SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure is greater than or equal to the limit specified in the COLR ~~≥ [2200] psig~~.	12 hours TA3.4-109
SR 3.4.1.2	Verify RCS average temperature is less than or equal to the limit specified in the COLR ~~≤ [581] °F~~.	12 hours TA3.4-109
~~SR 3.4.1.3~~	~~Verify RCS total flow rate is ≥ [284,000] gpm.~~	~~12 hours~~ CL3.4-103
SR 3.4.1.34	------------------~~NOTE~~------------------ ~~Not required to be performed until 24 hours after ≥ [90]% RTP.~~ -- Verify ~~by precision heat balance that~~ RCS total flow rate is within the limit specified in the COLR~~≥ [284,000] gpm~~.	~~[24~~~~18]~~ months CL3.4-104 PA3.4-106 CL3.4-107 CL3.4-102 R-9 R-2

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops – MODE 3

LCO 3.4.5 ~~[~~Two~~]~~ RCS loops shall be OPERABLE, and either: CL3.4-113

a. ~~[~~Two~~]~~ RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; or

b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

-----------------------------NOTE-----------------------------

Both~~All~~ reactor coolant pumps may be de-energized for ≤ 12 hours to perform preplanned work activities ~~per 8 hour period~~ provided: CL3.4-114 CL3.4-117 TA3.4-115 R-9

a. No operations are permitted that would cause introduction into~~reduction of~~ the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

b. Core outlet temperature is maintained at least 10°F below saturation temperature.

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ~~required~~ RCS loop inoperable.	A.1	Restore inoperable~~required~~ RCS loop to OPERABLE status.	72 hours CL3.4-113

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.5.2	Verify required steam generator capable of removing decay heat. ~~secondary side water levels are ≥ [17]% for required RCS loops.~~	12 hours CL3.4-121 R-9
SR 3.4.5.3	-------------------NOTE-------------------- Not required to be performed until 24 hours after a required pump is not in operation. --- Verify correct breaker alignment and indicated power are available to each~~the~~ required pump~~that is not in operation~~.	TA3.4-125 7 days R-1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops – MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.

---------------------------NOTES--------------------- PA3.4-120

1. All reactor coolant pumps (RCPs) and RHR pumps may be de-energized for ≤ 1 hour per 8 hour period provided: R-9

   a. No operations are permitted that would cause introduction intoreduction of the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and TA3.4-115

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ the Over Pressure Protection System (OPPS) enable temperature specified in the PTLR[275] °F unless: TA3.4-119

   a. Tthe secondary side water temperature of each steam generator (SG) is ≤ [50]°F above each of the RCS cold leg temperatures; or.

   b. There is a steam or gas bubble in the pressurizer. CL3.4-123

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required ~~RCS~~ loop inoperable. ~~AND~~ ~~Two RHR loops inoperable.~~	A.1 Initiate action to restore a second loop to OPERABLE status. AND A.2 -------NOTE------ Only required if RHR loop is OPERABLE. ------------------ Be in MODE 5.	Immediately TA3.4-330 24 hours
~~B. One required RHR loop inoperable.~~ ~~AND~~ ~~Two required RCS loops inoperable.~~	~~B.1 Be in MODE 5.~~	TA3.4-330 ~~24 hours~~

R-9

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C~~B. Both~~Required RCS or RHR~~ loops inoperable. OR ~~No RCS or RHR~~Required loop not in operation.	~~C~~B.1 Suspend ~~all~~ operations that would cause introduction into the~~involving a reduction of~~ RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. AND ~~C~~B.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately TA3.4-115 TA3.4-330 Immediately CL3.4-113

R-9

ACTIONS (continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.4.6.1	Verify ~~one~~ required RHR or RCS loop is in operation.	12 hours TA3.4-330	R-9
SR 3.4.6.2	Verify required SG capable of removing decay heat~~secondary side water levels are ≥ [17]% for required RCS loops~~.	12 hours CL3.4-121	R-9
SR 3.4.6.3	-------------------NOTE------------------- Not required to be performed until 24 hours after a required pump is not in operation. -- Verify correct breaker alignment and indicated power are available to each~~the~~ required pump~~that is not in operation~~.	TA3.4-125 7 days	

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops – MODE 5, Loops Filled

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

a. One additional RHR loop shall be OPERABLE; or

b. ~~The secondary side water level of at least [two]~~ One steam generators~~s~~ (SGs~~s~~) shall be capable of removing decay heat~~ ≥ [17]%~~. CL3.4-126 CL3.4-121

---------------------------NOTES---------------------------

1. The RHR pump of the loop in operation may be de-energized for ≤ 1 hour per 8 hour period provided: R-9

   a. No operations are permitted that would cause introduction into~~reduction of~~ the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and TA3.4-115

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required RHR loop may be inoperable for ≤~~up to~~ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation. PA3.4-127

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ the Over Pressure Protection System (OPPS) enable temperature specified in the PTLR~~[275] °F~~ unless: TA3.4-119

   a. T~~t~~he secondary side water temperature of each SG is ≤ ~~[~~50~~]~~°F above each of the RCS cold leg temperatures; or~~.~~

   b. There is a steam or gas bubble in the pressurizer. CL3.4-123

4. Both~~All~~ RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation. CL3.4-128

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RHR loop inoperable. AND One RHR loop OPERABLE ~~Required SGs secondary side water levels not within limits~~.	A.1 Initiate action to restore a second RHR loop to OPERABLE status. OR A.2 Initiate action to restore required SG capable to remove decay heat~~secondary side water levels to within limits~~.	Immediately TA3.4-330 CL3.4-113 Immediately CL3.4-121
B. One or more SGs not capable of decay heat removal. AND One RHR loop OPERABLE.	B.1 Initiate action to restore a second RHR loop to OPERABLE status. OR B.2 Initiate action to restore required SG capable to remove decay heat.	Immediately TA3.4-330 Immediately CL3.4-121

R-9

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B~~C. No ~~R~~required RHR loops ~~inoperable~~ OPERABLE. ~~OR~~AND ~~No~~Required RHR loop not in operation.	~~B~~C.1 Suspend ~~all~~ operations that would cause introduction into the~~involving a reduction of~~ RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. AND ~~B~~C.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	CL3.4-128 Imm ediately TA3.4-115 TA3.4-330 Immediately R-9

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify required ~~one~~ RHR loop is in operation.	12 hours TA3.4-330
SR 3.4.7.2	Verify ~~SG secondary side water level is ≥ [17]% in~~ required SGs capable of removing decay heat.	CL3.4-121 12 hours

R-9

(continued)

SR 3.4.7.3	-------------------NOTE------------------- Not required to be performed until 24 hours after a required pump is not in operation. -- Verify correct breaker alignment and indicated power are available to each~~the~~ required RHR pump~~ that is not in operation~~.	TA3.4-125 7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops – MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

---------------------------NOTES---------------------------

1. All RHR pumps may be de-energized for ≤ 1 hour per 8 hour period ~~15 minutes when switching from one loop to another~~ provided: CL3.4-131

   ab. No operations are permitted that would cause introduction into ~~a reduction of~~ the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; ~~and~~ R-9 TA3.4-115

   ba. ~~[~~The core outlet temperature is maintained > 10°F below saturation temperature; and~~.]~~

   c. No draining operations to further reduce the RCS water volume are permitted.

