

COMPONENT AND SUBSYSTEM DESIGN

and pressure have been reduced to approximately 350°F and 376 lb/in.²a, the SCS is put into operation.

In their shutdown cooling function, the LPSI pumps take suction from one of the two RCS hot legs. Heat is removed by circulating this flow through the shutdown cooling heat exchangers (SCHXs). The cooled flow returns to the RCS through four LPSI headers connected to the cold legs. Plant cool-down rate is controlled by flow control valves which permit proportioning the amount of shutdown cooling flow passing through the heat exchangers and heat exchanger bypass line. The SCS reduces reactor coolant temperature to refueling temperature and maintains this temperature during refueling operations.

The SCHXs are also used during the recirculation mode following a loss-of-coolant incident for containment spray purposes, as discussed in subsections 6.2.2 and 6.5.2.

The SCS is used in conjunction with steam generator atmospheric dump and emergency feedwater to cool down and depressurize the RCS following a small break LOCA (see section 6.3).

No components of the SCS for Unit 2 are shared by Unit 3.

5.4.7.1.2 Design Criteria

In addition to the functional requirements of paragraph 5.4.7.1.1, the following design requirements form the design basis for the SCS:

- A. The functional requirements defined in paragraph 5.4.7.1.1 must be met assuming the failure of a single active component.
- B. No single active failure will allow overpressurization of the SCS. Positive isolation from the RCS is provided whenever the RCS is above the shutdown cooling initiation pressure of 376 lb/in.²a (pressurizer). Isolation valves with appropriate interlocks are provided on the SCS suction line for this purpose. The valves and interlocks are discussed in paragraph 5.4.7.2.2.

Overpressure protection from the safety injection tanks is discussed in paragraph 6.3.2.2.1.

The SCS is provided with appropriate relief valves for overpressure protection. Design basis for pressure relief capacity is discussed in paragraph 5.4.7.2.2.

- C. ~~No single active failure prevents at least one train of the SCS from being aligned and operated from the control room either during a normal plant cooldown or following an accident. A failure modes and effects analysis of the SCS is provided in table 5.4.7. *~~

* Note: Applicable for 7 days from the date of the amendment or until repair of the shutdown cooling line leak is completed, whichever occurs first.