December 27, 2006

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

SUBJECT: CERTIFICATE OF COMPLIANCE NO. 9297, REV. NO. 2, FOR MODEL NOS. TRAVELLER STD AND TRAVELLER XL (TAC NO. L24031)

Dear Mr. Vescovi:

As requested by your application dated September 26, 2006, and supplemented by letter dated December 12, 2006, enclosed is Certificate of Compliance (CoC) No. 9297, Revision No. 2, for the Model Nos. Traveller STD and Traveller XL. Changes made to the enclosed certificate are indicated by vertical lines in the margin. The staff's Safety Evaluation Report is also enclosed.

Westinghouse Electric Company is registered as the certificate holder of the packages. The approval constitutes authority to use the 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 at (301) 415-1179 or Stewart W. Brown of my staff at (301) 415-8531.

Sincerely,

/RA/

Christopher M. Regan, Acting Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9297

Enclosures: 1. CoC No. 9297, Rev. No 2
2. Safety Evaluation Report

cc w/encls: R. Boyle, Department of Transportation
J. Schuler, Department of Energy
RAMCERTS

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SAFETY EVALUATION REPORT

Docket No. 71-9297
Model Nos. Traveller STD and Traveller XL
Certificate of Compliance No. 9297
Revision No. 2

SUMMARY

By letter dated September 26, 2006, and supplemented by letter dated December 12, 2006, Westinghouse Electric Company, LLC (Westinghouse or the applicant) submitted a request for amendment to Certificate of Compliance (CoC) No. 9297, for the Model Nos. Traveller STD and Traveller XL. The request was for approval of packaging components to secure non-Westinghouse type fuel assemblies in the Model Nos. Traveller STD and Traveller XL.

Based on the statements and representations in the application, the staff finds that the changes do not affect the ability of the packages to meet the requirements of 10 CFR Part 71.

EVALUATION

By letter dated September 26, 2006, and supplemented by letter dated December 12, 2006, Westinghouse submitted a request for amendment to CoC No. 9297, for the Model Nos. Traveller STD and Traveller XL. The request included information about packaging components Westinghouse plans to use to secure the non-Westinghouse type fuel assemblies in Model Nos. Traveller STD and Traveller XL, and a revision to the safety analysis report (SAR) for the CoC to describe the new packaging components. The authorized contents for the Model Nos. Traveller STD and Traveller XL already include non-Westinghouse type fuel assemblies.

Enclosure 1 of the applicant's letter dated September 26, 2006, provided a description of the proposed changes, justification for the proposed changes, and an analysis examining the differences in the overall forces and the mechanical response of structural components, when subjected to the hypothetical accident condition (HAC) in a Traveller package for the non-Westinghouse type fuel assemblies (namely CE and ATOM), rather than the Westinghouse 17 x 17-XL fuel assembly, which was used in the Traveller Certification Test Unit (CTU) drop test.

The Model Nos. Traveller STD and Traveller XL consists of two principal structural components, the "outerpack" and the "clamshell." The Traveller packagings are designed to transport a single fuel assembly or a single "rod container" (which is used when transporting loose fuel rods rather than a fuel assembly). However, the non-Westinghouse type fuel assemblies require a

bottom spacer under the fuel assembly, and a modified axial restraint at the top end to prevent the axial movement of the fuel during normal transport.

The three CE fuel assembly type designs authorized to be transported in Model Nos. Traveller STD and Traveller XL packagings are all shorter than the Westinghouse fuel assembly type. Thus, the need for a bottom end spacer. The bottom spacer assembly is comprised of six major pieces: top and bottom neoprene rubber pads, two stainless steel base plates, a stainless steel support pipe, and a stainless steel rod handle. The total weight for the bottom spacer assembly is 34.5 pounds (lbs.).

For the CE fuel a variant axial restraint system at the top of the fuel assembly is used. This variant axial restraint system is mainly comprised of: a stainless steel axial clamp arm, a stainless steel clamp arm extension, a stainless steel threaded rod, an aluminum axial base plate, and a neoprene rubber bottom pad. The total weight for the top restraint system is 7.5 lbs. The total weight of heaviest CE fuel assembly, plus the Traveller packaging is 4,611 lbs.

The 16 x 16 and 18 x 18 ATOM fuel assembly design types are also authorized to be transported in Model Nos. Traveller STD and Traveller XL packagings. These fuel assemblies will not require the bottom spacer assembly, but will require the same top restraint system as CE fuel assembly. The total weight of the heaviest ATOM fuel assembly, plus the Traveller packaging is 5,051 lbs.

Based on the previous analyses and testing it was determined that the most severe impact for the fuel assembly contents and packaging was the 9-meter impact in a bottom-end down orientation. The damage to the outerpack is a function of the total weight of the package. Since the total weight for both the CE fuel assembly type designs and the ATOM fuel assembly type designs are less than the total weight of design and licensing basis gross weight of 5,100 lbs., the resulting applied loads to the outerpack from a 9-meter drop would be less than the applied loads from the CTU drop, and therefore damage would be expected to be less.

The damage to the clamshell was also considered in the applicant's analysis. The CTU drop test kinetic energy and resultant forces were normalized to reflect responses to a 9-meter drop test to simplify the comparison with non-Westinghouse fuel assembly type configurations. The total forces on the clamshell were determined using an energy method. As discussed above, the total loads imposed on the clamshell would be less than those experienced in the CTU tests, as the CE and ATOM fuel assembly type designs are lighter than the CTU fuel assembly.

For a bottom nozzle end drop, the bottom spacer for the CE fuel assembly type design (6 inch schedule 40 pipe, 13.25 inches long) was evaluated using the heaviest CE fuel assembly design to bound all the fuel types by weight. The applicant calculated the maximum load before the pipe would buckle to be 195,000 lbs. The staff performed an independent check and found that the actual load at which the pipe could buckle was 183,000 lbs. However, this difference was determined to be immaterial.

Regardless of the buckling load, the staff agrees with the applicant's understanding that although some buckling of the fuel spacer assembly may occur, the load will be transferred from the impact pillow in the outerpack through the clamshell bottom head to the fuel assembly. The fuel assembly would not be in free-fall and would not impact the clamshell bottom head

with a significant differential velocity. Therefore, the fuel assembly would not shift under the HAC with the alternative restrain system.

For the top nozzle end drop condition, the applicant presented the summary of an analysis and results in Enclosure 1, Table 1. This summary demonstrated that for the CE top restraint system the maximum load before buckling would occur, P = 11,500 lbs., is substantially higher than the actual load calculated for the top restraint system used in the CTU tests, P = 6,200 lbs. The applicant has also presented an analysis using conservative assumptions which demonstrated that for the ATOM fuel assembly type design the maximum force exerted on the clamshell and contents would be approximately 561,000 lbs. (which is less than the force calculated for the CTU tests of 566,000 lbs.). The staff has reviewed this analysis and concurs with the results.

The staff finds that the proposed changes as shown in Enclosures 2 and 3 of the applicant's letter dated September 26, 2006, including the changes to the SAR, Revision 6, and changes to Westinghouse Drawing 10004E58, Sheets 1 and 7 are acceptable, as these changes do not affect the ability of the Model Nos. Traveller STD and Traveller XL to meet the requirements of 10 CFR Part 71.

CONCLUSION

Certificate of Compliance No. 9297 has been amended as follows:

> Condition No. 5(a)(3) of the certificate has been revised to reflect revision to Drawing 10004E58.

Based on the statements and representations in the application the staff finds that these changes do not affect the ability of the Model Nos. Traveller STD and Traveller XL to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9297,
Revision No. 2, on December 27, 2006.