NRC FORM 618 U.S. NUCLEAR REGULATORY COMMISSION

10 CFR

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES

1 a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
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2. PREAMBLE

a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."

b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

a. ISSUED TO *(Name and Address)*

AREVA NP, Inc.
3315 Old Forest Road,
P.O. Box 10935
Lynchburg, VA 24506-0935

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

AREVA NP, Inc., consolidated application dated October 28, 2008, as supplemented.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model No.: 51032-2

(2) Description

A steel shipping container for fuel bundles, consisting of a strong-back and fuel bundle clamping assembly, shock mounted to a steel outer container. Nine separator blocks, which are 6" x 8" x 8-1/2" long and have a 3/8" thick wall and a rectangular gusset plate welded inside, are bolted between fuel bundles. The outer container is composed of an 11 gauge steel shell approximately 43" diameter by 216" long. The maximum weight of the package, including contents, is 7,500 pounds.

(3) Drawings

The packaging is constructed and assembled in accordance with the following AREVA NP Inc. Drawing Nos.: 02-1215926C-002; 02-1215929D-003; 02-1215930D-003; 02-1215931D-003; 02-1215932D-003; 02-1215933D-003; 02-1215934C-002; 02-1215935D-003; 02-1216010D-001.

5.(b) Contents

(1) Type and form of material

Unirradiated fuel assemblies, composed of uranium dioxide fuel pellets clad in zircaloy tubes. Uranium is enriched to a maximum of 5.0 weight percentage U-235. The fuel assemblies may contain inserted control rod assemblies. The fuel assemblies have the following specifications:

Type	15x15	15x15	17x17	17x17
Maximum Number of Fuel Rods Per Assembly	208	204	264	264
Minimum Number of Non-Fuel Rods Per Assembly	17	21	25	25
Nominal Rod Pitch (in.)	0.568	0.563	0.501	0.496
Maximum Pellet Diameter (in.)	0.3742	0.3671	0.3252	0.3232
Maximum Density of Active Fuel Stack Length (%TD)	97.5	97.5	97.5	97.5
Nominal Cladding Maximum OD (in.)	0.430	0.422	0.379	0.374
Nominal Cladding Minimum OD (in.)	0.377	0.370	0.332	0.326
Nominal Fuel Assembly Envelope (in.)*	8.520	8.445	8.517	8.432
Nominal Active Fuel Stack Length (in.)	144	144	144	144

* The nominal fuel assembly envelope is defined as the product of the nominal rod pitch and the number of rods per edge.

5.b(1)(continued)

Type	15x15	17x17	GEN1 14x14, 15x15 16x16	L1 15x15	L2 15x15	L4 17x17
Maximum Number of Fuel Rods Per Assembly	204	264	256	208	208	264
Minimum Number of Non-Fuel Rods Per Assembly	21	25	0	17	17	25
Nominal Rod Pitch (in.)	0.563	0.496	0.501-0.590	0.568	0.568	0.496
Maximum Pellet Diameter (in.)	0.384	0.334	0.454	0.3707	0.3742	0.3232
Maximum Density of Active Fuel Stack Length (%TD)	95.0	95.0	97.5	97.5	97.5	97.5
Nominal Cladding Maximum OD (in.)	0.430	0.380	0.500	0.430	0.430	0.374
Nominal Cladding Minimum OD (in.)	0.410	0.355	0.260	n/a	n/a	n/a
Nominal Fuel Assembly Envelope (in.)*	8.445	8.432	*	8.520	8.520	8.432
Nominal Active Fuel Stack Length (in.)	196	196	196	196	196	196

* The nominal fuel assembly envelope is defined as the product of the nominal rod pitch and the number of rods per edge.

5.(b)(continued)

(2) Maximum quantity of material per package

Two fuel assemblies. Total weight of fuel assemblies, including control rod assemblies, not to exceed 3300 pounds.

Maximum quantity of radioactive material within a package may not exceed a Type A quantity.

5. (c) Criticality Safety Index (CSI): 1.0

6. Each fuel assembly must be unsheathed or must be enclosed in an unsealed polyethylene sheath which will not extend beyond the ends of the fuel assemblies. The ends of the sheaths must not be folded or taped in any manner that would prevent the flow of liquids into or out of the sheathed fuel assemblies.

7. Hydrogenous shims are not permitted within the fuel assemblies.

8. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) The package shall be prepared for shipment and operated in accordance with Chapter 7.0 of the application.

(b) Each packaging shall be maintained in accordance with Section 8.2 of the application.

(c) Each packaging shall meet the acceptance tests in Section 8.1 of the application.

9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

10. Transport by air of fissile material is not authorized.

11. Revision No. 5 of this certificate may be used until October 31, 2009.

12. Expiration date: October 31, 2013.

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REFERENCES

AREVA NP Inc. consolidated application dated October 28, 2008

Supplement dated: November 4, 2008; July 7, 2009.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date: September 9, 2009

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

SAFETY EVALUATION REPORT

Docket No. 71-9252
Model No. 51032-2 Package
Certificate of Compliance No. 9252
Revision No 7

SUMMARY

By letter dated July 7, 2009, AREVA NP, Inc., submitted a revised Chapter 6 of the consolidated Safety Analysis Report for the Model No. 51032-2 package to resolve discrepancies on fuel density and ambiguities on pellet dimensions. The staff reviewed the revised Chapter 6 of the Safety Analysis Report and determined that the changes made did not affect the ability of the package to meet 10 CFR Part 71 requirements.

EVALUATION

By letter dated July 7, 2009, AREVA NP, Inc., provided a revised Chapter 6 of the consolidated Safety Analysis Report for the Model No. 51032-2 package to address two issues raised by staff, i.e., density discrepancy and pellet dimension ambiguity:

- Staff had noted that Section 6.4.3 of the Criticality Chapter of the application stated that "Fuel pellets with an average UO_2 density of 97.5% TD enriched to 5.05 wt.% U-235, including enrichment tolerances, were used for all BWFC fuel assembly criticality safety analyses." However, a density of 96.3%TD was mentioned in comments to the KENO input files, and the calculated number densities were consistent with a density of 96.2%TD. Staff performed a few KENO runs and noted that the difference, although minimal, was outside of a standard deviation.

- Table 6-1 of the Criticality Chapter of the application gave nominal dimensions for the fuel assemblies including cladding minimum inner and maximum outer dimensions. In addition, Section 6.2 specifies that cladding thicknesses are not less than 0.02 inches. Therefore, Table 6-1 and Section 6.2 bind together the thickness of the cladding. Staff noted that the values used by the vendor in the KENO model were within these bounds. However, staff also noted that the most conservative values are usually obtained when the cladding is the thinnest, i.e., allowing for the most moderator. Staff was concerned that this ambiguity could raise the worst case scenario close to a K_{eff} of 0.95.

Based on the information provided by the applicant, and verified by the staff's own confirmatory analyses, the staff concluded that the changes made in the revised Chapter 6 of the application do not affect the criticality design features for the Model No. 52032-2 package.

Condition No. 5.(b)(1) was modified for the GEN1 fuel only (page 3 of the CoC, column 3 of the table): the maximum density of the active fuel stack length of 95%TD was replaced with 97.5%TD, and the nominal fuel assembly envelope of 8.25 in. was replaced by the footnote due to the variety of the dimensions for the 14x14, 15x15, and 16x16 GEN 1 fuel assemblies

CONCLUSION

The changes made to the Criticality Chapter of the consolidated package application do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No 9252, Revision No 7,
on September 9 , 2009