3.1.1 Operable Components (continued)

h. Forced circulation (starting the first primary coolant pump) shall not be initiated unless one of the following conditions is met:

(1) PCS cold leg temperature (T_c) is > 430°F.

(2) S/G secondary temperature is ≤ T_c.

(3) S/G secondary temperature is < 100°F above T_c, and shutdown cooling is isolated from the PCS, and PCS heatup/cooldown rate is ≤ 10°F/hour.

(4) S/G secondary temperature is < 100°F above T_c, and shutdown cooling is isolated from the PCS, and pressurizer level is ≤ 57%.

i. When the PCS cold leg temperature is < 300°F, primary coolant pumps P-50A and P-50B shall not be operated simultaneously.

j. The PCS shall not be heated or maintained above 300°F unless a minimum of 375 kW of pressurizer heater capacity is available from both buses 1D and 1E. Should heater capacity from either bus 1D or 1E fall below 375 kW, either restore the inoperable heaters to provide at least 375 kW of heater capacity from both buses 1D and 1E within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

Basis

When primary coolant boron concentration is being changed, the process must be uniform throughout the primary coolant system volume to prevent stratification of primary coolant at lower boron concentration which could result in a reactivity insertion. Sufficient mixing of the primary coolant is assured if one shutdown cooling or one primary coolant pump is in operation.[1] The shutdown cooling pump will circulate the primary system volume in less than 60 minutes when operated at rated capacity. By imposing a minimum shutdown cooling pump flow rate of 2810 gpm, sufficient time is provided for the operator to terminate the boron dilution under asymmetric flow conditions.[5] The pressurizer volume is relatively inactive, therefore will tend to have a boron concentration higher than rest of the primary coolant system during a dilution operation. Administrative procedures will provide for use of pressurizer sprays to maintain a nominal spread between the boron concentration in the pressurizer and the primary system during the addition of boron.[2]

The 57% pressurizer level, in section 3.1.1h(4), is not an analytical result, but simply a decision point between having and not having a bubble. It was chosen to agree with the maximum programmed level during power operation.

The limitation, in section 3.1.1i, on operating P-50A and P-50B together with T_c below 300°F allows the Pressure Temperature limits of Figures 3-1 and 3-2 to be higher than they would be without this limit.

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