November 5, 2009

Mr. Peter J. Vescovi
Westinghouse Electric Company, LLC
Columbia Fuel Site
P.O. Drawer R
Columbia, South Carolina 29250

SUBJECT: AUTHORIZATION FOR SHIPMENT OF MODIFIED FUEL ASSEMBLY IN THE MODEL NOS. MCC-3, MCC-4, AND MCC-5 PACKAGINGS (TAC NO. L24372)

Dear Mr. Vescovi:

As requested by your application dated September 3, 2009, as supplemented on November 2, 2009, pursuant to Title 10 of the Code of Federal Regulations Part 71 Certificate of Compliance (CoC) No. 9239, for Model Nos. MCC-3, MCC-4, and MCC-5 packages is amended to authorize contents as follows:

Contents:

Type and Form of Material – A modified unirradiated 17x17 (Type B) OFA fuel assembly with sixteen (16) of the fuel rods replaced with solid stainless steel rods.

The following additional conditions apply to the shipment of the contents described above:

1. All other conditions of CoC No. 9239 shall remain the same.

2. Authorization is for a one-time shipment of a modified unirradiated 17x17 (Type B) OFA fuel assembly with sixteen (16) of the fuel rods replaced with solid stainless steel rods.

3. This authorization shall expire on January 30, 2010.

If you have any questions regarding this authorization, please contact me or Michele Sampson of my staff at (301) 492-3300.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Steven L. Baggett, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9239
TAC No. L24372

Enclosure: Safety Evaluation Report

November 5, 2009

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Columbia Fuel Site
P.O. Drawer R
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Docket No. 71-9239
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Enclosure: Safety Evaluation Report

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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

SUMMARY

By application dated September 3, 2009, as supplemented on November 2, 2009, the Westinghouse Electric Company, LLC (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 packagings. Westinghouse requested a one-time authorization to ship a modified unirradiated 17x17 (Type B) OFA fuel assembly with sixteen (16) of the fuel rods replaced with solid stainless steel rods.

The CoC No. 9239 has been amended by letter to authorize shipment of the modified assembly based on the statements and representations in the application. The staff agrees that the change does not affect the ability of the package to meet the requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 71.

EVALUATION

The applicant requested authorization to make a one-time shipment of a modified unirradiated 17x17 (Type B) OFA fuel assembly with sixteen (16) of the fuel rods replaced with solid stainless steel rods. NRC staff performed a criticality safety review of the proposed request for the Westinghouse Model Nos. MCC-3, MCC-4, and MCC-5 packages with the modified contents. The replacement stainless steel rods are in a specific configuration for the one-time shipment. There were no design changes to the packaging. The staff evaluated the proposed content modification to the certificate based on the information provided in the application.

Westinghouse's original application dated August 29, 2006, as supplemented, demonstrated that the 17x17 (Type B) OFA fuel assembly is the most reactive contents of the package. These calculations were performed using a 227-group cross-section and evaluated using the AMPX system codes. The applicant's current methodology utilizes the SCALE 4.4 code and the 44-group cross-sections. As indicated in Table 1 of the application, the SCALE results agree to a high degree with the original calculations.

With the reduction of fissile mass due to replacing the sixteen (16) fuel rods with solid stainless steel rods, the calculated k_{eff} for the requested amendment resulted in a significant reduction from that of the design basis fuel. Comparison with the previously approved design basis bounding case was accepted as a risk-informed determination due to the significant margin in k_{eff} and the limitation that this will be a one-time shipment only. Thus the analysis indicated that this one-time shipment request is bounded by the allowable contents under the current CoC.

NRC staff performed confirmatory calculations on both the original fuel assembly and the one with solid stainless steel rods in place of the sixteen (16) fuel rods using the SCALE 6 system of

codes with 238-group cross-sections. The results of the confirmatory calculations were consistent with those performed by the applicant. In all instances the calculated k_{eff} was found to be below that of the 17x17 (Type B) OFA fuel assembly. The staff's analysis confirms that the package as amended would be bounded by the applicant's original analysis and would remain subcritical under normal and accident conditions of transport.

Based on the NRC staff verification of adequate system modeling by the licensee, the analyses supporting content modification were considered acceptable. Thus, the proposed content modification does not affect the ability of the package to meet the requirements of 10 CFR Part 71.

CONDITIONS

The authorization is limited to the following contents and additional conditions:

Contents

Type and Form of Material – A modified unirradiated 17x17 (Type B) OFA fuel assembly with sixteen (16) of the fuel rods replaced with solid stainless steel rods.

The following additional conditions apply to the shipment of the contents described above:

1. All other conditions of CoC No. 9239 shall remain the same.

2. Authorization is for a one-time shipment of a modified unirradiated 17x17 (Type B) OFA fuel assembly with sixteen (16) of the fuel rods replaced with solid stainless steel rods.

3. This authorization shall expire on January 30, 2010.

CONCLUSION

CoC No. 9239 has been amended by letter to authorize shipment of a modified unirradiated 17x17 (Type B) OFA fuel assembly with sixteen (16) of the fuel rods replaced with stainless steel rods. This authorization expires January 30, 2010. Based on the statements and representations in the application, and with the conditions listed above, the staff agrees that this change does not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued on November 5, 2009.