

4.5.4 ENGINEERED SAFEGUARDS FEATURE (ESF) SYSTEMS LEAKAGE

Applicability

Applies to those portions of the Decay Heat, Building Spray, and Make-Up Systems, which are required to contain post accident sump recirculation fluid, when these systems are required to be operable in accordance with Technical Specification 3.3.

Objective

To maintain a low leakage rate from the ESF systems in order to prevent significant off-site exposures and dose consequences.

Specification

- 4.5.4.1 The total maximum allowable leakage into the Auxiliary Building from the applicable portions of the Decay Heat, Building Spray and Make-Up System components as measured during refueling interval tests in Specification 4.5.4.2 shall not exceed 15 gallons per hour.
- 4.5.4.2 Once each refueling interval the following tests of the applicable portions of the Decay Heat Removal, Building Spray and Make-Up Systems shall be conducted to determine leakage:
- a. The applicable portion of the Decay Heat Removal System that is outside containment shall be leak tested with the Decay Heat pump operating, except as specified in "b".
 - b. Piping from the Reactor Building Sump to the Building Spray pump and Decay Heat Removal System pump suction isolation valves shall be pressure tested at no less than 55 psig.
 - c. The applicable portion of the Building Spray system that is outside containment shall be leak tested with the Building Spray pumps operating and BS-V-1A/B closed, except as specified in "b" above.
 - d. The applicable portion of the Make-Up system on the suction side of the Make-Up pumps shall be leak tested with a Decay Heat pump operating and DH-V-7A/B open.
 - e. The applicable portion of the Make-Up system from the Make-Up pumps to the containment boundary valves (MU-V-16A/D, 18, and 20) shall be leak tested with a Make-Up pump operating.
 - f. Visual inspection shall be made for leakage from components of these systems. Leakage shall be measured by collection and weighing or by another equivalent method.

Bases

The leakage rate limit of 15 gph (measured in standard room temperature gallons) for the accident recirculation portions of the Decay Heat Removal (DHR), Building Spray (BS), and Make-Up (MU) systems is based on ensuring that potential leakage after a loss-of-coolant accident will not result in off-site dose consequences in excess of those calculated to comply with the 10 CFR 50.67 limits (Reference 1 and 2). The test methods prescribed in 4.5.4.2 above for the applicable portions of the DH, BS and MU systems ensure that the testing results account for the highest pressure within that system during the sump recirculation phase of a design basis accident.

References

- (1) UFSAR, Section 6.4.4 - "Design Basis Leakage"
- (2) UFSAR, Section 14.2.2.5(d) - "Effects of Engineered Safeguards Leakage During Maximum Hypothetical Accident"