

**SHIPPINGPORT REACTOR PRESSURE VESSEL
AND NEUTRON SHIELD TANK ASSEMBLY
PROBABILISTIC WATERBORNE
ACCIDENT ASSESSMENT**

D. L. Becker, D. M. Burgess, and M. R. Lindquist

**Westinghouse Hanford Company
Richland, Washington 99352**

ABSTRACT

The Shippingport Atomic Power Station reactor was decommissioned at the end of its design life in 1984. The integral reactor pressure vessel/neutron shield tank was filled with a lightweight concrete material, removed from the facility as a unit, and transported to the Hanford Site in Richland, Washington, for interment. The reactor pressure vessel/neutron shield tank package was transported by barge from the Shippingport site to the Hanford Site via the Ohio River, Mississippi River, Gulf of Mexico, Panama Canal, Pacific Ocean, and Columbia River. A safety analysis report for packaging was prepared to evaluate the adequacy of the package in meeting the applicable requirements of the U.S. Department of Energy Order 5480.3. This paper presents a summary of a study to assess accident scenarios postulated as a result of the activities conducted during waterborne transport. The study provided supplemental information to the safety analysis report for packaging on the hazards of transporting the package by barge. Postulated accident scenarios are identified and discussed. Evaluations of the postulated accident situations are based on an assessment of the probabilities of accidents. Radiological dose analyses were performed for normal conditions of transport and for the different postulated accident situations. Also, a technical basis is provided for consideration and development of alternative criteria for shipment of irradiated nuclear components with low specific activity levels.

