



Department of Energy
Washington, DC 20585

SAFETY EVALUATION REPORT (SER)
RTG (Radioisotope Thermoelectric Generator) Package
Docket 94-6-9904

SUMMARY

The Richland Operations Office (RL) of the Department of Energy (DOE) with the assistance of its contractors, Westinghouse Hanford Company and Packaging Technology, Inc., has requested a DOE Certificate of Compliance (CoC) for the RTG Package. The original requested contents were the GPHS (General Purpose Heat Source) RTG and a somewhat larger generic payload. With the agreement of RL, the content authorized in Revision 0 of the CoC and confirmed in this SER is limited to just the GPHS RTG. Fissile Class III and exclusive use shipment in a semi-trailer specifically built for the RTG Package were also requested.

The EM-76 Packaging Certification Team has determined that the RTG Package design satisfies the requirements of 10 CFR Part 71 that became effective April 1, 1996, and has accordingly awarded the Certificate of Compliance with the B(U)F-85 designator. However, the SARP itself, which was prepared to document compliance with the 1983 requirements of 10 CFR Part 71, does not show compliance with the 1996 requirements of 10 CFR Part 71 in two areas as follows:

- In Chapter 3, Thermal Evaluation, the SARP demonstrates compliance with the still-air concept of the Hypothetical Accident Thermal Event of the 1983 version instead of the fire-enhanced convection concept of the 1996 version.
- In Chapter 6, Criticality, the SARP demonstrates compliance with the 2 undamaged and 1 damaged package concept of the 1983 version instead of the 3 undamaged and 1 damaged package concept of the 1996 version.

These areas must be addressed in Revision 1 of the SARP. Upon submission to the Packaging Certification Team, the SARP will be reviewed to determine that it satisfactorily documents compliance with all regulatory requirements.

In addition, the Certificate of Compliance imposes a condition not provided in the SARP which also must be addressed in Revision 1 of the SARP. The Certificate of Compliance requires the entire containment boundary of both the outer containment vessel and the inner containment vessel to pass a 1×10^{-7} std cm³/s air leak test within the 12 months preceding a shipment. This condition is imposed in the Certificate of Compliance to satisfy the recommendation of ANSI (American National Standards Institute) N14.5 for periodic leak testing.