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5. Pressurizer Power-Operated Relief Valves (PORV) and PORV Block Valves

If a unit is placed in the HOT SHUTDOWN condition in accordance with the requirements of Specifications a(1) through a(5) below, then the reactor coolant system temperature should be maintained greater than ~~the minimum pressurization temperature for the inservice pressure test as defined in Figure 15.3.1-1~~ 355°F. If cooldown to less than this temperature is required in order to take action to restore the inoperable component(s) to service, then the requirements of Specification 15.3.15 apply.

a. Two PORVs and their associated block valves shall be operable.

(1) If one or both PORVs are INOPERABLE due to seat leakage in excess of that allowed in Specifications 15.3.1.D, within one hour either restore the PORVs to an operable status or close the associated block valves(s). If these conditions cannot be met, place the unit in a HOT SHUTDOWN condition within the next six hours.

(2) If one PORV is INOPERABLE due to causes other than excessive seat leakage, within one hour either restore the PORV to OPERABLE status or close its associated block valve and remove power from the block valve. If the PORV cannot be restored to operable status within 72 hours, place the unit in a HOT SHUTDOWN condition within the next six hours.

(3) If both PORVs are INOPERABLE due to causes other than excessive seat leakage, within one hour restore at least one PORV to OPERABLE status. If this condition cannot be met, close the associated block valves, remove power from the block valves and place the unit in a HOT SHUTDOWN condition within the next six hours.

(4) If one block valve is inoperable, within one hour either restore the block valve to OPERABLE status or place the associated PORV in manual control. Restore the block valve to OPERABLE status within 72 hours. If these conditions cannot be met, place the unit in a HOT SHUTDOWN condition within the next six hours.

15.3.15 ~~OVERPRESSURE MITIGATING~~ LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM ~~OPERATIONS~~

Applicability

Applies to operability of the low temperature overpressure protection (LTOP) ~~mitigating~~ system when the reactor coolant system temperature is ~~less than the minimum temperature for the inservice pressure test~~ ≤ 355°F.

Objective

To specify functional requirements and limiting conditions for operation on the use of the pressurizer power operated relief valves when used as part of the ~~overpressure mitigating~~ LTOP system and to specify further limiting conditions for operation when the reactor coolant system is operated ~~without a pressure absorbing volume in the pressurizer~~ at low temperatures.

Specification

A. System Operability

1. Except as specified in 15.3.15.A.2 below, the ~~overpressurization mitigating~~ LTOP system shall be operable whenever the reactor coolant system is not open to the atmosphere and the temperature is ~~less than the minimum pressurization temperature for the inservice pressure test, as specified in Figure 15.3.1-1~~ ≤ 355°F. Operability requirements are:
   a. Both pressurizer power operated relief valves operable at a setpoint of ≤~~425~~440 psig.
   b. Both power operated relief valve block valves are open.
2. The requirements of 15.3.15.A.1 may be modified as specified below:
   a. With one PORV inoperable while reactor coolant system temperature is >200°F but ~~less than the minimum pressurization temperature for the inservice pressure test~~ ≤ 355°F, either restore the inoperable PORV to operable status within 7 days, or depressurize and vent reactor coolant system within the next 8 hours.
   b. With one PORV inoperable while reactor coolant system temperature is ≤200°F, either restore the inoperable PORV to operable status within 24 hours, or depressurize and vent the reactor coolant system within a total of 32 hours.
   c. With both power operated relief valves inoperable while the reactor coolant system temperature is ~~less than the minimum pressurization temperature for the inservice pressure test~~ ≤ 355°F, the reactor coolant system must be depressurized and vented within 8 hours.
3. If the reactor coolant system is vented per Specification 15.3.15.A.2.a, b, or c, the pathway must be verified at least once every 31 days when it is provided by a non-isolable pathway or by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise, verify the pathway every 12 hours.

B. Additional Limitations

1. ~~When the reactor coolant system is not open to the atmosphere and the temperature of one or both reactor coolant system cold legs is ≤275°F~~ When LTOP is required to be enabled by Specification 15.3.15.A.1, no more than one high pressure safety injection pump shall be operable. The second high pressure safety injection pump shall be ~~demonstrated~~ rendered inoperable whenever ~~the temperature of one or both reactor coolant system cold legs is ≤275°F.~~ LTOP is required to be enabled by verifying that the motor circuit breakers have been removed from their electrical power supply circuits or by verifying that the discharge valves from the high pressure safety injection pumps to the reactor coolant system are shut and that power is removed from their operators.

2. A reactor coolant pump shall not be started when the reactor coolant system temperature is ~~less than the minimum temperature for the inservice pressure test~~ < 355°F unless:

   a. There is a pressure absorbing volume in the pressurizer or in the steam generator tubes or

   b. The secondary water temperature of each steam generator is less than 50°F above the temperature of the reactor coolant system.

