

cladding temperatures. This was demonstrated in the CESSAR FSAR SBLOCA spectrum analysis, which became the break spectrum analysis for PVNGS Cycle 1.

The peak cladding temperatures from the Cycle 1 analyses for the 0.20, 0.35, and 0.5 ft<sup>2</sup> breaks were all calculated to occur shortly after injection from the SITs began. The peak cladding temperature for the 0.05 ft<sup>2</sup> break was calculated to occur prior to the initiation of flow from the SITs.

Based on the above, the licensee concluded that the 0.05 ft<sup>2</sup> break size with a peak cladding temperature of 1907°F was the limiting SBLOCA break size. This peak cladding temperature is less than the 10 CFR Part 50 acceptance criteria of 2200°F.

### 3.1.3 Post-LOCA Long-Term Cooling (LTC)

The licensee performed the post-LOCA LTC analysis using ABB-CE's NRC-approved evaluation model. The same methodology was used in the previous PVNGS LTC analysis performed at the current rated core power of 3800 Mwt. The licensee stated that the objective of the analysis was to demonstrate, for a complete spectrum of break sizes, that (1) core decay heat is removed in the long term while the core temperature is maintained at an acceptably low value, and (2) the boric acid concentration in the core is maintained below its solubility limit.

The licensee's analysis demonstrated that core decay heat can be removed over the long term for a complete spectrum of break sizes. For breaks smaller than 0.03 ft<sup>2</sup>, core decay heat removal can be accomplished by initiating and maintaining shutdown cooling. For breaks larger than 0.006 ft<sup>2</sup>, core decay heat removal can be accomplished by maintaining simultaneous hot- and cold-leg high-pressure safety injection. The overlap in these break sizes is the range within which either the large- or small-break cooling procedures could be successfully performed. The analysis determined that more than 13 hours is required to exhaust all auxiliary feedwater during a cooldown of the RCS. This gives the operator ample time to determine, and begin using, the appropriate long-term decay heat removal method.

The licensee indicated that the analysis for the proposed RTP increase demonstrated that the boric acid concentration in the core is maintained below its solubility limit if a minimum high-pressure safety injection flow of 380 gpm is begun to both the hot and cold side of the RCS between 2 and 3 hours after the start of the LOCA. This is 20 gpm more than the minimum required flow rate of 360 gpm for the previous analysis at a rated core power of 3800 Mwt. UFSAR Section 6.3.3.4.1 describes the 2-3 hour safety injection (SI) delay assumed in the previous analysis. TS Surveillance Requirement 4.5.2.h for each of the PVNGS units requires a minimum flow well in excess of the 380 gal/min hot- and cold-side flow needed to meet the safety analysis requirement for operation at the proposed increased RTP. (TS 4.5.2.h requires, for simultaneous hot and cold leg injection, 525 gpm hot leg flowrate and 525 gpm sum of cold leg flowrates).



11

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- 2 -

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