



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

February 6, 2015

Mr. Paul Triska  
Vice President, Technical Services  
AREVA Inc.  
7135 Minstrel Way, Ste. 300  
Columbia, MD 21045

SUBJECT: REVISION NO. 8 OF CERTIFICATE OF COMPLIANCE NO. 9301, DOCKET  
NO. 71-9301

Dear Mr. Triska:

By letter dated December 9, 2014, you requested amendment to add a new content, UO<sub>2</sub> powder containing impurities, to Certificate of Compliance No. 9301. As requested by your application, enclosed is Certificate of Compliance No. 9301, Revision No. 8, for the Model No. TNF-XI transportation package. Changes made to the enclosed certificate are indicated by vertical lines in the margin. The staff's safety evaluation report is also enclosed.

Those on the attached list have been registered as users of the package under the general license provisions of 10 CFR 71.17 or 49 CFR 173.471. The approval constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471.

If you have any questions regarding this certificate, please contact me or John Vera of my staff at (301) 287-9165.

Sincerely,

/RA/

Michele Sampson, Chief  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9301  
TAC No. L24973

Enclosures: 1. Certificate of Compliance  
No. 9301, Rev. No. 8  
2. Safety Evaluation Report  
3. Registered Users List

Upon removal of Enclosure 3, this  
document is uncontrolled

cc w/encls 1 & 2: R. Boyle, Department of Transportation  
J. Shuler, Department of Energy c/o L.F. Gelder  
Registered Users

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**ADAMS P8 Package No.: ML15041A196 ADAMS P8 Letter No.: ML15041A203**

**Coc: ML15041A222 Enclosure 3: ML15041A240**

<b>OFC:</b>	SFM	SFM	SFM	SFM	SFM
<b>NAME:</b>	JVera	MDeBose	JSmith	MRahimi	MSampson
<b>DATE:</b>	2/2/2015	2/2/2015	2/2/2015	2/2/2015	2/6/2015

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**SAFETY EVALUATION REPORT**  
**Docket No. 71-9301**  
**Model No. TNF-XI**  
**Certificate of Compliance No. 9301**  
**Revision No. 8**

## **SUMMARY**

By letter dated December 9, 2014, AREVA Inc., (AREVA) requested an amendment to Certificate of Compliance No. 9301, for the Model No. TNF-XI transportation package. The letter requested adding a new content, UO<sub>2</sub> powder containing impurities. The certificate has been updated to Revision No. 8 to reflect the changes.

## **EVALUATION**

The contents requested to be added do not exceed the mass limits of Revision No. 7 of the Certificate, nor do they require any changes in the evaluation of package performance in the areas of structural, materials, thermal, or shielding.

### **Criticality Evaluation**

The applicant requested inclusion of impurities (i.e., powder scrap), as allowable contents in the TNF-XI shipping container when shipping unirradiated uranium oxides. The uranium oxides, which include UO<sub>2</sub>, UO<sub>3</sub> and U<sub>3</sub>O<sub>8</sub>, are powdered scrap that is enriched to a maximum of 5.0 weight percent and may contain impurities primarily consisting of aluminum and carbon. These impurities are not allowed to exceed 5,000 ppm for aluminum and 10,000 ppm for carbon. The maximum weight allowed as payload in the TNF-XI is 300 kg of uranium oxides.

The applicant performed a series of calculations on the allowable contents assuming the conservative maximum aluminum and carbon impurities, and demonstrated that the resulting addition of the impurities indicated no discernable difference from the baseline calculations performed on uranium oxide powders with no impurities. Calculations were performed on both single packages and packages in arrays at various enrichments, UO<sub>2</sub> loading levels, and optimal fill heights under both normal conditions of transport and hypothetical accident conditions, and in all cases the results were found statistically insignificant from those assuming only pure uranium oxide powder.

Based on the review of the statements and representations in the application, the calculations performed by the applicant, and a review of the representative input files provided, the staff has reasonable assurance that the nuclear criticality safety design of the package continues to meet the criticality safety requirements of 10 CFR Part 71.

## **CONDITIONS**

The following changes have been made to the certificate of compliance:

Condition No. 5.(b)(1) is updated to include the new content.

Condition No. 5.(b)(1)(iii) is added to establish equivalent UO<sub>2</sub> mass limits for the new contents.

Condition No. 5.(b)(2)(iii) is added to establish maximum quantity of material per package for the new content.

Condition No. 8 reflects a correction of a typographical error: "10 CFR 71.71" is corrected to "10 CFR 71.17".

Condition No. 9 now allows use of Revision No. 7 of the certificate until February 28, 2016.

The References section has been updated to include the amendment request.

## **CONCLUSION**

Based on the statements and representations in the amendment request and the staff's evaluation, the staff finds that these changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9301, Revision No. 8.