

3.19 CONTAINMENT SYSTEMS

3.19.1 CONTAINMENT STRUCTURAL INTEGRITY

Applicability:

Applies to the structural integrity of the reactor building.

OBJECTIVE:

To verify containment structural integrity in accordance with the inservice tendon surveillance program for the reactor building prestressing system.

Specification

3.19.1.1 With the structural integrity of the containment not conforming to the inservice tendon surveillance program requirements of 4.4.2.1 for the tendon lift off forces, perform an engineering evaluation of the structural integrity of the containment to determine if COLD SHUTDOWN is required. The margins available in the containment design may be considered during the investigation. If the acceptability of the containment tendons cannot be established within 48 hours, restore the structural integrity to within the limits within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

3.19.1.2 DELETED

4.4.2 Structural Integrity

Specification

4.4.2.1 Inservice Tendon Surveillance Requirements

The surveillance program for structural integrity and corrosion protection conforms to the recommendations of the U.S. NRC Regulatory Guide 1.35, "Inservice Surveillance of UngROUTed Tendons in Prestressed Concrete Containment Structures." The detailed surveillance program for the prestressing system tendons shall be based on periodic inspection and mechanical tests to be performed on selected tendons.

4.4.2.1.1 DELETED

4.4.2.1.2 DELETED

4.4.2.1.3 DELETED

4.4.2.1.4 Tendon Surveillance Previous Inspections

The tendon surveillance shall include the reexamination of all abnormalities (i.e., concrete scaling, cracking, grease leakage, etc.) discovered in the previous inspection to determine whether conditions have stabilized. The inspection program shall be modified accordingly if obvious deteriorating conditions are observed.

4.4.2.1.5 Inspection for Crack Growth at Dome Tendons in the Ring Girder Anchorage Areas

Concrete around the dome tendon anchorage areas shall be inspected for crack growth during ten and 15 year inspections by monitoring cracks greater than 0.005 inch in width. Select as a minimum nine dome tendon anchoring areas having concrete cracks with crack widths 0.005 inch. In the selection of dome tendon anchoring areas to be monitored, preference shall be given to those areas having cracks greater than 0.005 inch in width. The width, depth (if depths can be measured with simple existing plant instruments, (i.e., feeler gauges, wires) and length of the selected cracks shall be measured and mapped by charting. This inspection may be discontinued, if the concrete cracks show no sign of growth. If, however, these inspections indicate crack growth, an investigation of the causes and safety impact should be performed.

4.4.2.1.6 Reports

- a. Within 3 months after the completion of each tendon surveillance a special report shall be submitted to the NRC Region I Administrator. This Report will include a section dealing with trends for the rate of prestress loss as compared to the predicted rate for the duration of the plant life (after an adequate number of surveillances have been completed).
- b. Reports submitted in accordance with 10 CFR 50.73 shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedures, the tolerances on cracking, and any corrective actions taken.

4.4.3 DELETED

BASES

For ungrouted, post-tensioned tendons, this surveillance requirement ensures that the structural integrity of the containment will be maintained in accordance with the provisions of the TMI-1 Reactor Building Structural Integrity Tendon Surveillance Program. Testing and frequency are consistent with the recommendations of Regulatory Guide 1.35, as described in the FSAR.

The modified visual inspection requirements pertaining to the dome tendons in the ring girder were implemented as a result of: 1) discovery of ring girder voids in 1977 and the potential that more undetected voids in the ring girder could exist, and 2) the number of dome tendon bearing areas having cracks appeared to be growing with time (Reference Amendment No. 59).

REFERENCES

- (1) UFSAR, Section 5.7.5 - Tendon Stress Surveillances