LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
h. If both of the above required subsystems become inoperable, suspend core alterations and all operations that have a potential for draining the reactor vessel. Restore at least one subsystem to operable status within 4 hours or establish secondary containment integrity within the next 12 hours.	
i. With the downcomers in the suppression chamber having less than three and one half foot submergence, two core spray subsystems and the associated raw water pumps shall be operable with the core spray suction from the condensate storage tanks (CST), and the CST inventory shall not be less than 300,000 gallons.	

LIMITING CONDITION FOR OPERATION

3.3.2 PRESSURE SUPPRESSION SYSTEM PRESSURE SUPPRESSION CHAMBER WATER TEMPERATURE AND LEVEL

Applicability:

Applies to the interrelated parameters pressure suppression system pressure suppression chamber water temperature and level.

Objective:

To assure that the peak suppression chamber pressure does not exceed design values in the event of a loss-of-coolant accident.

Specification:

a. The downcomers in the suppression chamber shall have a minimum submergence of three and one half feet and maximum submergence of four and one quarter feet whenever the reactor coolant system temperature is above 215F.

b. During normal power operation, suppression chamber water temperature shall be less than or equal to 85F.

SURVEILLANCE REQUIREMENT

4.3.2 PRESSURE SUPPRESSION SYSTEM PRESSURE AND SUPPRESSION CHAMBER WATER TEMPERATURE AND LEVEL

Applicability:

Applies to the periodic testing of the pressure suppression system pressure and suppression chamber water temperature and level.

Objective:

To assure that the pressure suppression system pressure and suppression chamber water temperature and level are within required limits.

Specification:

a. At least once per day the suppression chamber water level and temperature and pressure suppression system pressure shall be checked.

b. A visual inspection of the suppression chamber interior, including water line regions, shall be made at each major refueling outage.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
c. If Specifications a and b above are not met within 24 hours, the reactor shall be shut down using normal shutdown procedures.	c. Whenever heat from relief valve operation is being added to the suppression pool, the pool temperature shall be continually monitored and also observed and logged every 5 minutes until the heat addition is terminated.
d. During testing of relief valves which add heat to the torus pool, bulk pool temperature shall not exceed 10F above normal power operation limit specified in b above. In connection with such testing, the pool temperature must be reduced within 24 hours to below the normal power operation limit specified in b above.	d. When operation of a relief valve is indicated and the bulk suppression pool temperature reached 160F or above while the reactor primary coolant system pressure is greater than 200 psig, an external visual examination of the suppression chamber shall be made before resuming normal power operation.
e. The reactor shall be scrammed from any operating condition when the suppression pool bulk temperature reaches 110F. Operation shall not be resumed until the pool temperature is reduced to below the normal power operation limit specified in b above.	e. Whenever there is indication of relief valve operation with the local temperature of the suppression pool reaching 200F or more, an external visual examination of the suppression chamber shall be conducted before resuming power operation.
f. During reactor isolation conditions, the reactor pressure vessel shall be depressurized to less than 200 psig at normal cooldown rates if the pool bulk temperature reaches 120F.	

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BASES FOR 3.3.2 AND 4.3.2 PRESSURE SUPPRESSION SYSTEM PRESSURE AND SUPPRESSION CHAMBER WATER TEMPERATURE AND LEVEL

The combination of three and one half foot downcomer submergence, 85F suppression chamber water temperature at lake water temperature defined by specification 3.3.7/4.3.7 will maintain post accident system temperature and pressure within FSAR design limits (FSAR Section VI, XV, and XVI).

The three and one half foot minimum and the four and one-quarter foot maximum submergence are a result of Suppression Chamber Heat-up Analysis and the Mark I Containment Program respectively. The minimum submergence provides sufficient water to meet the Suppression Chamber Heatup Analysis post LOCA and the maximum submergence limits the torus levels to be consistent with the Mark I Plant Unique Analysis.

The 215F limit for the reactor is specified, since below this temperature the containment can tolerate a blowdown without exceeding the 35 psig design pressure of the suppression chamber without condensation.

Actually, for reactor temperatures up to 312F the containment can tolerate a blowdown without exceeding the 35 psig design pressure of the suppression chamber, without condensation.

Some experimental data suggests that excessive steam condensing loads might be encountered if the bulk temperature of the suppression pool exceeds 160F during any period of relief valve operation with sonic conditions at the discharge exit. This can result in local pool temperatures in the vicinity of the quencher of 200F. Specifications have been placed on the envelope of reactor operating conditions so that the reactor can be depressurized in a timely manner to avoid the regime of potentially high suppression chamber loadings.

