April 14, 2006

Mr. Norman A. Kent
Manager Transport Licensing and Regulation Compliance
Nuclear Material Supply
Westinghouse Electric Company
P.O. Drawer R
Columbia, South Carolina 29250

SUBJECT: CERTIFICATE OF COMPLIANCE NO. 9239 FOR MODEL NUMBERS MCC-3, MCC-4, AND MCC-5 PACKAGING (TAC NO. L23939)

Dear Mr. Kent:

As requested by your application dated January 25, 2006, enclosed is Certificate of Compliance (CoC) No. 9239, Revision No. 13, for the Model Nos. MCC-3, MCC-4, and MCC-5. In addition to the changes you requested, we made an additional change to CoC No. 9239. This change was necessary to ensure continued compatibility of CoC No. 9239 with Title 10 of the Code of Federal Regulations (10 CFR) Part 71 due to a revision of 10 CFR Part 71 that took effect on October 1, 2004. This certificate supersedes, in its entirety, CoC No. 9239, Revision No. 12, dated March 14, 2002. 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. Registered users may request by letter to remove their names from the Registered Users List.

If you have any questions regarding this certificate, please contact me at (301) 415-7298 or Stewart W. Brown of my staff at (301) 415-8531.

Sincerely,

/RA/

Robert A. Nelson, Chief
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9239

Enclosures:
1. CoC No. 9239, Rev. No 13
2. Safety Evaluation Report
3. Registered Users List

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

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SAFETY EVALUATION REPORT

Docket No. 71-9239
Model Nos. MCC-3, MCC-4, and MCC-5
Certificate of Compliance No. 9239
Revision No. 13

SUMMARY

By application dated January 25, 2006, Westinghouse Electric Company (Westinghouse or the applicant) requested an amendment to Certificate of Compliance (CoC) No. 9239, for the Model Nos. MCC-3, MCC-4, and MCC-5 shipping packaging. The applicant requested that CoC No. 9239 be amended to increase the enrichment limit from 4.65 weight percent of uranium-235 (wt.% ^{235}U) to 4.85 wt.% ^{235}U before requiring the use of GD_2O_3 (gadolinia) plates when transporting 17x17 standard lattice fuel types in either an MCC-3 or MCC-4 shipping packaging.

In addition, the U.S. Nuclear Regulatory Commission (NRC) staff (the staff) made an additional change to CoC No. 9239. The change was necessary to ensure continued compatibility of CoC No. 9239 with Title 10 of the Code of Federal Regulations (10 CFR) Part 71 due to a revision of 10 CFR Part 71 that took effect on October 1, 2004.

CoC No. 9239 has been amended to: (1) increase the enrichment limit to 4.85 wt.% ^{235}U before requiring the use of gadolinia plates when transporting 17x17 standard lattice fuel types in either an MCC-3 or MCC-4 shipping packaging, and (2) reflect the current version of 10 CFR Part 71. Based on the statements and representations in the application, the staff agrees that the changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

EVALUATION

The applicant requested that CoC No. 71-9239 be amended to increase the enrichment limit from 4.65 weight percent of uranium-235 (wt.% ^{235}U) to 4.85 wt.% ^{235}U before requiring the use of gadolinia plates when transporting 17x17 standard lattice fuel types in either an MCC-3 or MCC-4 shipping packaging. The following 17x17 standard lattice fuel contents were evaluated for nuclear criticality:

Nuclear Criticality Safety Review

The staff performed a criticality safety review of the proposed amendment for the Westinghouse Model Nos. MCC-3 and MCC-4 shipping packages that increased the enrichment where horizontal gadolinia plates are required from 4.65 wt.% ^{235}U to 4.85 wt.% ^{235}U. There were no design changes to the packaging, only the contents.

This change was requested to facilitate a shipment of 17x17 XL fuel enriched to 4.80 wt.% ^{235}U in an MCC-4 shipping packaging that does not contain the optional gadolinia absorber plate as currently required by the CoC.

The applicant used a 17x17 XL fuel type with no optional gadolinia plate at an enrichment of 4.85 wt.% ^{235}U in a standard lattice to perform its analysis since the standard lattice has a larger diameter fuel rod than the optimized fuel assembly (OFA) lattice. Therefore, this results in a lower keff. Thus, the maximum enrichment was able to be increased over the 4.65 wt.% ^{235}U limit set by the 17OFA fuel type.

The applicant performed criticality safety calculations for the new 4.85 wt.% ^{235}U limit without the optional gadolinia plates. Contents were modeled as both independent packages and infinite arrays of packages. In all instances, the calculated effective multiplication factor (k_{eff}) was below the maximum 0.95 regulatory limit.

The staff reviewed the documentation, the code calculations, and the results supplied by the applicant and found that the applicant included conservatism in the modeling parameters for both normal and hypothetical accident conditions. In all instances, the models were consistent in their assumptions and the maximum calculated k_{eff}s were found to be below the regulatory limit when the code biases and uncertainties were added, ensuring an adequate margin of safety.

The staff performed confirmatory calculations using the KENO V.a code and the 238GROUPNDF5 cross section set in the SCALE 5 system of codes. The results of these confirmatory calculations were consistent with those performed by the applicant. In all instances the calculated k_{eff} were found to be below the regulatory limit of 0.95. The staff's analysis confirms that a package as amended would remain subcritical.

The staff has determined based on: (1) its verification of adequate system modeling by the applicant and (2) that the acceptance standard of a maximum k_{eff} of 0.95 was maintained for all analyzed scenarios, that increasing the enrichment limit from 4.65 wt.% ^{235}U to 4.85 wt.% ^{235}U for the 17x17 fuel types transported in either an MCC-3 or MCC-4 shipping packaging before requiring a gadolinia plate is acceptable and does not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Revised 10 CFR Part 71

On January 26, 2004, NRC published its final rule revising 10 CFR Part 71, "Packing and Transportation of Radioactive Material." NRC revised Part 71 to address compatibility with the International Atomic Energy Agency's transportation safety standards, "Regulation of the Safe Transport of Radioactive Material" (TS-R-1) and other transportation safety issues. The revised 10 CFR Part 71 final rule was published in the *Federal Register* (69 FR 3698). This rule became effective on October 1, 2004.

The staff has determined that as a result of changes made to 10 CFR Part 71 that a change to CoC No. 9239 was necessary to ensure continued compatibility with the revised regulation:

Condition 11, page 4 of 4 - Revised wording from:

> "The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.12."
>
> to:
>
> "The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17."

As part of the 10 CFR Part 71 revision certain sections were renumbered with no substantial change to the renumbered section. This change was necessary to address the renumbering of Section 71.12 to Section 71.17, that became effective on October 1, 2004.

CONCLUSION

Certificate of Compliance No. 9239 has been amended as follows:

- Condition No. 6. of the certificate has been revised to increase the enrichment limit from 4.65 wt.% ^{235}U to 4.85 wt.% ^{235}U before requiring the use of GD_2O_3 (gadolinia) plates when transporting 17x17 standard lattice fuel types in either an MCC-3 or MCC-4 shipping packaging.

- Condition No. 11 of the certificate has been revised to reflect the current revision of 10 CFR Part 71.

Based on the statements and representations in the application 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. 9239,
Revision No. 13, on April 14, 2006.