

CONTAINMENT SYSTEMS

CONTAINMENT EMERGENCY SUMP pH CONTROL SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.2 The containment emergency sump pH control system shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTION:

Restore the containment emergency sump pH control system to OPERABLE within 72 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.2 At least once per refueling interval:

1. Verify that a minimum of $250 \pm 4 \text{ ft}^3$ of trisodium phosphate dodecahydrate [$\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O} \cdot \frac{1}{4}\text{NaOH}$] (TSP-C) is contained within the three (3) TSP-C storage baskets.
2. Verify that a representative sample of TSP-C from a storage basket has a density of $\geq 53 \text{ lbs/ft}^3$.
3. Verify that the solubility of a representative sample of 0.50 ± 0.05 lbs of TSP-C when submerged, without agitation, in 20 ± 1 gallons of borated water taken from the BWST, heated to $180^\circ\text{F} \pm 10^\circ\text{F}$, raises the pH of the borated water to ≥ 7.0 within 4 hours.

DELETED

CONTAINMENT SYSTEMS

BASES

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the safety analyses. The leak rate surveillance requirements assure that the leakage rates assumed for the system during the recirculation phase will not be exceeded.

3/4.6.2.2 CONTAINMENT EMERGENCY SUMP pH CONTROL SYSTEM

The OPERABILITY of the containment emergency sump pH control system ensures that sufficient trisodium phosphate dodecahydrate [$\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O} \cdot \frac{1}{2}\text{NaOH}$] (TSP-C) is maintained in the three TSP-C storage baskets to increase the pH of the water in the emergency sump to at least 7.0 following a LOCA. The pH is measured at $77^\circ\text{F} \pm 2^\circ\text{F}$. The sump water pH must be increased to at least 7.0 to reduce the potential for elemental iodine re-evolution and long-term stress corrosion during the recirculation mode of ECCS operation.

3/4.6.2.3 CONTAINMENT COOLING SYSTEM

The OPERABILITY of the containment cooling system ensures that 1) the containment air temperature will be maintained within limits during normal operation, and 2) adequate heat removal capacity is available when operated in conjunction with the containment spray systems during post-LOCA conditions.

SHOLLY EVALUATION OF REQUEST:

Florida Power Corporation has reviewed the requirements of 10 CFR 50.92 as they relate to the proposed change in the chemical used to control the water chemistry of the containment emergency sump and considers the proposed change not to involve a significant hazards consideration. In support of this conclusion, the following analysis is provided:

1. The proposed change will not significantly increase the probability of an accident previously evaluated because the pH of the water in the emergency sump is being adjusted with trisodium phosphate dodecahydrate (TSP-C) rather than sodium hydroxide (NaOH) to be within a range that will reduce the potential for elemental iodine re-evolution and long-term stress corrosion during the recirculation mode of ECCS operation. The use of a plain borated water spray rather than a sodium hydroxide-borated water mixture in the containment spray during the initial phases of a loss-of-coolant accident will not increase the consequences of an accident previously evaluated since research has shown that elemental iodine can be washed from the atmosphere with borated water and stress corrosion from the boric acid is not a factor in the short term.
2. The proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated because the function of the TSP-C is the same as NaOH. The TSP-C will act as a buffering agent to raise the pH of the water in the containment emergency sump to at least 7.0 before the recirculation phase of the post-LOCA actions begins. TSP-C does not create a personnel safety hazard in its handling as does NaOH.
3. The proposed change will not involve a significant reduction in the margin of safety. The TSP-C will buffer the sump water sufficiently to assure that the resulting mixture pH is at least 7.0. A pH at this level will be effective in reducing the potential for iodine re-evolution during the recirculation phase of the accident and preventing long-term stress corrosion.