SECTION FOUR

CONTAINMENT

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4 CONTAINMENT

4.1 Description of the Containment System

The containment boundary of the package is defined as the payload vessel with its associated welds, payload vessel high temperature heat resistant fiberglass sleeve gasket, payload vessel blind flange, and reinforcing ring.

The payload vessel is comprised of a 10-gauge carbon steel sheet for the body and bottom. The upper end of the vessel is fitted with a ¼" inner carbon steel flange ring with a $^1/_2$" thick carbon steel blind flange. The vessel has three circumferential welds (two at the flange, one at the base) and one longitudinal weld. An $^1/_8$" high temperature resistant fiberglass sleeve gasket is used between the steel flange ring and blind flange. The payload vessel blind flange is secured to the flange with twelve ½" bolts. There are no penetrations, valves or venting devices used within the containment boundary.

A specified torque is applied to the closure bolts and tightened as part of the closure steps defined within Section 7.1.3 to assure positive closure of the containment boundary, and given the mode of the closure, it cannot be opened unintentionally. The use of lock washers assures that the closure bolts are not loosed due to vibration during shipment. A location for installation of a tamper-indicating device is provided at the drum closure.

4.2 Containment under Normal Conditions of Transport

The Versa-Pac Shipping Container is classified as a Type A Fissile package. Performance tests consistent with the requirements of 10CFR71.71 and 10CFR71.73 have demonstrated that the Versa-Pac effectively prevents loss or dispersal of the radioactive contents under the postulated conditions of transport. Additionally, the tests have demonstrated that there is no substantial reduction in the effectiveness of the packaging during normal conditions of transport; thus, there is no significant increase in external surface radiation levels resulting from the postulated conditions of transport. Section 2.0 provides a description of the tests performed and analyses completed. Section 6.0 demonstrates that the package remains subcritical under normal and hypothetical accident conditions.

Since the package is not a sealed system, the internal pressure is maintained near atmospheric pressure for all conditions of transport. The maximum normal hot contents temperature is less than 212°F; thus, any water moisture remains in the liquid state and within the payload cavity.

4.3 Containment Requirements for Hypothetical Accident Conditions

As discussed in Section 4.2 and Section 2.0, performance tests consistent with the requirements of 10CFR71.71 and 10CFR71.73 have demonstrated that the Versa-Pac effectively prevents loss or dispersal of the radioactive contents under the postulated conditions of transport.

Section 6.0 demonstrates that the package remains subcritical under normal and hypothetical accident conditions.

Since the package is not a sealed system, the internal pressure of the package is maintained near atmospheric pressure for all conditions of transport. During the fire event, some water moisture within the payload will be converted to steam. Any pressure build up will be relieved through the package gaskets.

4.4 Leakage Rate Tests for Type B Packages

This section is not applicable.

4.5 List of Appendices

This section is not applicable.