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately TA3.4-330 R-9

ACTIONS

CONDITION (continued)	REQUIRED ACTION	COMPLETION TIME
		(continued)
B. No Rrequired RHR loops OPERABLE inoperable. OR NoRequired RHR loop not in operation.	B.1 Suspend all operations that would cause introduction into theinvolving reduction in RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately CL3.4-128 TA3.4-115
	AND	TA3.4-330
	------------NOTE------------ A Safety Injection pump may be run as required to maintain adequate core cooling and RCS inventory. ---------------------------	R-9
	B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	CL3.4-132 Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify ~~one~~required RHR loop is in operation.	12 hours TA3.4-330 R-9
SR 3.4.8.2	-------------------NOTE-------------------- Not required to be performed until 24 hours after a required pump is not in operation. --- Verify correct breaker alignment and indicated power are available to each~~the~~ required RHR pump~~ that is not in operation~~.	TA3.4-125 7 days

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time not met. OR Both~~Two or more~~ pressurizer safety valves inoperable.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 4 with any RCS cold leg temperatures ≤ the OPPS enable temperature specified in the PTLR ~~[275] °F~~.	24~~12~~ hours TA3.4-139 CL3.4-142 TA3.4-119

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within 1% (2460 to 2510 psig).	PA3.4-143 In accordance with the Inservice Testing Program R-9

R-9

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Low Temperature Overpressure Protection (LTOP) System - Reactor Coolant System Cold Leg Temperature (RCSCLT) > Safety Injection (SI) Pump Disable Temperature

CL3.4-162

R-9

LCO 3.4.12 An LTOP System shall be providedOPERABLE with:

a) a maximum of [one] [high pressure injection SI (HPI)] pump [and one charging pump] capable of injecting into the RCS;

b) and the emergency core cooling system (ECCS) accumulators isolated; CL3.4-163

c) an OPERABLE Over Pressure Protection System (OPPS); and either a or b below.

a. Two RCS relief valves, as follows:

1.d) tTwo OPERABLE pressurizer power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR., or

[2. Two residual heat removal (RHR) suction relief valves with setpoints ≥ [436.5] psig and ≤ [463.5] psig, or]

[3. One PORV with a lift setting within the limits specified in the PTLR and one RHR suction relief valve with a setpoint ≥ [436.5] psig and ≤ [463.5] psig].

b. The RCS depressurized and an RCS vent of ≥ [2.07] square inches.

---NOTES---

1. Both SI pumps may be run for ≤ 1 hour while conducting SI system testing providing there is a steam or gas bubble in the pressurizer and at least one isolation valve between the SI pump and the RCS is shut. CL3.4-164

2. ECCS accumulator may be unisolated when ECCS accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR TA3.4-166 R-9

APPLICABILITY: MODE 4 when any~~all~~ RCS cold leg temperature is ≤ the OPPS enable temperature specified in the PTLR~~[275]°F,~~ and > the SI pump disable temperature specified in the PTLR. TA3.4-165 TA3.4-119

~~MODE 5,~~
~~MODE 6 when the reactor vessel head is on.~~ CL3.4-167

---NOTE---

~~Accumulator isolation is only required when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.~~ TA3.4-166

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Two ~~or more~~ SI~~[HPI]~~ pumps capable of injecting into the RCS.	A.1 Initiate action to verify a maximum of ~~[one]~~ SI~~[HPI]~~ pump is capable of injecting into the RCS.	Immediately PA3.4-159 CL3.4-163

R-9

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two or more charging pumps capable of injecting into the RCS.	B.1 --------NOTE--------- Two charging pumps may be capable of injecting into the RCS during pump swap operation for ≤ 15 minutes. --------------------- Initiate action to verify a maximum of [one] charging pump is capable of injecting into the RCS.	CL3.4-163 Immediately
BC. An ECCS accumulator not isolated when the ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	BC.1 Isolate affected ECCS accumulator.	1 hour CL3.4-163

R-9

(continued)

R-9

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C~~D~~. Required Action and associated Completion Time of Condition B~~[C]~~ not met.	C~~D~~.1 Increase RCS cold leg temperature to > the OPPS enable temperature specified in the PTLR~~[275] °F~~. OR C~~D~~.2 Depressurize affected ECCS accumulator to less than the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	12 hours TA3.4-119 12 hours CL3.4-163
D~~E~~. One required PORV~~RCS relief valve~~ inoperable ~~in MODE 4~~.	D~~E~~.1 Restore required PORV~~RCS relief valve~~ to OPERABLE status.	7 days CL3.4-163
~~F. One required RCS relief valve inoperable in MODE 5 or 6.~~	~~F.1 Restore required RCS relief valve to OPERABLE status.~~	~~24 hours~~ CL3.4-167

(continued)

R-9

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
EG. Two required PORVsRCS relief valves inoperable.	EG.1 Be in MODE 5.	8 hours PA3.4-168
OR	AND	CL3.4-169
Required Action and associated Completion Time of Condition A, C, or [B,] D, E, or F not met.	E.2 Depressurize RCS and establish RCS vent of ≥ 3[2.07] square inches.	128 hours TA3.4-139
OR		
OPPSLTOP System inoperable for any reason other than Condition A, [B,] C, D, E, or F.		

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	Verify a maximum of [one] SI[HPI] pump is capable of injecting into the RCS.	CL3.4-163 12 hours
SR 3.4.12.2	Verify a maximum of one charging pump is capable of injecting into the RCS.	CL3.4-163 12 hours

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.12.23	-----NOTE----- Only required to be performed when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. ---------- Verify each ECCS accumulator is isolated.	X3.4-171 Once within 12 hours and every 12 hours thereafter
~~SR 3.4.12.4~~	~~Verify RHR suction valve is open for each required RHR suction relief valve.~~	~~12 hours~~ CL3.4-163
~~SR 3.4.12.5~~	~~-----NOTE-----~~ ~~Only required to be performed when complying with LCO 3.4.12.b.~~ ~~----------~~ ~~Verify RCS vent ≥ [2.07] square inches open.~~	~~12~~ CL3.4-163 ~~hours for unlocked open vent valve(s)~~ ~~AND~~ ~~31 days for locked open vent valve(s)~~

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.12.36	Verify PORV block valve is open for each required PORV.	72 hours
~~SR 3.4.12.7~~	~~Verify associated RHR suction isolation valve is locked open with operator power removed for each required RHR suction relief valve.~~	CL3.4-163 ~~31 days~~
SR 3.4.12.48	-------------------NOTE-------------------- Not required to be performedmet until 12 hours after decreasing RCS cold leg temperature to ≤ the OPPS enable temperature specified in the PTLR~~[275] °F~~. --- Perform a COT on OPPS~~each required PORV, excluding actuation~~.	TA3.4-157 TA3.4-119 31 days CL3.4-162

(continued)

SR 3.4.12.59	Perform CHANNEL CALIBRATION for each OPPS ~~required PORV~~ actuation channel.	CL3.4-107 24~~[18]~~ months CL3.4-162 R-2

 R-9

3.4 REACTOR COOLANT SYSTEM (RCS)

CL3.4-172

3.4.13 Low Temperature Overpressure Protection (LTOP)- Reactor Coolant System Cold Leg Temperature (RCSCLT) ≤ Safety Injection (SI) Pump Disable Temperature

R-9

LCO 3.4.13 LTOP shall be provided with: 1) no SI Pumps capable of injecting into the RCS; 2) the emergency core cooling system (ECCS) accumulators isolated; and 3) one of the following pressure relief capabilities:

a. An Over Pressure Protection System (OPPS) shall be OPERABLE with two pressurizer power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR, or

b. The RCS depressurized and an RCS vent of ≥ 3 square inches.

--------------------------------NOTES------------------------

1. Both SI pumps may be run for ≤ 1 hour while conducting SI system testing provided there is a steam or gas bubble in the pressurizer, the reactor vessel head is on, and at least one isolation valve between the SI pump and the RCS is shut. R-9

2. During reduced inventory conditions an SI pump may be run as required to maintain adequate core cooling and RCS inventory.

3. ECCS accumulator may be unisolated when ECCS accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR. R-9

APPLICABILITY: MODE 4 when any RCS cold leg temperature is ≤ the SI pump disable temperature specified in the PTLR,

R-9

MODE 5 when the steam generator (SG) primary system manways and pressurizer manway are closed and secured in position,
MODE 6 when the reactor vessel head is on and the SG primary system manways and pressurizer manway are closed and secured in position.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or both SI pump(s) capable of injecting into the RCS.	A.1	Initiate action to verify no SI pump is capable of injecting into the RCS.	Immediately
B. An ECCS accumulator not isolated when the ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	B.1	Isolate affected ECCS accumulator.	1 hour

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(continued)

R-9

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1	Increase RCS cold leg temperature to > the OPPS enable temperature specified in the PTLR.	12 hours
	<u>OR</u>		
	C.2	Depressurize affected ECCS accumulator to less than the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	12 hours
D. ------NOTE------ Only applicable in LCO 3.4.13.a ---------------- One required PORV inoperable.	D.1	Restore required PORV to OPERABLE status.	24 hours

(continued)

~~ACTIONS (continued)~~

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two PORVs inoperable for LCO 3.4.13.a. OR Required Action and associated Completion Time of Condition A, C, or D not met. OR OPPS inoperable.	E.1 Depressurize RCS and establish RCS vent of ≥ 3 square inches.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.13.1	Verify no SI pumps are capable of injecting into the RCS.	12 hours
SR 3.4.13.2	----------------NOTE-------------------- Only required to be performed when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. -- Verify each ECCS accumulator is isolated.	Once within 12 hours and every 12 hours thereafter