In addition to the limits on temperature of the suppression chamber pool water, operating procedures define the action to be taken in the event of a relief valve inadvertently opens or sticks open. As a minimum, this acton would include: (1) use of all available means to close the valve, (2) initiate suppression pool water cooling heat exchangers, (3) initiate reactor shutdown, (4) if other relief valves are used to depressurize the reactor, their discharge shall be separated from that of the stuck-open relief valve to assure mixing and uniformity of energy insertion to the pool.

Because of the large volume and thermal capacity of the suppression pool, the volume and temperature normally changes very slowly and monitoring these parameters daily is sufficient to establish any temperature trends. By requiring the suppression pool temperature to be continually monitored and frequently logged during periods of significant heat addition, the temperature trends will be closely followed so that appropriate action can be taken. The requirement for an external visual examination following any event where potentially high loadings

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
f. The containment spray system shall be considered operable by verifying that lake water temperature does not exceed 81F	f. Lake Water Temperature Record at least once per 24 hours, and at least once per 8 hours when latest recorded water temperature is greater than or equal to 75°F and at least once per 4 hours when the latest recorded water temperature is greater than or equal to 79°F.
g. If specification "f" cannot be met commence shutdown within one hour and be in hot shutdown within 8 hours and cold shutdown within 24 hours.	

For reactor coolant temperatures less than 215F not enough steam is generated during a loss-of-coolant accident to pressurize the containment. For reactor coolant temperatures up to 312F, the resultant loss-of-coolant accident pressure would not exceed the design pressure of 35 psig.

Operation of only one containment spray pump is sufficient to provide the required containment spray cooling flow.[1] The specified flow of 3600 gpm at 87.7 psid primary, 89 psid secondary (approximately 95 percent to the drywell and the balance to the suppression chamber) is sufficient to remove post accident core energy released (FSAR Section VII). Requiring both pumps in both systems operable (400 percent redundancy) will assure the availability of the containment spray system.[1]

Allowable outages are specified to account for components that become inoperable in both systems and for more than one component in a system.

The containment spray raw water cooling system is considered operable when the flow rate is not less then 3000 gpm and the pressure on the raw water side of the containment spray heat exchangers is 10 psig greater than that on the torus water side (not less than 141 psig). The higher pressure on the raw water side will assure than any leakage is into the containment spray system.

Electrical power for all system components is normally available from the reserve transformer. Upon loss of this service the pumping requirement will be supplied from the diesel generator. At least one diesel generator shall always be available to provide backup electrical power for one containment spray system.

Automatic initiation of the containment spray system assures that the containment will not be overpressurized. This automatic feature would only be required if all core spray systems malfunctioned and significant metal-water reaction occurred. For the normal operation condition of 85F suppression chamber water, containment spray actuation would not be necessary for about 15 minutes.

[1] With two of the containment spray intertie valves open, operation of two containment spray pumps is required to assure the proper flow distribution to the containment spray headers to reduce containment pressure during the first fifteen minutes of the LOCA. Requiring two containment spray pumps to operate reduces the 400 percent redundancy of the containment spray system, but there are still six combinations (two out of four pumps) that will assure two pump operation.

In conjunction with containment spray pump operation during each operating cycle, the raw water pumps and associated cooling system performance will be observed. The containment spray system shall be capable of automatic initiation from simultaneous low-low reactor water level and high containment pressure. The associated raw water cooling system shall be capable of manual actuation. Operation of the containment spray system involves spraying water into the atmosphere of the containment. Therefore, periodic system tests are not practical. Instead separate testing of automatic containment spray pump startup will be performed during each operating cycle. During pump operation, water will be recycled to the suppression chamber. Also, air tests to verify that the drywell and torus spray nozzles and associated piping are free from obstructions will be performed each operating cycle. Design features are discussed in Volume I, Section VII-B.2.0 (page VII-19*). The valves in the containment spray system are normally open and are not required to operate when the system is called upon to operate.

The test interval between operating cycle results in a system failure probability of 1.1×10^{-6} (Fifth Supplement, page 115*) and is consistent with practical considerations. Pump operability will be demonstrated on a more frequent bases and will provide a more reliable system.

The intent of Specification 3.3.7f is to allow control rod drive maintenance and instrument replacement at the time that the suppression chamber is unwatered and to perform normal fuel movement activities in the refuel mode with an unwatered suppression chamber.

*FSAR