Certificate of Compliance No. 9301, Docket 71-9301, for the Model TNF-XI

**References:** Certificate of Compliance No. 9301; Docket 71-9301, Revision 7, dated March 7, 2014  
Safety Analysis Report (SAR), "TNF-XI Package", Revision 10

In accordance with the requirements of 10 CFR 71, Subpart D, AREVA Inc. herewith submits an application to revise the Certificate of Compliance (CoC) for the TNF-XI packaging. This revision is for the addition of a separate content. There are no changes to the packaging design, acceptance tests, or maintenance programs.

This submittal contains the following enclosures:

- Enclosure 1 provides a description of each safety analysis report (SAR) proposed page change, the reason for the change and the associated justification.
- Enclosure 2 provides the replacement pages for the proprietary version of the SAR.
- Enclosure 3 provides the replacement pages for the non-proprietary version of the SAR.
- Enclosure 4 is a markup of Revision 7 of CoC No. 9301 for the proposed changes discussed in Enclosure 1.
- Enclosure 5 provides a listing of the computer files contained in Enclosure 6.
- Enclosure 6 is a separate DVD containing the computer files.
- Enclosure 7 provides an affidavit, in accordance with 10 CFR 2.390, specifically requesting that the proprietary information included in Enclosure 2 and Enclosure 6 of this submittal be withheld from public disclosure. That information may not be used for any purpose other than to support the review of the application for revision to the TNF-XI CoC. A non-proprietary version of Enclosure 2 is provided in Enclosure 3. Since Enclosure 6 is entirely proprietary, there is no corresponding non-proprietary version.

The changed areas in the SAR are marked as follows:

- Changed areas are indicated using revision bars in the right-hand margin. Newly inserted or changed text is shown by italics.

AREVA Inc. respectfully requests an expedited review and issuance of Revision 8 of the TNF-XI CoC on or before February 24, 2015, to support an early March 2015 shipment.

## **AREVA TN**

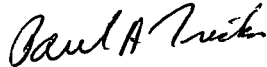
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Should the NRC staff require additional information to support review of this application, please do not hesitate to contact Mr. Glenn Mathues at 410-910-6538 or me at 410-910-6820.

Sincerely,



Paul Triska  
Vice President, Technical Services

cc: John A. Vera, U.S. Nuclear Regulatory Commission

- One electronic copy (DVD) of this letter and Enclosures 1 through 5 and 7
- One electronic copy (DVD) of the Computer Files (Enclosure 6)

M. Conroy U.S. Department of Transportation (this letter and Enclosures 1 through 5 and 7, via email)

Enclosures:

1. List, Description, and Justification of Changes
2. Replacement Pages for the TNF-XI SAR, Revision 11 (Proprietary Version)
3. Replacement Pages for the TNF-XI SAR, Revision 11 (Non-Proprietary Version)
4. Proposed Changes to CoC 9301, Revision 7
5. Listing of Computer Files Contained in Enclosure 6
6. One electronic copy (DVD) of the Computer Files (Proprietary)
7. Affidavit Pursuant to 10 CFR 2.390

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**AREVA TN**

## **Enclosure 1 to E-40448**

### **List, Description, and Justification of Changes**

**List, Description, and Justification of Changes**  
(Safety Analysis Report, TNF-XI, Revision 11)

<u>Item</u>	<u>Section</u>	<u>Description and Justification</u>
1.	1.1	<p>Added the sentence "The uranium oxide powder may contain impurities (powder scrap). The aluminum and carbon impurities in the uranium oxide powder shall not exceed 5,000 ppm and 10,000 ppm, respectively" at the end of the 3<sup>rd</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
2.	1.2.3	<p>Added "The TNF-XI is also loaded with radioactive contents constituted of unirradiated uranium oxides (UO<sub>2</sub>, UO<sub>3</sub> and U<sub>3</sub>O<sub>8</sub>) as powder scrap enriched to a maximum of 5% containing impurities such as aluminum and carbon not exceeding 5,000 ppm and 10,000 ppm, respectively. The maximum weight of the uranium oxides payload is 300 kg. The fissile material is completely enclosed in pails, which are stacked inside four inner wells of the packaging body. Each inner well is closed by a primary lid and an upper plug." as a new paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
3.	6.1	<p>Added "Appendix A.6 includes" and deleted "is documented in Appendix A.6" in the 3<sup>rd</sup> sentence in the 5<sup>th</sup> paragraph.</p> <p>Justification: Editorial clarification.</p>
4.	6.1	<p>Added "and in the presence of impurities such as aluminum and carbon not exceeding 5,000 ppm and 10,000 ppm, respectively, in the UO<sub>2</sub> powder content" at the end of the 3<sup>rd</sup> sentence in the 5<sup>th</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
5.	A.6.1.1	<p>Added the sentence "The UO<sub>2</sub> powder may contain impurities (powder scrap). The aluminum and carbon impurities in the UO<sub>2</sub> powder shall not exceed 5,000 ppm and 10,000 ppm, respectively" after the 5<sup>th</sup> sentence.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
6.	A.6.1.2	<p>Changed from "TNX-XI" to "TNF-XI".</p> <p>Justification: Typographical error.</p>