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.13.3	-------------------NOTE------------------- Only required to be performed when complying with LCO 3.4.13.b. -- Verify required RCS vent ≥ 3 square inches open.	12 hours for unlocked open vent valve(s) <u>AND</u> 31 days for other vent path(s)
SR 3.4.13.4	Verify PORV block valve is open for each required PORV.	72 hours
SR 3.4.13.5	-------------------NOTE------------------- 1. Not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ the OPPS enable temperature specified in the PTLR. 2. Only required to be performed when complying with LCO 3.4.13.a. -- Perform a COT on OPPS.	31 days

R-9

R-9

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.13.6	Perform CHANNEL CALIBRATION for OPPS actuation channel.	24 months

SURVEILLANCE		FREQUENCY
SR 3.4.143.1	------------------NOTE------------------ Not required to be performed ~~in MODE 3 or 4~~ until 12 hours after establishment of steady state operation. -- Verify RCS operational leakage within limits by performance of~~Perform~~ RCS water inventory balance.	~~-----NOTE------~~ ~~Only required to be performed during steady state operation~~ TA3.4-176 TA3.4-177 ~~----~~ CL3.4-331 ~~72~~ 24 hours R-9
SR 3.4.143.2	Verify steam generator tube integrity is in accordance with the Steam Generator ~~Tube Surveillance~~ Program.	In accordance PA3.4-179 with the Steam Generator ~~Tube Surveillance~~ Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17~~6~~ RCS Specific Activity

LCO 3.4.17~~6~~ The specific activity of the reactor coolant shall be within limits.

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APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 μCi/gm.	------------Note------------ LCO 3.0.4 is not applicable. ----------------------------	
	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.17~~6~~-1.	Once per 4 hours
	<u>AND</u>	
	A.2 Restore DOSE EQUIVALENT I-131 to within limit.	48 hours

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ACTIONS CONDITION (continued)	REQUIRED ACTION	COMPLETION TIME
B. Gross specific activity of the reactor coolant not within limit.	~~B.1 Perform SR 3.4.16.2.~~ ~~AND~~ B.12 Be in MODE 3 with T_{avg} < 500°F.	~~4 hours~~ 6 hours

TA3.4-201

(continued)

C. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.176-1.	C.1 Be in MODE 3 with T_{avg} < 500°F.	6 hours

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.176.1 Verify reactor coolant gross specific activity ≤ 100/Ē μCi/gm.	7 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.176.2	-------------------NOTE------------------- Only required to be performed in MODE 1. -- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 μCi/gm.	14 days <u>AND</u> Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period

(continued)

SR 3.4.176.3	-------------------NOTE------------------- Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. -- Determine $\bar{E}$ from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	184 days

R-9

PA3.4-101 PA3.4-211

to be calibrated and verifies the actual RCS flow rate is greater than or equal to the minimum required RCS flow rate. This verification may be performed via a precision calorimetric heat balance or other means.

The Frequency of 24~~[18]~~ months reflects the importance of verifying flow after a refueling outage when the core has been altered, which may have caused an alteration of flow resistance.

~~This SR is modified by a Note that allows entry into MODE 1, without having performed the SR, and placement of the unit in the best condition for performing the SR. The Note states that the SR is not required to be performed until 24 hours after ≥ [90%] RTP. This exception is appropriate since the heat balance requires the plant to be at~~ CL3.4-104

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.1.34 (continued)

~~a minimum of [90%] RTP to obtain the stated RCS flow accuracies. The Surveillance shall be performed within 24 hours after reaching [90%] RTP.~~

R-9

REFERENCES

1. UFSAR, Section 14~~[15]~~.

BASES

ACTIONS

A.1 and A.2 (continued)

required to determine if RCS operation can continue. The evaluation must verify the RCPB integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including an engineering evaluation to determine effects of the out-of-limit condition on the structural integrity of the RCS, a comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components. CL3.4-329 R-9

ASME Code, Section XI, Appendix E ~~(Ref. 7)~~, may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

The 72 hour Completion Time is reasonable to accomplish the evaluation. The evaluation for a mild violation is possible within this time, but more severe violations may require special, event specific stress analyses or inspections. A favorable evaluation must be completed before continuing to operate.

Condition A is modified by a Note requiring Required Action A.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action A.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

B.1 and B.2

If a Required Action and associated Completion Time of Condition A are not met, the plant must be placed in a lower MODE because either the RCS remained in an unacceptable P/T region for an extended period of increased stress or a

(continued)

PA3.4-211

LCO

The purpose of this LCO is to require that both~~at least [two]~~ RCS loops be OPERABLE. In MODE 3 with the ~~RTBs in the closed position and~~ Rod Control System capable of rod withdrawal, both~~[two]~~ RCS loops must be in operation. ~~[Two]~~ RCS loops are required to be in operation in MODE 3 with the~~RTBs closed and~~ Rod Control System capable of rod withdrawal due to the postulation of a power excursion because of an inadvertent control rod withdrawal. The required number of RCS loops in operation ensures that the transient analysis acceptance~~Safety Limit~~ criteria will be met~~ for all of the postulated accidents~~.

When~~With the RTBs in the open position, or the CRDMs de-energized,~~ the Rod Control System is not capable of rod withdrawal~~; therefore~~, only one RCS loop in operation is necessary to ensure removal of decay heat from the core and homogenous boron concentration throughout the RCS. An additional RCS loop is required to be OPERABLE to ensure redundant capability for decay heat removal~~ that safety analyses limits are met~~. TA3.4-118 CL3.4-227

The Note permits both~~all~~ RCPs to be de-energized for ≤ 12 hours ~~per 8 hour period~~ to perform preplanned work activities. CL3.4-117 R-9

One~~The~~ purpose of the Note is to allow performance of tests that are designed to validate various accident analyses values. One of these tests is validation of the pump coastdown curve used as input to a number of accident analyses including a loss of flow accident. This test was~~is generally~~ performed ~~in MODE 3~~ during the initial startup testing program, and would normally~~as such should~~ only be performed once. If, however, changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input PA3.4-228

LCO (continued)

values of the coastdown curve must be revalidated by conducting the test again. Another test performed during

(continued)

PA3.4-211

concentration distribution throughout the RCS cannot be ensured when in natural circulation (Ref. 1); and

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

An OPERABLE RCS loop consists of one OPERABLE RCP and one OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which is capable of removing decay heat as has the minimum water level specified in SR 3.4.5.2. An RCP is OPERABLE if it is capable of being powered and is able to provide forced flow if required. PA3.4-232 CL3.4-121 R-9

APPLICABILITY

In MODE 3, this LCO ensures forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. The most stringent condition of the LCO, that is, two RCS loops OPERABLE and two RCS loops in operation, applies to MODE 3 with the Rod Control System capable of rod withdrawalRTBs in the TA3.4-118

APPLICABILITY (continued)

closed position. The least stringent condition, that is, two RCS loops OPERABLE and one RCS loop in operation, applies to MODE 3 with the Rod Control System not capable of rod withdrawalRTBs open.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops – MODES 1 and 2";
LCO 3.4.6, "RCS Loops – MODE 4";
LCO 3.4.7, "RCS Loops – MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops – MODE 5, Loops Not Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

(continued)

~~withdrawal~~Suspending the introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core; however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

This SR requires verification every 12 hours that the required loops are in operation. Verification may include~~s~~ flow rate, temperature, or~~and~~ pump status monitoring, which helps ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS loop performance.

SR 3.4.5.2

SR 3.4.5.2 requires verification that the SG has the capability to remove decay heat. The ability to remove decay heat requires the ability to pressurize and control pressure in the RCS, sufficient secondary side water level in the SG relied on for decay heat removal, and an available supply of feedwater (Ref. 2). ~~of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side narrow range water level is ≥ [17]% for required RCS loops. If the SG secondary side narrow range water level is < [17]%,~~The ability of the SG to provide an adequate heat sink for decay heat removal further ensures that the SG tubes remain covered. ~~may become~~

CL3.4-121

R-9

(continued)

BASES

PA3.4-211

~~uncovered and the associated loop may not be capable of providing the heat sink for removal of the decay heat.~~ The 12 hour Frequency is considered adequate in view of the other indications available in the control room to alert the operator to a loss of the SG to remove decay heat~~level~~.

R-9

SR 3.4.5.3

Verification that each~~the~~ required RCP~~s~~ ~~are~~is OPERABLE ensures that ~~safety analyses limits are met. The requirement also ensures that~~ an additional RCP can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power availability to each~~the~~ required RCP~~s~~. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability.