Basis

The ~~Overpressurization Mitigating~~ Low Temperature Overpressure Protection System consists of a ~~diverse~~ redundant means of relieving pressure during periods of water solid operation and when the reactor coolant system temperature is ~~below the value permitted to perform the primary system leak test~~ < 355°F. This method of water relief utilizes the pressurizer power operated relief valves (PORV's). The PORV's are made operational for low pressure relief by utilizing a dual setpoint where the low pressure circuit is energized and de-energized by the operator with a keylock switch depending on plant conditions. The logic required for the low pressure setpoint is in addition to the existing PORV actuation logic and will not interfere with existing automatic or manual actuation of the PORV's. The OPERABILITY of the PORVs is determined on the basis of their being capable of automatically mitigating an overpressure event during low temperature operation. The LTOP setpoint of 440 psig is valid through an inside surface neutron fluence of the limiting reactor vessel material of less than or equal to 2.05×10^{19} n / cm^2 (E > 1.0 Mev).

During plant cooldown prior to reducing reactor coolant system temperature below ~~the minimum temperature allowable for the inservice pressure test~~ 355°F, the operator under administrative procedures shall place the keylock switch in the "Low Pressure" position. This action enables the Low Temperature Overpressure Protection ~~Mitigating~~ System. The redundant PORV channels shall remain enabled and operable while the ~~Overpressure Mitigation~~ LTOP system is required to be in operation.

The reactor coolant system is defined as vented if there is an opening in the reactor coolant system pressure boundary to atmosphere or the pressurizer relief tank that has an equivalent system pressure relieving capability as a PORV. Some examples of such openings include an open or removed PORV, open steam generator or pressurizer manways, a removed pressurizer safety valve, and the top of the reactor vessel when the reactor vessel head has been unbolted or removed.

The mass input transient used to determine the PORV setpoint assumes~~d~~s a worse case transient of a single high pressure safety injection pump discharging to the reactor coolant system while the system is solid. Therefore, when ~~the reactor coolant system is less than 275°F~~ LTOP is required to be enabled, only one high pressure safety injection pump shall be operable at any time except when the reactor coolant system is open to the atmosphere.

The heat input transient used to determine the PORV setpoint assumes a temperature difference between the reactor coolant system and the steam generator of 50°F. Therefore, before starting a reactor coolant pump when the reactor coolant system is solid, the operator shall ~~i~~ensure that the secondary temperature of each steam generator is less than 50°F above the temperature of the reactor coolant system unless a pressure absorbing volume has been verified to exist in the pressurizer or steam generator tubes.

TABLE 15.4.1-1 (continued)

NO.	CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	PLANT CONDITIONS WHEN REQUIRED
20.	Auxiliary Feedwater Flowrate	(13)	R	-	ALL
21.	Boric Acid Control System	-	R	-	ALL
22.	Boric Acid Tank Level	D	R	-	ALL
23.	Charging Flow	-	R	-	ALL
24.	Condensate Storage Tank Level	S(1)	R	-	ALL
25.	Containment High Range Radiation	S(1)	R(14)	M(1)	ALL
26.	Containment Hydrogen Monitor	D	-	-	ALL
	-Gas Calibration	-	Q(15)	-	ALL
	-Electronic Calibration	-	R	-	ALL
27.	Containment Pressure	S	R	Q(1,3,9)	ALL
28.	Containment Water Level	M	R	-	ALL
29.	Emergency Plan Radiation Survey Instruments	Q	R	Q	ALL
30.	Environmental Monitors	M	-	-	ALL
31.	In-Core Thermocouples	M	R(14)	-	ALL
32.	Low Temperature Overpressure ~~Mitigating~~ Protection System	S(12)	R	(10)	ALL
33.	PORV Block Valve Position Indicator	Q	R	-	ALL
34.	PORV Operability	-	R	Q(11)	ALL
35.	PORV Position Indicator	S(21)	R	R	ALL

15.6.9.2 Unique Reporting Requirements

The following written reports shall be submitted to the Director, Office of Nuclear Reactor Regulation, USNRC:

A. Deleted

B. Poison Assembly Removal From Spent Fuel Storage Racks
Plans for removal of any poison assemblies from the spent fuel storage racks shall be reported and described at least 14 days prior to the planned activity. Such report shall describe neutron attenuation testing for any replacement poison assemblies, if applicable, to confirm the presence of boron material.

C. Low Temperature Overpressure ~~Mitigating~~Protection System Operation
In the event the low temperature overpressure ~~mitigating~~ protection system (power operated relief valves in the low temperature overpressure protection mode) or residual heat removal system relief valves are operated to relieve a pressure transient which, by licensee's evaluation, could have resulted in an overpressurization incident had the system not been operable, a special report shall be prepared and submitted to the Commission within 30 days. The report shall describe the circumstances initiating the transient, the effect of the system on the transient and any corrective action necessary to prevent recurrence.