ATTACHMENT 1

Consumers Power Company
Palisades Plant
Docket 50-255

PROPOSED TECHNICAL SPECIFICATIONS
PAGE CHANGES

June 13, 1990

3 Pages

8

3.3 EMERGENCY CORE COOLING SYSTEM

Applicability

Applies to the operating status of the emergency core cooling system.

Objective

To assure operability of equipment required to remove decay heat from the core in either emergency or normal shutdown situations.

Specifications

Safety Injection and Shutdown Cooling Systems

3.3.1 The reactor shall not be made critical, except for low-temperature physics tests, unless all of the following conditions are met:

a. The SIRW tank contains not less than 250,000 gallons of water with a boron concentration of at least 1720 ppm but not more than 2000 ppm at a temperature not less than 40°F.

b. All four Safety Injection tanks are operable and pressurized to at least 200 psig with a tank liquid level of at least 174 inches (52%) and a maximum level of 198 inches (59%) with a boron concentration of at least 1720 ppm but not more than 2000 ppm. / /

c. One low-pressure Safety Injection pump is operable on each bus.

d. One high-pressure Safety Injection pump is operable on each bus.

e. Both shutdown heat exchangers and both component cooling heat exchangers are operable.

f. Piping and valves shall be operable to provide two flow paths from the SIRW tank to the primary cooling system.

g. All valves, piping and interlocks associated with the above components and required to function during accident conditions are operable.

h. The Low-Pressure Safety Injection Flow Control Valve CV-3006 shall be opened and disabled (by isolating the air supply) to prevent spurious closure.

i. The Safety Injection bottle motor-operated isolation valves shall be opened with the electric power supply to the valve motor disconnected.

j. The Safety Injection miniflow valves CV-3027 and 3056 shall be opened with HS-3027 and 3056 positions to maintain them open.

c. If Specification a. and b. cannot be met, an orderly shutdown shall be initiated and the reactor shall be in hot shutdown condition within 12 hours, and cold shutdown within the next 24 hours.

Basis

The normal procedure for starting the reactor is, first, to heat the primary coolant to near operating temperature by running the primary coolant pumps. The reactor is then made critical by withdrawing control rods and diluting boron in the primary coolant.[1] With this mode of start-up, the energy stored in the primary coolant during the approach to criticality is substantially equal to that during power operation and, therefore, all engineered safety features and auxiliary cooling systems are required to be fully operable. During low-temperature physics tests, there is a negligible amount of stored energy in the primary coolant; therefore, an accident comparable in severity to the design basis accident is not possible and the engineered safeguards' systems are not required.

The SIRW tank contains a minimum of 250,000 gallons of water containing 1720 ppm boron. This is sufficient boron concentration to provide a 5% shutdown margin with all control rods withdrawn and a new core at a temperature of 60°F.

Heating steam is provided to maintain the tank above 40°F to prevent freezing. The 1% boron (1720 ppm) solution will not precipitate out above 32°F. The source of steam during normal plant operation is extraction steam line in the turbine cycle.

The limits for the safety injection tank pressure and volume assure the required amount of water injection during an accident and are based on values used for the accident analyses. The minimum 174-inch level corresponds to a volume of 1040 ft^3 and the maximum 198-inch level corresponds to a volume of 1166 ft^3.

Prior to the time the reactor is brought critical, the valving of the safety injection system must be checked for correct alignment and appropriate valves locked. Since the system is used for shutdown cooling, the valving will be changed and must be properly aligned prior to start-up of the reactor.

The operable status of the various systems and components is to be demonstrated by periodic tests. A large fraction of these tests will be performed while the reactor is operating in the power range. If a component is found to be inoperable, it will be possible in most cases to effect repairs and restore the system to full operability within a relatively short time. For a single component to be inoperable does not negate the ability of the system to perform its function, but it reduces the redundancy provided in the reactor design and thereby limits the

Basis (continued)

demonstrate that the maximum fuel clad temperatures that could occur over the break size spectrum are well below the melting temperature of zirconium (3300°F).

Malfunction of the Low Pressure Safety Injection Flow control valve could defeat the Low Pressure Injection feature of the ECCS; therefore, it is disabled in the 'open' mode (by isolating the air supply) during plant operation. This action assures that it will not block flow during Safety Injection.

The inadvertent closing of any one of the Safety Injection bottle isolation valves in conjunction with a LOCA has not been analyzed. To provide assurance that this will not occur, these valves are electrically locked open by a key switch in the control room. In addition, prior to critical the valves are checked open, and then the 480 volt breakers are opened. Thus, a failure of a breaker and a switch are required for any of the valves to close.

Insuring both HPSI pumps are inoperable when the PCS temperature is < 260°F or the shutdown cooling isolation valves are open eliminates PCS mass additions due to inadvertent HPSI pump starts. Both HPSI pumps starting in conjunction with a charging/letdown imbalance may cause 10CFR50 Appendix G limits to be exceeded when the PCS temperature is < 260°F. When the PCS temperature is ≥ 430°F, the pressurizer safety valves ensure that the PCS pressure will not exceed 10CFR50 Appendix G.

The requirement to have both HPSI trains operable above 325°F provides added assurance that the effects of a LOCA occuring under LTOP conditions would be mitigated. If a LOCA occurs when the primary system temperature is less than or equal to 325°F, the pressure would drop to the level where low pressure safety injection can prevent core damage. Therefore, when the PCS temperature is ≥260°F and ≤325°F operation of the HPSI system would not cause the 10CFR50 Appendix G limits to be exceeded nor is HPSI system operation necessary for core cooling.

HPSI pump testing with the HPSI pump manual discharge valve closed is permitted since the closed valve eliminates the possibility of pump testing being the cause of a mass addition to the PCS.

References

(1) FSAR, Section 9.10.3;
(2) FSAR, Section 6.1,
(3) FSAR, Section 14.17 /
(4) Letter , H. G. Shaw (ANF) to R. J. Gerling (CPco), "SRP Chapter 15 Disposition of Events Review for Changes to Technical Specification/ Limits on Palisades Safety Injection Tank Liquid Levels", / April 11, 1990 /

ATTACHMENT 2

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MARKED UP TECHNICAL SPECIFICATIONS PAGES

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Insert Change A →

b. All four Safety Injection tanks are operable and pressurized to at least 200 psig with a tank liquid level of at least ~~186~~ 174 inches (~~55±5%~~ 52%) and a maximum level of 198 inches (59%) with a boron concentration of at least 1720 ppm but not more than 2000 ppm.

c. One low-pressure Safety Injection pump is operable on each bus.

d. One high-pressure Safety Injection pump is operable on each bus.

e. Both shutdown heat exchangers and both component cooling heat exchangers are operable.

f. Piping and valves shall be operable to provide two flow paths from the SIRW tank to the primary cooling system.

g. All valves, piping and interlocks associated with the above components and required to function during accident conditions are operable.

h. The Low-Pressure Safety Injection Flow Control Valve CV-3006 shall be opened and disabled (by isolating the air supply) to prevent spurious closure.

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Insert Change B

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(3)
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