TA3.4-125 CL3.4-227

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a pump is not in operation.

TA3.4-125

REFERENCES

1. License Amendment Request Dated November 19, 1999. ~~None.~~ (Approved by License Amendment 152/143, July 14, 2000.)

CL3.4-117

2. NRC Information Notice 95-35, "Degraded Ability of Steam Generators to Remove Decay Heat by Natural Circulation."

CL3.4-121

R-9

BASES

APPLICABLE SAFETY ANALYSES

In MODE 4, RCS circulation increases~~is considered in the determination of~~ the time available for mitigation of an~~the~~ accidental boron dilution event. The RCS and RHR loops provide this circulation. CL3.4-237

RCS Loops — MODE 4 ~~have been identified in the NRC Policy Statement as important contributors to risk reduction~~satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least two loops be OPERABLE in MODE 4 and that one of these loops be in operation. The LCO allows the two loops that are required to be OPERABLE to consist of any combination of RCS loops and RHR loops. Any one loop in operation provides enough flow to remove the decay heat from the core with forced circulation. An additional loop is required to be OPERABLE to provide redundancy for heat removal.

LCO (continued)

Note 1 permits all RCPs or RHR pumps to be de-energized for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests that are designed to validate various accident analyses values. One of the tests performed during the startup testing program was~~is the~~ validation of rod drop times during cold conditions, both with and without flow. If changes are made to the RCS that would cause a change in flow characteristics of the RCS, the input values must be revalidated by conducting the test again. Any future~~The~~ no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits stopping~~the de-energizing of~~ the pumps in order to perform this test and validate the assumed analysis values. ~~If changes are made to the RCS that would cause a change to the flow~~ R-9 PA3.4-228

(continued)

PA3.4-211

BASES

LCO (continued)

An OPERABLE RCS loop consists ofcomprises an OPERABLE RCP and an OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which is capable of removing decay heat ashas the minimum water level specified in SR 3.4.6.2. PA3.4-232 CL3.4-121 R-9

Similarly for the RHR System, an OPERABLE RHR loop consists ofcomprises an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RCPs and RHR pumps are OPERABLE if they are capable of being powered and are able to provide forced flow if required.

APPLICABILITY

In MODE 4, this LCO ensures forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. One loop of either RCS or RHR provides sufficient circulation for these purposes. However, two loops consisting of any combination of RCS and RHR loops are required to be OPERABLE to meet single failure considerations. PA3.4-238

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops – MODES 1 and 2";
LCO 3.4.5, "RCS Loops – MODE 3";
LCO 3.4.7, "RCS Loops – MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops – MODE 5, Loops Not Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

(continued)

BASES

ACTIONS

A.1

TA3.4-330

If one required RCS loop is inoperable and two RHR loops are inoperable, redundancy for heat removal is lost. Action must be initiated to restore a second RCS or RHR loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal. Entry to a reduced MODE (MODE 5 or 6) requires RHR availability for long term decay heat removal. Remaining in MODE 4, with RCS loop operation, is conservative.

R-9

PA3.4-239

B.1

TA3.4-330

If one required RHR loop is OPERABLE and in operation and there are no RCS loops OPERABLE, an inoperable RCS or RHR

ACTIONS

B.1 (continued)

loop must be restored to OPERABLE status to provide a redundant means for decay heat removal.

If the parameters that are outside the limits cannot be restoredIf restoration is not accomplished and an RHR Loop is OPERABLE, the unit must be brought to MODE 5 within 24 hours. Bringing the unit to MODE 5 is a conservative action with regard to decay heat removal. With only one RHR loop OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining RHR loop, it would be safer to initiate that loss from MODE 5 (≤ 200°F) rather than MODE 4 (200 to 3500°F). The Completion Time of 24 hours is a reasonable time, based on operating experience, to reach MODE 5 from MODE 4 in an orderly manner and without challenging plant systems.

R-9

R-9

(continued)

PA3.4-211

BASES

The Required Action is modified by a Note which indicates that the unit must be placed in MODE 5 only if a RHR loop is OPERABLE. With no RHR loop OPERABLE, the unit is in a condition with only limited cooldown capabilities. Therefore, the actions are to be concentrated on the restoration of a RHR loop, rather than a cooldown of extended duration. TS3.4-330

TA3.4-330

CL3.4-113

~~C~~B.1 and ~~C~~B.2

If both~~no~~ loops ~~is OPERABLE~~are inoperable or a required loop not in operation, except during conditions permitted by Note 1 in the LCO section, all operations involving ~~a reduction~~introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action to restore one RCS or RHR loop to OPERABLE status and operation must be initiated. ~~Boron dilution requires forced circulation for proper mixing, and t~~The margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core; however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation. R-9 TA3.4-115

(continued)

BASES

TA3.4-330

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This SR requires verification every 12 hours that ~~one~~the required RCS or RHR loop is in operation. Verification may include~~s~~ flow rate, temperature, or pump status monitoring, which helps ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS and RHR loop performance. R-9

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.2

SR 3.4.6.2 requires verification ~~of~~that the required SG has the capability to remove decay heat. The ability to remove decay heat requires the ability to pressurize and control pressure in the RCS, sufficient secondary side water level in the SG relied on for decay heat removal, and an available supply of feedwater (Ref. 2). The ability of the SG to provide an adequate heat sink for decay heat removal further ensures that the SG tubes remain covered. ~~OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side narrow range water level is ≥ [17]%. If the SG secondary side narrow range water level is < [17]%, the tubes may become uncovered and the associated loop may not be capable of providing the heat sink necessary for removal of decay heat.~~ The 12 hour Frequency is considered adequate in view of the other indications available in the control room to alert the operator to ~~the~~a loss of capability of the SG to remove decay heat~~level~~. CL3.4-121

R-9

(continued)

BASES

SR 3.4.6.3

Verification that each~~the~~ required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to each~~the~~ required pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience. TA3.4-125

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a pump is not in operation. TA3.4-125

REFERENCES

1. License Amendment Request Dated November 19, 1999. ~~None.~~ (Approved by License Amendment 152/143, July 14, 2000.) CL3.4-117

2. NRC Information Notice 95-35, "Degraded Ability of Steam Generator to Remove Decay Heat by Natural Circulation." CL3.4-121

R-9

PA3.4-211

BASES (continued)

LCO is to require that a second path be available to provide redundancy for heat removal.

The LCO provides for redundant paths of decay heat removal capability. The first path can be an RHR loop that must be OPERABLE and in operation. The second path can be another OPERABLE RHR loop or maintaining atwo SGs capable of removing decay heat with secondary side water levels above [17]% to provide an alternate method for decay heat removal via natural circulation. TA3.4-246 CL3.4-121 R-9

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation increasesis considered in the determination of the time available for mitigation of anthe accidental boron dilution event. The RHR loops provide this circulation. CL3.4-237

RCS Loops — MODE 5 (Loops Filled) have been identified in the NRC Policy Statement as important contributors to risk reductionsatisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least one of the RHR loops be OPERABLE and in operation with an additional RHR loop OPERABLE or atwo SGs capable of removing decay heat via natural circulationwith secondary side water level ≥ [17]%. One RHR loop provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. An additional RHR loop is required to be OPERABLE to provide redundancymeet single failure considerations. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is atwo SGs with their secondary side water levels ≥ [17]%. Should the operating RHR loop fail, the SGs could be used to remove the decay heat via natural circulation. CL3.4-121 R-9 TA3.4-246

(continued)

PA3.4-211

BASES (continued)

Note 1 permits all RHR pumps to be de-energized ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests designed to validate various accident analyses values. One of the tests performed during the startup testing program ~~was~~is the validation of rod drop times during cold conditions, both with and without flow. If changes are made to the RCS that would cause a change in flow characteristics of the RCS, the input values must be revalidated by conducting the test again. Any future ~~The~~ no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits stopping ~~de-energizing of~~ the pumps in order to perform this test and validate the assumed analysis values. ~~If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values must be revalidated by conducting the test again.~~ The 1 hour time period is adequate to perform the test, and operating experience has shown that boron stratification is not likely during this short period with no forced flow. R-9 PA3.4-228

Utilization of Note 1 is permitted provided the following conditions are met, along with any other conditions imposed by ~~initial~~ startup test procedures: PA3.4-228

LCO (continued)

a. No operations are permitted that would dilute the RCS boron concentration with coolant with boron concentration less than required to meet SDM of LCO 3.1.1, therefore maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure SDM is maintained is prohibited to preclude the need for a boration, due to the time required to achieve ~~because~~ a uniform ~~concentration~~ distribution ~~throughout the RCS cannot be ensured~~ when in natural circulation (Ref. 2); and TA3.4-115 CL3.4-117

(continued)

PA3.4-211

BASES

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 allows one RHR loop to be inoperable for a period of up to 2 hours, provided that the other RHR loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable loop during the only time when such testing is safe and possible.

