July 10, 2009

Mr. S. E. Miller
Manager, Environmental, Health Safety, and Licensing
AREVA NP, Inc.
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA 24506-0935

SUBJECT: CERTIFICATE OF COMPLIANCE NO. 9319 FOR THE MODEL NOS. MAP-12 AND MAP-13 PACKAGES

Dear Mr. Miller:

As requested by your application dated June 8, 2009, supplemented June 18, 2009, enclosed is Certificate of Compliance No. 9319, Revision No. 2, for the Model Nos. MAP-12 and MAP-13 packages. The staff's Safety Evaluation Report is also enclosed.

Those on the attached list have been registered as users of these packages under the general license provisions of 10 CFR 71.17 or 49 CFR 173.471. This approval constitutes authority to use these packages for shipment of radioactive material, and for the packages 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 Pierre Saverot of my staff at (301) 492-3408.

Sincerely,

/RA/

Eric J. Benner, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No: 71-9319
TAC No: L24348

Enclosures:
1. Certificate of Compliance No. 9319, Rev. No. 2
2. Safety Evaluation Report
3. Registered Users

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

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OFC:	SFST	SFST	SFST	SFST	SFST	SFST
NAME:	PSaverot	NDay	BTripathi	KRopon	JIreland	MWaters
DATE:	7/09/2009	7/09/2009	7/09/2009	7/09/2009	7/09/2009	7/10/2009
OFC:	SFST	SFST	SFST	SFST*	SFST	SFST
NAME:	LCampbell	CRegan	MDeBose	EJBenner		
DATE:	7/09/2009	7/09/2009	7/10/2009	7/10/2009		

C = cover only E = cover & enclosure N = no copy **OFFICIAL RECORD**
*See previous concurrence

SAFETY EVALUATION REPORT

Model Nos. MAP-12 and MAP-13 Packages
Certificate of Compliance No. 9319
Revision No. 2

SUMMARY

By application dated June 8, 2009, supplemented June 18, 2009, AREVA requested an amendment to Certificate of Compliance (CoC) No. 9319 to (i) modify the door hinge and latch design of the Model Nos. MAP-12 and MAP-13 packages, (ii) revise Licensing Drawings to address welds and ensure consistency with as-tested units, (iii) remove references to Boral® plate thickness to focus on meeting areal density specifications, (iv) change the fuel cavity spacer material from Neoprene to Delrin, and (v) make minor editorial changes.

EVALUATION

The original door hinge included three anchor bolts, resulting in an open space at the center of the hinge. The new design omits the open space at the center of the hinge, thus providing more support for the hinge shaft. The new unit doors consist of two different assemblies, four latch assemblies on the end doors and two latch assemblies on the middle doors compared to four latch assemblies for both the end doors and the middle doors in the original design.

The new hinge design supports a ¾" diameter shaft at the center (1.25" opening) with unslotted geometry, while maintaining the total supported area (2.25"). All other main features and characteristics such as material properties, mounting holes, welds, etc., remain identical. Therefore, the staff determined that the new hinge is at least as strong as the old hinge and is an acceptable replacement.

The staff verified that the new material for the outboard hinge axial shaft, i.e., ASTM A564, Type 630, condition H1100, is stronger than the 18-8 stainless steel chosen in the original design. The new shaft design is 3.56" long (compared to 6.0" long) with the same thread engagement and a larger threaded diameter. The staff determined that the new outboard hinge axial will be at least as strong as the old design and is an acceptable replacement.

The new outboard hinge axial retainer is made of the same material as the original design and has the same thread engagement. The staff reviewed shear strength and tensile strength calculations performed by the applicant and determined that the new axial retainer design will be at least as strong as the old hex nut and washer design, and is an acceptable replacement.

The new inboard end door shaft is made of the same material, has equal thread engagement but a greater diameter, and has a shorter span than the original design. The staff determined that the new shaft design will be at least as strong as the old design and is an acceptable replacement.

The new inboard middle door components are designed similarly to the new end door components, i.e., the new middle door parts are of the same material specification, which

include larger bearing areas, shorter shaft lengths, and greater thread engagement. The staff determined that the new components will be at least as strong as the old design and are acceptable as replacements.