**List, Description, and Justification of Changes**  
(Safety Analysis Report, TNF-XI, Revision 11)

<u>Item</u>	<u>Section</u>	<u>Description and Justification</u>
7.	A.6.1.2	<p>Added the sentence "Criticality calculations are performed for UO<sub>2</sub> powder scrap, including impurities as specified in ASTM C 753 [7], and conservatively specified as aluminum and carbon not exceeding 5,000 ppm and 10,000 ppm, respectively." At the end of the 1<sup>st</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
8.	A.6.1.2	<p>Added "and powder scrap" at the end of the 1<sup>st</sup> sentence in the 4<sup>th</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
9.	A.6.1.2	<p>Added the following sentence "The criticality calculations performed for UO<sub>2</sub> powder scrap including impurities, as specified in ASTM C753 [7], and conservatively specified as aluminum and carbon not exceeding 5,000 ppm and 10,000 ppm, respectively, demonstrate that the impact of the impurities is negligible. The difference in reactivity between UO<sub>2</sub> powder and UO<sub>2</sub> powder scrap with conservative aluminum and carbon impurities not exceeding 5,000 ppm and 10,000 ppm, respectively, is statistically insignificant. Regarding the possible presence of the other impurities as specified in ASTM C753 [7], their impact on the reactivity is either insignificant or even beneficial." at the end of the 4<sup>th</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
10	A.6.2	<p>Added "(and powder scrap)" within the 1<sup>st</sup> sentence in the 4<sup>th</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
11	A.6.3.2	<p>Added the following sentence "For powder scrap, the fuel mixture includes impurities, as defined in ASTM C753 [7] or, conservatively as aluminum and carbon not exceeding 5,000 ppm and 10,000 ppm, respectively." at the end of the 2<sup>nd</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
12	A.6.4.1	<p>Added "and Powder Scrap" after the word Powder in the title of this section.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>

**List, Description, and Justification of Changes**  
(Safety Analysis Report, TNF-XI, Revision 11)

<u>Item</u>	<u>Section</u>	<u>Description and Justification</u>
13	A.6.4.1	<p>Added the following sentence "For impurity analysis, the fuel mixture includes impurities as defined in the ASTM C753 [7] or impurities such as aluminum and carbon not exceeding 5,000 ppm and 10,000 ppm, respectively." at the end of the 2<sup>nd</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
14	A.6.4.1	<p>Added "and powder scrap" after the word powder in the 1<sup>st</sup> sentence of the 4<sup>th</sup> paragraph.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
15	A.6.9	<p>Added reference 7: ASTM C753-04, "Standard Specification for Nuclear-Grade, Sinterable Uranium Dioxide Powder", June 2009.</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
<u>Item</u>	<u>Table</u>	<u>Description and Justification</u>
16	A.6-1	<p>Revised this table format and data for three classes of content material: Powder, Powder Scrap with ASTM C753 Impurities, and Powder Scrap with 5,000 ppm Aluminum and 10,000 ppm Carbon Impurities (Maximum).</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
17	A.6-3	<p>Revised the heading of 2<sup>nd</sup> column to include "and Powder Scrap<sup>1</sup>" and added the following footnote "1- Powder scrap defined as powder with impurities as aluminum and carbon not exceeding 5,000 ppm and 10,000 ppm, respectively."</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
18	Table A.6-6 through Table A.6-12	<p>For each table: Revised the table format and data for three classes of content material: Powder, Powder Scrap with ASTM C753 Impurities, and Powder Scrap with 5,000 ppm Aluminum and 10,000 ppm Carbon Impurities (Maximum).</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>

**List, Description, and Justification of Changes**  
(Safety Analysis Report, TNF-XI, Revision 11)

<u>Item</u>	<u>Table</u>	<u>Description and Justification</u>
19	Table A.6-25 through Table A.6-31	<p>For each table: Revised the table format and data for three classes of content material: Powder, Powder Scrap with ASTM C753 Impurities, and Powder scrap with 5,000 ppm Aluminum and 10,000 ppm Carbon Impurities (Maximum).</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
20	Table A.6-46 through Table A.6-52	<p>For each table: Revised the table format and data for three classes of content material: Powder, Powder Scrap with ASTM C753 Impurities, and Powder Scrap with 5,000 ppm Aluminum and 10,000 ppm Carbon Impurities (Maximum).</p> <p>Justification: The addition of a new content, UO<sub>2</sub> powder, containing impurities.</p>
<u>Item</u>	<u>Section</u>	<u>Description and Justification</u>
21	7.1	<p>Added the term “(items)” and “specifically on the <i>List of Material Table</i>” within this paragraph.</p> <p>Justification: Provide clarification on the term used in association with packaging components and the location of the listing of packaging components.</p>
22	7.2	<p>Added the term “(items)” and “specifically on the <i>List of Material Table</i>” within this paragraph.</p> <p>Justification: Provide clarification on the term used in association with packaging components and the location of the listing of packaging components.</p>
23	7-2	<p>Revised step 7.2.1.1 to say “Position the vehicle for unloading.”</p> <p>Justification: The containers are shipped in an ISO container and the ISO container is not unloaded using a dock.</p>
<u>Item</u>	<u>Page</u>	<u>Description and Justification</u>
24	7-1	<p>Changed the footer note: from “1-1-97” to “current”.</p> <p>Justification: The specified year of the 49 CFR Regulations is not required.</p>
25	7-3	<p>Changed the footer note: from “1-1-97” to “current”.</p> <p>Justification: The specified year of the 49 CFR Regulations is not required.</p>