Note 3 requires a steam or gas bubble in the pressurizer or that the secondary side water temperature of each SG be ≤ [50]°F above each of the RCS cold leg temperatures before the start of a reactor coolant pump (RCP) with an RCS cold leg temperature ≤ the OPPS enable temperature specified in the PTLR~~[275] °F~~. A steam or gas bubble ensures that the pressurizer will accommodate the swell resulting from an RCP start. Either of these restraints~~This restriction is to~~ prevents a low temperature overpressure event due to a thermal transient when an RCP is started. CL3.4-123 TA3.4-119

Note 4 provides for an orderly transition from MODE 5 to MODE 4 during a planned heatup by permitting removal of RHR loops from operation when at least one RCS loop is in operation. This Note provides for the transition to MODE 4 where an RCS loop is permitted to be in operation and replaces the RCS circulation function provided by the RHR loops.

RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required. A SG is capable of removing decay heat via natural circulation when: 1) there is the ability to pressurize and control pressure in the RCS; 2) there is sufficient secondary side water level in the SG TA3.4-246 PA3.4-232 CL3.4-121

(continued) R-9

PA3.4-211

BASES

relied on for decay heat removal; and 3) there is an available supply of feedwater (Ref. 1). An OPERABLE SG can perform as a heat sink via natural circulation when it has ~~an adequate~~ the capability to remove decay heat as ~~water level and is OPERABLE in accordance with the Steam Generator Tube Surveillance Program~~specified in SR 3.4.7.2.

R-9

APPLICABILITY

In MODE 5 with RCS loops filled, this LCO requires forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. One loop of RHR provides sufficient circulation for these purposes. However, one additional RHR loop is required to be OPERABLE, or ~~the secondary side water level of~~ a~~t least [two]~~ SG~~s~~ is capable of removing decay heat~~required to be ≥ [17]%~~.

APPLICABILITY (continued)

CL3.4-121

R-9

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops – MODES 1 and 2";
LCO 3.4.5, "RCS Loops – MODE 3";
LCO 3.4.6, "RCS Loops – MODE 4";
LCO 3.4.8, "RCS Loops – MODE 5, Loops Not Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

TA3.4-330

<u>A.1, ~~and~~ A.2, B.1 and B.2</u>

CL3.4-121

If one RHR loop is ~~inoperable~~OPERABLE and the ~~required~~ SGs are not capable of removing decay heat~~have secondary side water levels < [17]%~~, redundancy, for heat removal is lost. Action must be initiated immediately to

R-9

(continued)

PA3.4-211

BASES (continued)

restore a second RHR loop to OPERABLE status or to restore the required SG capability to remove decay heat~~secondary side water levels~~. Either Required Action ~~A.1 or Required Action A.2~~ will restore redundant heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal. R-9

~~B~~C.1 and ~~B~~C.2

If ~~no~~a required RHR loop is not in operation, except during conditions permitted by Note 1, or if no loop is OPERABLE, all operations involving ~~a reduction~~introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action to restore one RHR loop to OPERABLE status and operation must be initiated. ~~To prevent boron dilution, forced circulation is required to provide proper mixing and preserve the margin to criticality in this type of operation~~ Suspending the introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core; however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Times reflect the importance of maintaining operation for heat removal. TA3.4-330 TA3.4-115 R-9

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification every 12 hours that the required loop is in operation. Verification may include~~s~~ flow rate, temperature, or pump status monitoring, which helps ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other

PA3.4-211

BASES (continued)

indications and alarms available to the operator in the control room to monitor RHR loop performance.

SR 3.4.7.2

CL3.4-121

SR 3.4.7.2 requires verification that the required SG has the capability to remove decay heat via natural circulation. This provides an alternate decay heat removal method in the event that the second RHR loop is not OPERABLE. The ability to remove decay heat requires the ability to pressurize and control pressure in the RCS, sufficient secondary side water level in the SG relied on for decay heat removal, and an available supply of feedwater(Ref. 1). ~~Verifying that at least two SGs are OPERABLE by ensuring their secondary side narrow range water levels are ≥ [17]% ensures an alternate decay heat removal method in the event that the second RHR loop is not OPERABLE. If both RHR loops are OPERABLE, this Surveillance is not needed.~~ The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to a~~the~~ loss of capability of the SG to remove decay heat~~level~~.

TA3.4-246

R-9

R-9

SR 3.4.7.3

Verification that each required~~a second~~ RHR pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to ~~the~~each required RHR pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. If ~~secondary side water level is ≥ [17]% in~~ at least one~~two~~ SG~~s~~ is capable of decay heat removal, this Surveillance is not needed. The Frequency of 7 days is considered reasonable in view of other administrative controls

TA3.4-125

CL3.4-121

R-9

PA3.4-211

BASES (continued)

available and has been shown to be acceptable by operating experience.

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a pump is not in operation. TA3.4-125

REFERENCES

CL3.4-121

1. NRC Information Notice 95-35, "Degraded Ability of Steam Generators to Remove Decay Heat by Natural Circulation"~~None~~.

TA3.4-246 CL3.4-117 R-9

2. License Amendment Request Dated November 19, 1999. (Approved by License Amendment 152/143, July 14, 2000.)

PA3.4-211

BASES

LCO

The purpose of this LCO is to require that at least two RHR loops be OPERABLE and one of these loops be in operation to. ~~An OPERABLE loop is one that has the capability of~~ transferring heat from the reactor coolant at a controlled rate. Heat cannot be removed via the RHR System unless forced flow is used. A minimum of one operating~~running~~ RHR pump meets the LCO requirement for one loop in operation. An additional RHR loop is required to be OPERABLE to provide redundancy~~meet single failure considerations~~.

LCO (continued)

Note 1 permits all RHR pumps to be de-energized for ≤ 1 hour per 8 hour period ~~15 minutes when switching from one loop to another~~. The circumstances for stopping both RHR pumps are to be limited to situations when the outage time is short [and core outlet temperature is maintained > 10°F below saturation temperature]. The Note prohibits boron dilution with coolant at boron concentrations less than required to assure SDM is maintained or draining operations when RHR forced flow is stopped.

CL3.4-131

R-9

TA3.4-115

Note 2 allows one RHR loop to be inoperable for a period of ≤ 2 hours, provided that the other loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable loop during the only time when these tests are safe and possible.

An OPERABLE RHR loop is comprised of an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required.

(continued)

PA3.4-211

BASES

APPLICABILITY

In MODE 5 with loops not filled, this LCO requires core heat removal and coolant circulation by the RHR System.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops – MODES 1 and 2";
LCO 3.4.5, "RCS Loops – MODE 3";
LCO 3.4.6, "RCS Loops – MODE 4";
LCO 3.4.7, "RCS Loops – MODE 5, Loops Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A.1

TA3.4-330

If ~~only~~ one required RHR loop is inoperable ~~OPERABLE and in operation~~, redundancy for RHR is lost. Action must be initiated to restore a second loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

R-9

ACTIONS (continued)

B.1 and B.2

TA3.4-330

If no required ~~RHR~~ loop~~s are~~is OPERABLE or the required loop is not in operation, except during conditions permitted by Note 1, all operations involving ~~a reduction~~introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action must be initiated immediately to restore an RHR loop to OPERABLE status and operation. ~~Boron dilution requires forced circulation for uniform dilution, and t~~The margin to criticality must not be reduced in this type of operation.

TA3.4-115

R-9

PA3.4-211

BASES

Suspending the introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core; however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must continue until one loop is restored to OPERABLE status and operation.

CL3.4-132

The Note in Required Action B.2 allows the use of one safety injection pump to provide heat removal in the event of a loss of RHR system cooling during reduced RCS inventory conditions.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

TA3.4-330

R-9

This SR requires verification every 12 hours that ~~one~~the required loop is in operation. Verification may include~~s~~ flow rate, temperature, or pump status monitoring, which helps ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.

SR 3.4.8.2

Verification that each~~the~~ required ~~number of~~ pump~~s~~ is~~are~~ OPERABLE ensures that an additional pump~~s~~ can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to ~~the~~each required pump~~s~~. Alternatively, verification that a pump is in operation also verifies proper breaker alignment

TA3.4-125

PA3.4-211

BASES

and power availability. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a pump is not in operation. TA3.4-125

REFERENCES None.