The latch hook is redesigned to accommodate the revised 5/8" diameter shaft used by the end door components. The smaller hole size is enlarged from 0.515" diameter to 0.640" diameter. The 0.640" diameter hole size for the latches T-Nut passed the loading tests prescribed for the original design. Therefore, the staff determined that the new latch hook is acceptable as a replacement for the old latch hook design.

The ¾ - 16 pins used to anchor the old design are now replaced by ¾ - 10 Socket Head Cap Screw (SHCS) anchor bolts, which are universally used for all door attachments. The staff reviewed the thread stripping and tensile strength calculations for the new anchor bolts and determined that the new anchor bolt design is acceptable as a replacement for the old anchor pin design.

The anchor receptacle is modified to be tapped for ¾ - 10 Unified Coarse Threads (UNC) from ¾ - 16 Unified Fine Threads (UNF) due to availability and cost. This item is made from the same strength material, has better galling capabilities, and has a stronger thread pattern than the original anchor bolt. The staff determined that this is an acceptable receptacle in conjunction with the anchor bolt.

The staff reviewed the axial restraint box weld calculation in Attachment C of the application. The new design uses a 3/16" fillet weld instead of a ¼" weld on the old design and also removes the weld attaching the block to the vertical leg of the angle where it would interfere with the axial restraint bar. The staff determined that the calculation is appropriate and that a 3/16" fillet weld, with a weld length of 16.45", is an acceptable replacement for ¼" fillet weld. The staff reviewed the licensing Drawings 9045401, Rev. 2; 9045402, Rev. 2; 9045403, Rev. 2; 9045404, Rev. 2; 9045405, Rev. 2; and 9045393, Rev. 4 and found them acceptable. The staff also determined that all pictorial, editorial, clarification and procedural changes were acceptable. The staff finds that the new door/latch/hinge design of the Model Nos. MAP-12 and MAP-13 packages meets the structural requirements of 10 CFR Part 71.43(f) and 10 CFR Part 71.31(b).

The staff also verified that the change in the fuel cavity spacer material from Neoprene to Delrin does not impact the temperatures during accident conditions (HAC) due to the lower specific heat value of Delrin compared to Neoprene. The temperatures during both normal (NCT) and HAC conditions remain within the limits. Also, as stated in Attachment 3 of the application, the material is not important to safety during HAC. The applicant used thermal desktop for modeling NCT, but performed a fire test for HAC, thus alleviating any concern on the reduction of the fire temperature as it was the case on other applications. The staff finds that Model Nos. MAP-12 and MAP-13 packages meet the thermal requirements of 10 CFR Part 71.

In lieu of referencing BORAL® plate thickness, the applicant states that, "the BORAL® plates… meet the areal density specification." To assure sub-criticality of the package, BORAL® plates are mounted inside the package during service. When the package is closed, the content is surrounded by BORAL® plates. Uniformity of the neutron absorber distribution in the absorber material is the critical aspect of the absorber. Neutron absorber distribution is assessed by measuring neutron absorber density and thickness or the areal density, provided that the sampling method is conservative and the effect of statistical uncertainty in neutron counting is considered. There is no change to the areal density requested in this amendment. The applicant relies upon the supplier to provide quality assurance to guarantee the ^{10}B load in the

BORAL®. Furthermore, the applicant takes 75% credit of the measured ^{10}B content. The staff reviewed the omission of plate thickness in the SAR and found that it does not affect criticality. The staff also notes the applicant changed the sequence of steps in Section 7.2.2 of the application to address process improvements and an editorial change in Section 1.2.2. Such changes also do not affect criticality. The staff finds that Model Nos. MAP-12 and MAP-13 packages meet the criticality requirements of 10 CFR Part 71.

As a result of the amendment request, the following conditions were revised in CoC No. 9319:

Condition No. 5.(a)(3) was changed to reflect Revision No. 4 as the latest version of Drawing No. 9045393, Revision No. 2 as the latest version of Drawing Nos. 9045397, 9045401, 9045402, 9045403, 9045404, and 9045405, and Revision No. 1 as the latest version of the Drawing Nos. 9045397 and 9045399.

CONCLUSION

Based on the statements and representations in the amendment request dated June 8, 2009, supplemented June 18, 2009, the NRC staff has reviewed the proposed changes for the Model Nos. MAP-12 and MAP-13 packages. The staff concludes the changes indicated for the Model Nos. MAP-12 and MAP-13 packages do not affect the ability of the design to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9319, Revision No. 2 on
July 10, 2009.