

### 3.1.5 Chemistry

#### Specification

- 3.1.5.1 If the concentration of oxygen in the primary coolant exceeds 0.1 ppm during power operation, corrective action shall be initiated within eight hours to return oxygen levels to  $\leq$  0.1 ppm.
- 3.1.5.2 If the concentration of chloride in the primary coolant exceeds 0.15 ppm during power operation, corrective action shall be initiated within eight hours to return chloride levels to  $\leq$  0.15 ppm.
- 3.1.5.3 If the concentration of fluorides in the primary coolant exceeds 0.15 ppm following modifications or repair to the primary system involving welding, corrective action shall be initiated within eight hours to return fluoride levels to  $\leq$  0.15 ppm.
- 3.1.5.4 If the concentration limits of oxygen, chloride or fluoride in 3.1.5.1, 3.1.5.2 and 3.1.5.3 above are not restored within 24 hours the reactor shall be placed in a shutdown condition within 12 hours thereafter. If the normal operational limits are not restored within an additional 24-hour period, the reactor shall be placed in a cold shutdown condition within 24-hours thereafter.
- 3.1.5.5 If the oxygen concentration and the chloride or fluoride concentration of the primary coolant system individually exceed 1.0 ppm. the reactor shall be immediately brought to the hot shutdown condition using normal shutdown procedure and action is to be taken immediately to return the system to within normal operation specifications. If normal operating specifications have not been reached in 12 hours, the reactor shall be brought to a cold shutdown condition using normal procedure.

#### Bases

By maintaining the chloride, fluoride and oxygen concentration in the reactor coolant within the specifications, the integrity of the reactor coolant system is protected against potential stress corrosion attack. (1,2)

The oxygen concentration in the reactor coolant system is normally expected to be below detectable limits since dissolved hydrogen is used when the reactor is critical and a residual of hydrazine is used when the reactor is subcritical to control the oxygen. The requirement that the oxygen concentration not exceed 0.1 ppm during power operation is added assurance that stress corrosion cracks will not occur. (4)

If the oxygen, chloride, or fluoride limits are exceeded, measures can be taken to correct the condition (e.g., switch to the spare demineralizer, replace the ion exchange resin, increase the hydrogen concentration in the makeup tank, etc.) and further because of the time dependent nature of any adverse effects arising from chlorides or oxygen concentrations in excess of the limits, it is unnecessary to shutdown immediately, since the condition can be corrected.