CL3.4-162 CL3.4-271 PA3.4-211 R-9

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.12 Low Temperature Overpressure Protection (LTOP) - Reactor Coolant System Cold Leg Temperature (RCSCLT) > Safety Injection (SI) Pump Disable Temperature R-9

BASES

BACKGROUND

The LTOP function limitsSystem controls RCS pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G (Ref. 1). The reactor vessel is the limiting RCPB component for demonstrating such protection. The Over Pressure Protection System (OPPS) and the pressurizer power operated relief valves (PORVs) provide the LTOP function (Ref. 2). The PTLR provides the maximum allowable OPPS actuation logic setpoints for the power operated relief valves (PORVs) and the maximum RCS pressure for the existing RCS cold leg temperature during cooldown, shutdown, and heatup to meet the Reference 1 requirements during the LTOP MODES. The LTOP MODES are the MODES as defined in the Applicability statement of LCO 3.4.12 and LCO 3.4.13.

The pressurizer safety valves and PORVs at their normal setpoints do not provide overpressure protection for certain low temperature operational transients. Inadvertent pressurization of the RCS at temperatures below the OPPS enable temperature specified in the PTLR could result in exceeding the ASME Appendix G (Ref. 3) brittle fracture P/T limits.The reactor vessel material is less tough at low temperatures than at normal operating temperature. As the vessel neutron exposure accumulates, the material toughness decreases and becomes less resistant to pressure stress at low temperatures (Ref. 2). RCS pressure, therefore, is maintained low at low temperatures and is increased only as temperature is increased. CL3.4-272

(continued)

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CL3.4-162 CL3.4-271 PA3.4-211

BASES

~~The potential for vessel overpressurization is most acute when the RCS is water solid, occurring only while shutdown; a pressure fluctuation can occur more quickly than an operator can react to relieve the condition.~~ Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," requires administrative control of RCS pressure and temperature during heatup and cooldown to prevent exceeding the PTLR limits.

This LCO provides RCS overpressure protection by restricting~~having a minimum~~ coolant input capability and ensuring~~having~~ adequate pressure relief capacity. In MODE 4, above the safety injection (SI) pump disable temperature, lLimiting coolant input capability requires ~~all but [~~one~~]~~ ~~[high pressure injection (~~SI~~HPI)]~~ pump ~~[and one charging pump]~~ incapable of injection into the RCS and isolating the emergency core cooling system (ECCS) accumulators.~~ The pressure relief capacity requires either two redundant RCS relief valves or a depressurized RCS and an RCS vent of sufficient size.~~ In MODE 4, above the SI pump disable temperature, oOne PORV~~RCS relief valve or the open RCS vent~~ is the overpressure protection device that acts to terminate an increasing pressure event. CL3.4-163

BACKGROUND (continued)

~~With minimum~~ Limiting coolant input capability reduces the ability to
provide core coolant addition~~ is restricted~~. The LCO does not require the makeup control system deactivated or the ~~safety injection (~~SI~~)~~ actuation circuits blocked. Due to the lower pressures in the LTOP MODES and the expected core decay heat levels, the charging~~makeup~~ system can provide adequate flow~~ via the makeup control valve~~. If conditions require the use of more than one S~~[HPI~~ ~~or] charging~~ pump for makeup in the event of loss of inventory, then pumps can be made available through manual actions.

(continued)

BASES

~~The LTOP System for~~ In MODE 4, above the SI pump disable temperature, pressure relief consists of two PORVs with reduced lift settings~~, or two residual heat removal (RHR) suction relief valves, or one PORV and one RHR suction relief valve, or a depressurized RCS and an RCS vent of sufficient size~~. Two PORVs~~RCS relief valves~~ are required for redundancy. One PORV~~RCS relief valve~~ has adequate relieving capability to prevent~~keep from~~ overpressurization for the required coolant input capability. CL3.4-272

~~PORV Requirements~~

As designed for the LTOP function~~System~~, each PORV is signaled to open by OPPS if the RCS pressure approaches the lift setpoint provided when OPPS is enabled~~a limit determined by the LTOP actuation logic~~. The OPPS~~LTOP actuation logic~~ monitors both RCS temperature and RCS pressure and indicates ~~determines~~ when a condition not acceptable in the PTLR limits is approached. The wide range RCS temperature setpoints indicate conditions requiring enabling OPPS~~ions are auctioneered to select the lowest temperature signal~~.

~~The lowest temperature signal is processed through a function generator that calculates a pressure limit for that temperature. The calculated pressure limit is then compared with the indicated RCS pressure from a wide range pressure channel. If the indicated pressure meets or exceeds the calculated value, a PORV is signaled to open.~~

The PTLR presents the OPPS~~PORV~~ setpoints for LTOP. ~~The setpoints are normally staggered so only one valve opens during a low temperature overpressure transient. Having the setpoints of both valves within the limits in the PTLR ensures that the Reference 1 limits will not be exceeded in any analyzed event.~~

(continued)

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BASES

BACKGROUND PORV Requirements (continued)

When a PORV is opened in an increasing pressure transient, the release of coolant will cause the pressure increase to slow and reverse. As the PORV releases coolant, the RCS pressure decreases until a reset pressure is reached and the valve is signaled to close. The pressure continues to decrease below the reset pressure as the valve closes.

RHR Suction Relief Valve Requirements CL3.4-272

During LTOP MODES, the RHR System is operated for decay heat removal and low pressure letdown control. Therefore, the RHR suction isolation valves are open in the piping from the RCS hot legs to the inlets of the RHR pumps. While these valves are open and the RHR suction valves are open, the RHR suction relief valves are exposed to the RCS and are able to relieve pressure transients in the RCS.

The RHR suction isolation valves and the RHR suction valves must be open to make the RHR suction relief valves OPERABLE for RCS overpressure mitigation. Autoclosure interlocks are not permitted to cause the RHR suction isolation valves to close. The RHR suction relief valves are spring loaded, bellows type water relief valves with pressure tolerances and accumulation limits established by Section III of the American Society of Mechanical Engineers (ASME) Code (Ref. 3) for Class 2 relief valves.

RCS Vent Requirements CL3.4-272

Once the RCS is depressurized, a vent exposed to the containment atmosphere will maintain the RCS at containment ambient pressure in an RCS overpressure transient, if the

(continued)

BASES

relieving requirements of the transient do not exceed the capabilities of the vent. Thus, the vent path must be capable of relieving the flow resulting from the limiting LTOP mass or heat input transient, and maintaining pressure below the P/T limits. The required vent capacity may be provided by one or more vent paths.

For an RCS vent to meet the flow capacity requirement, it requires removing a pressurizer safety valve, removing a PORV's internals, and disabling its block valve in the open

BACKGROUND RCS Vent Requirements (continued)

position, or similarly establishing a vent by opening an RCS vent valve. The vent path(s) must be above the level of reactor coolant, so as not to drain the RCS when open.

APPLICABLE SAFETY ANALYSES

Safety analyses (Ref. 24) demonstrate that the reactor vessel is adequately protected against exceeding the Reference 1 P/T limits. In MODES 1, 2, and 3, and in MODE 4 with RCS cold leg temperature exceeding the OPPS enable temperature specified in the PTLR[275] °F, the pressurizer safety valves will prevent RCS pressure from exceeding the Reference 1 limits. At about the OPPS enable temperature specified in the PTLR[275] °F and below, overpressure prevention falls to two OPERABLE PORVsRCS relief valves or to a depressurized RCS and a sufficiently sized RCS vent. Each of these means has a limited overpressure relief capability. LCO 3.4.13, "LTOP ≤ SI Pump Disable Temperature," provides the requirements for overpressure prevention at the lower temperatures. TA3.4-119 CL3.4-167

The actual temperature at which the pressure in the P/T limit curve falls below the pressurizer safety valve

(continued)

BASES

setpoint increases as the reactor vessel material toughness decreases due to neutron embrittlement. Each time the PTLR curves are revised, the LTOP System must be re-evaluated to ensure its functional requirements can still be met using the PORVRCS relief valve method or the depressurized and vented RCS condition. CL3.4-272

The PTLR contains the acceptance limits that define the LTOP requirements. Any change to the RCS must be evaluated against the Reference 24 analyses to determine the impact of the change on the LTOP acceptance limits.

