

3.6 REACTOR BUILDING

Applicability

Applies to the containment when the reactor is subcritical by less than 1% $\Delta k/k$.

Objective

To assure containment integrity during startup and operation.

Specification

- 3.6.1 Containment integrity shall be maintained whenever all three (3) of the following conditions exist:
- Reactor coolant pressure is 300 psig or greater
 - Reactor coolant temperature is 200°C or greater
 - Nuclear fuel is in the core
- 3.6.2 Containment integrity shall be maintained when the reactor coolant system is open to the containment atmosphere and the requirements for a refueling shutdown are not met.
- 3.6.3 The containment integrity shall be intact whenever positive reactivity insertions which would result in the reactor being subcritical by less than 1% $\Delta k/k$ are made by control rod motion or boron dilution.
- 3.6.4 Exceptions to 3.6.1, 3.6.2, and 3.6.3 shall be as follows:
- If either the personnel or emergency hatches become inoperable, except as a result of an inoperable door gasket, the hatch shall be restored to an operable status within 24 hours, or the reactor shall be in cold shutdown within the next 36 hours.

If a hatch is inoperable due to an inoperable door gasket:
 - The remaining door of the affected hatch shall be closed and sealed except for momentary personnel passage necessary for repair or test of the inoperable door.
 - The hatch shall be restored to operable status within seven days or the reactor shall be in cold shutdown within the next 36 hours.
 - A containment isolation valve may be inoperable provided either:
 - The inoperable valve is restored to operable status within four hours.
 - The affected penetration is isolated within four hours by the use of a deactivated automatic valve secured and locked in the isolated position.

3. The affected penetration is isolated within four hours by the use of a closed manual valve or blind flange.
4. The reactor is in the hot shutdown condition within 12 hours and cold shutdown within 24 hours.

3.6.5 The reactor building internal pressure shall not exceed 1.5 psig or five inches of Hg if the reactor is critical.

3.6.6 Prior to criticality following refueling shutdown, a check shall be made to confirm that all manual containment isolation valves which should be closed are closed and tagged.

Bases

The Reactor Coolant System conditions of cold shutdown assure that no steam will be formed and hence no pressure buildup in the containment if the Reactor Coolant System ruptures.

The selected shutdown conditions are based on the type of activities that are being carried out and will preclude criticality in any occurrence.

The reactor building is designed for an internal pressure of 59 psig and an external pressure 3.0 psi greater than the internal pressure. The design external pressure of 3.0 psi corresponds to a margin of 0.5 psi above the differential pressure that could be developed if the building is sealed with an internal temperature of 120°F with a barometric pressure of 29.0 inches of Hg and the building is subsequently cooled to an internal temperature of 80°F with a concurrent rise in barometric pressure to 31.0 inches of Hg. The weather conditions assumed here are conservative since an evaluation of National Weather Service records for this area indicates that from 1918 to 1970 the lowest barometric pressure recorded is 29.05 inches of Hg and the highest is 30.85 inches of Hg.

Operation with a personnel or emergency hatch inoperable does not impair containment integrity since either door meets the design specifications for structural integrity and leak rate. Momentary passage through the outer door is necessary should the inner door gasket be inoperative to install or remove auxiliary restraint beams on the inner door to allow testing of the hatch. The time limits imposed permit completion of maintenance action and the performance of a local leak rate test when required or the orderly shutdown and cooldown of the reactor. Timely corrective action for an inoperable containment isolation valve is also specified.

When containment integrity is established, the limits of 10CFR100 will not be exceeded should the maximum hypothetical accident occur.

REFERENCES

FSAR, Section 5