Transients that are capable of overpressurizing the RCS are categorized as either mass or heat input transients., The bounding mass input transient examples of which follow: CL3.4-272

Mass Input Type Transients

a. is iInadvertent safety injection; or

b. with injection from one SI pump and three c-Charging pumps, and /letdown isolatedflow mismatch.

The bounding heat input transient is

APPLICABLE SAFETY ANALYSES (continued)

Heat Input Type Transients

a. Inadvertent actuation of pressurizer heaters;

b. Loss of RHR cooling; or

c. rReactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

The following limitations are required during the Applicability of this specification LTOP MODES to ensure CL3.4-272

(continued)

CL3.4-162 CL3.4-271 PA3.4-211 R-9

BASES

that mass and heat input transients in excess of analysis assumptions do not occur~~, which either of the LTOP overpressure protection means cannot handle~~:

a. Rendering ~~all but~~ ~~[~~one~~]~~ ~~[HPSI]~~ pump ~~[and one charging pump]~~ incapable of injection;

b. Deactivating the ECCS accumulator discharge isolation valves in their closed positions; and

c. Disallowing start of an RCP if secondary temperature is more than ~~[~~50~~]~~°F above primary temperature in any one loop. LCO 3.4.6, "RCS Loops - MODE 4," ~~and LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled,"~~ provides this protection.

The Reference 2~~4~~ analyses demonstrate that ~~either~~ one PORV~~RCS relief valve or the depressurized RCS and RCS vent~~ can maintain RCS pressure below limits when only one S~~[HP~~I~~]~~ pump ~~[~~and all~~one~~ charging pumps are~~] is [are]~~ actuated. Thus, the LCO allows only ~~[~~one~~]~~ S~~[HP~~I~~]~~ pump ~~[and one charging pump]~~ OPERABLE during the Applicability of this specification~~LTOP MODES~~. CL3.4-272

Since ~~neither~~ one PORV~~RCS relief valve nor the RCS vent~~ cannot handle the pressure transient resulting~~need~~ from ECCS accumulator injection, when RCS temperature is low, the LCO also requires ECCS ~~the~~ accumulator~~s~~ isolation when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. R-9

The isolated ECCS accumulators must have their discharge valves closed and the valve power supply breakers fixed in their open positions. ~~The analyses show the effect of accumulator discharge is over a narrower RCS temperature~~ CL3.4-272

(continued)

CL3.4-162 CL3.4-271 PA3.4-211 R-9

range ([175]°F and below) than that of the LCO ([275]°F and below).

APPLICABLE SAFETY ANALYSES

Heat Input Type Transients (continued)

TA3.4-119

Fracture mechanics analyses established the temperature of LTOP Applicability at the OPPS enable temperature specified in the PTLR[275]°F.

The consequences of a small break loss of coolant accident (LOCA) in LTOP MODE 4 above the SI pump disable temperature conform to 10 CFR 50.46 and 10 CFR 50, Appendix K (Refs. 5 and 6), requirements by having a maximum of [one] [HPSI] pump [and one charging pump] OPERABLE and SI actuation enabled.

PORV Performance

The fracture mechanics analyses show that the vessel is protected when the PORVs are set to open at or below the limit shown in the PTLR. The OPPS setpoints are derived by analyses that model the performance of the LTOP Ssystem, assuming the limiting LTOP transient of [one] [HPSI] pump [and allone charging pumps] injecting into the RCS. These analyses consider pressure overshoot and undershoot beyond the PORV opening and closing, resulting from signal processing and valve stroke times. The OPPSPORV setpoints at or below the derived limit ensures the Reference 1 P/T limits will be met.

The OPPSPORV setpoints in the PTLR will be updated when the revised P/T limits conflict with the LTOP analysis limits. The P/T limits are periodically modified as the reactor vessel material toughness decreases due to neutron embrittlement caused by neutron irradiation. Revised limits are determined using neutron fluence projections and the

(continued)

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BASES

results of examinations of the reactor vessel material irradiation surveillance specimens. The Bases for LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," discuss these examinations.

The PORVs are considered active components. Thus, the failure of one PORV is assumed to represent the worst case, single active failure.

CL3.4-272

CL3.4-163

APPLICABLE SAFETY ANALYSES (continued)

[RHR Suction Relief Valve Performance]

The RHR suction relief valves do not have variable pressure and temperature lift setpoints like the PORVs. Analyses must show that one RHR suction relief valve with a setpoint at or between [436.5] psig and [463.5] psig will pass flow greater than that required for the limiting LTOP transient while maintaining RCS pressure less than the P/T limit curve. Assuming all relief flow requirements during the limiting LTOP event, an RHR suction relief valve will maintain RCS pressure to within the valve rated lift setpoint, plus an accumulation ≤ 10% of the rated lift setpoint.

Although each RHR suction relief valve may itself meet single failure criteria, its inclusion and location within the RHR System does not allow it to meet single failure criteria when spurious RHR suction isolation valve closure is postulated. Also, as the RCS P/T limits are decreased to reflect the loss of toughness in the reactor vessel materials due to neutron embrittlement, the RHR suction relief valves must be analyzed to still accommodate the design basis transients for LTOP.

(continued)

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~~The RHR suction relief valves are considered active components. Thus, the failure of one valve is assumed to represent the worst case single active failure.~~

~~RCS Vent Performance~~ CL3.4-272

~~With the RCS depressurized, analyses show a vent size of 2.07 square inches is capable of mitigating the allowed LTOP overpressure transient. The capacity of a vent this size is greater than the flow of the limiting transient for the LTOP configuration, [one] HPI pump [and one charging pump] OPERABLE, maintaining RCS pressure less than the maximum pressure on the P/T limit curve.~~

~~The RCS vent size will be re-evaluated for compliance each time the P/T limit curves are revised based on the results of the vessel material surveillance.~~

~~The RCS vent is passive and is not subject to active failure.~~

~~APPLICABLE SAFETY ANALYSES~~ ~~RCS Vent Performance (continued)~~

The LTOP function~~System~~ satisfies Criterion 2 of ~~the NRC Policy Statement~~10 CFR 50.36(c)(2)(ii).

LCO

This LCO requires that ~~the~~ LTOP ~~System is OPERABLE. The LTOP System is OPERABLE when the minimum~~be provided, by limiting coolant input capability and by OPERABLE pressure relief capability~~ies are OPERABLE~~. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient.

(continued)

CL3.4-162 CL3.4-271 PA3.4-211 R-9

TA3.4-166

To limit the coolant input capability, the LCO requires that a maximum of {one} {HPSI} pump {and one charging pump} be capable of injecting into the RCS, and all ECCS accumulator discharge isolation valves be closed and deenergizedimmobilized. (wWhen ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR).

CL3.4-163 R-9

TA3.4-166 CL3.4-164

The LCO is modified by two Notes. Note 1 allows operation of both SI pumps for ≤ 1 hour for conducting SI system testing providing there is a steam or gas bubble in the pressurizer and at least one isolation valve between the SI pump and the RCS is shut. The purpose of this note is to permit the conduct of the integrated SI test and other SI system tests and operations that may be performed in MODE 4. In this case, pressurizer level is maintained at less than 50% and a positive means of isolation is provided between the SI pumps and the RCS to prevent fluid injection to the RCS. This isolation is accomplished by either a closed manual valve or motor operated valve with the power removed. This combination of conditions under strict administrative control assure that overpressurization cannot occur.

TA3.4-166

Note 2 states that ECCS accumulator isolation is only required when the ECCS accumulator pressure is more than or at the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR (less allowance for instrument uncertainty). This Note permits the ECCS accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions.

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The elements of the LCO thatTo provide low temperature overpressure mitigation through pressure relief, the LCO

(continued)

CL3.4-162 CL3.4-271 PA3.4-211 R-9

BASES

a. Two RCS relief valves, as follows:

1. Two OPERABLE PORVs; or

A PORV is OPERABLE for LTOP when its block valve is open, its low pressure lift setpoint is set to the limit required by the PTLR has been selected (OPPS enabled) and testing proves its ability to open at this setpoint, and the backup air supply is chargedmotive power is available to the two valves and their control circuits.

[2. Two OPERABLE RHR suction relief valves; or] CL3.4-163

An RHR suction relief valve is OPERABLE for LTOP when its RHR suction isolation valve and its RHR suction valve are open, its setpoint is at or between [436.5] psig and [463.5] psig, and testing has proven its ability to open at this setpoint.

LCO (continued)

3. One OPERABLE PORV and one OPERABLE RHR suction relief valve; or

b. A depressurized RCS and an RCS vent. CL3.4-272

An RCS vent is OPERABLE when open with an area of ≥ [2.07] square inches.

Each of these methods of overpressure prevention is capable of mitigating the limiting LTOP transient.

APPLICABILITY

This LCO is applicable in MODE 4 when any RCS cold leg temperature is ≤ the OPPS enable temperature specified in the PTLR and > the SI pump disable temperature specified in the PTLR[275]°F, in MODE 5, and in MODE 6 when the reactor TA3.4-119 CL3.4-167

(continued)

BASES

~~vessel head is on~~. The pressurizer safety valves provide overpressure protection that meets the Reference 1 P/T limits above the OPPS enable temperature specified in the PTLR~~[275] °F. When the reactor vessel head is off, overpressurization cannot occur.~~

LCO 3.4.3 provides the operational P/T limits for all MODES. LCO 3.4.10, "Pressurizer Safety Valves," requires the OPERABILITY of the pressurizer safety valves that provide overpressure protection during MODES 1, 2, and 3, and MODE 4 above the OPPS enable temperature specified in the PTLR~~[275] °F~~. LCO 3.4.13 provides the LTOP requirements in MODE 4 ≤ SI pump disable temperature and in MODES 5 and 6. TA3.4-119 CL3.4-167

Low temperature overpressure prevention is most critical during shutdown when the RCS is water solid, and a mass or heat input transient can cause a very rapid increase in RCS pressure when little or no time allows operator action to mitigate the event.

~~The Applicability is modified by a Note stating that accumulator isolation is only required when the accumulator pressure is more than or at the maximum RCS pressure for the existing temperature, as allowed by the P/T limit curves. This Note permits the accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions.~~ TA3.4-166

ACTIONS A.1 ~~[and B.1]~~

(continued)

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CL3.4-162 CL3.4-271 PA3.4-211

BASES

ACTIONS

A.1 [and B.1]

With two or more HPSI pumps capable of injecting into the RCS, RCS overpressurization is possible.

To immediately initiate action to restore restricted coolant input capability to the RCS reflects the urgency of removing the RCS from this condition.

Required Action B.1 is modified by a Note that permits two charging pumps capable of RCS injection for ≤ 15 minutes to allow for pump swaps. TA3.4-166

BC.1, CD.1, and DC.2

An unisolated ECCS accumulator requires isolation within 1 hour. This is only required when the ECCS accumulator pressure is at or more than the maximum RCS pressure for the existing temperature allowed by the P/T limit curves. R-9

If isolation is needed and cannot be accomplished in 1 hour, Required Action CD.1 and Required Action CD.2 provide two options, either of which must be performed in the next 12 hours. By increasing the RCS temperature to > the OPPS enable temperature specified in the PTLR[275] °F, an ECCS accumulator pressure of [6800] psig cannot exceed the LTOP analysis limits if the ECCS accumulators are fully injected. Depressurizing the ECCS accumulators below the LTOP limit from the PTLR also gives this protection. TA3.4-119

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The Completion Times are based on operating experience that these activities can be accomplished in these time

(continued)

CL3.4-162 CL3.4-271 PA3.4-211 R-9

BASES

In MODE 4 when any RCS cold leg temperature is ≤ the OPPS enable temperature specified in the PTLR~~[275]°F~~, with one required PORV~~RCS relief valve~~ inoperable, the PORV~~RCS relief valve~~ must be restored to OPERABLE status within a Completion Time of 7 days. Two PORVs~~RCS relief valves [in any combination of the PORVS and the RHR suction relief valves]~~ are required to provide low temperature overpressure mitigation while withstanding a single failure of an active component. TA3.4-119 CL3.4-163

ACTIONS

D~~E~~.1 (continued)

The Completion Time considers the facts that only one of the PORVs~~RCS relief valves~~ is required to mitigate an overpressure transient and that the likelihood of an active failure of the remaining valve path during this time period is very low.

E~~F~~.1

CL3.4-167

~~The consequences of operational events that will overpressurize the RCS are more severe at lower temperature (Ref. 7). Thus, with one of the two RCS relief valves inoperable in MODE 5 or in MODE 6 with the head on, the Completion Time to restore two valves to OPERABLE status is 24 hours.~~

~~The Completion Time represents a reasonable time to investigate and repair several types of relief valve failures without exposure to a lengthy period with only one OPERABLE RCS relief valve to protect against overpressure events.~~

(continued)

~~G.1~~

MODE 5 must be entered, t~~T~~he RCS must be depressurized and a vent must be established within 12~~8~~ hours when: PA3.4-168 TA3.4-139

a. Both ~~required~~ PORVs~~RCS relief valves~~ are inoperable; or

b. A Required Action and associated Completion Time of Condition A, C~~[B,] D, E~~, or D~~F~~ is not met; or

c. The OPPS~~LTOP System~~ is inoperable ~~for any reason other than Condition A, [B,] C, D, E, or F~~.

The vent must be sized ≥ 3~~[2.07]~~ square inches to ensure that the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. The vent opening is based on the cross sectional flow area of a PORV. A PORV maintained in the open position satisfies the vent requirement. This action is needed to protect the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel. CL3.4-169

ACTIONS

E~~G~~.1 (continued)

The Completion Time considers the time required to place the plant in this Condition and the relatively low probability of an overpressure event during this time period due to increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1, [SR 3.4.12.2,] and SR 3.4.12.23

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, a maximum of [one] [HPSI] pump is[and a maximum of one charging pump] are verified incapable of injecting into the RCS and the ECCS accumulator discharge isolation valves are verified closed and deenergizedlocked out. CL3.4-163

The [HPSI] pump[s] and charging pump[s] are is rendered incapable of injecting into the RCS through removing the power from the pumps by racking the breakers out under administrative control. An alternate method of LTOP control may be employed usingby employing at least two independent means to prevent a pump start such that a single failure or single action will not result in an injection into the RCS. This may be accomplished through the pump control switch being placed in [pullout to lock] and at least one valve in the discharge flow path being closed with a blocking device installed over the control switch that would prevent an unplanned pump start. CL3.4-273

The ECCS accumulator motor operated isolation valves can be verified closed and deenergized by use of control board indication. SR 3.4.12.2 is modified by a Note specifying that this verification is only required when the ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. If ECCS accumulator pressure is less than this limit, no verification is required since the ECCS accumulator cannot pressurize the RCS to or above the OPPS setpoint. CL3.4-273 X3.4-171 R-9 R-9

The Frequency of 12 hours is sufficient, considering other indications and alarms available to the operator in the

(continued)

CL3.4-162 CL3.4-271 PA3.4-211 R-9

BASES

control room, to verify the required status of the equipment.

SR 3.4.12.4 CL3.4-163

Each required RHR suction relief valve shall be demonstrated OPERABLE by verifying its RHR suction valve and RHR suction isolation valves are open and by testing it in accordance with the Inservice Testing Program. (Refer to SR 3.4.12.7 for the RHR suction isolation valve Surveillance.) This Surveillance is only required to be performed if the RHR suction relief valve is being used to meet this LCO.

SURVEILLANCE REQUIREMENTS

SR 3.4.12.4 (continued)

The RHR suction valve is verified to be opened every 12 hours. The Frequency is considered adequate in view of other administrative controls such as valve status indications available to the operator in the control room that verify the RHR suction valve remains open.

The ASME Code, Section XI (Ref. 8), test per Inservice Testing Program verifies OPERABILITY by proving proper relief valve mechanical motion and by measuring and, if required, adjusting the lift setpoint.

SR 3.4.12.5 CL3.4-272

The RCS vent of ≥ [2.07] square inches is proven OPERABLE by verifying its open condition either:

a. Once every 12 hours for a valve that cannot be locked.

b. Once every 31 days for a valve that is locked, sealed, or secured in position. A removed pressurizer safety valve fits this category.

(continued)

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CL3.4-162 CL3.4-271 PA3.4-211

BASES

The passive vent arrangement must only be open to be OPERABLE. This Surveillance is required to be performed if the vent is being used to satisfy the pressure relief requirements of the LCO 3.4.12b.

SR 3.4.12.36

The PORV block valve must be verified open every 72 hours to provide the flow path for each required PORV to perform its function when actuated. The valve maymust be remotely verified open in the main control room. [This Surveillance is performed if the PORV satisfies the LCO.]

The block valve is a remotely controlled, motor operated valve. The power to the valve operator is not required to be removed, and the manual operator is not required to be locked in the inactive position. Thus, the block valve can be closed in the event the PORV develops excessive leakage or does not close (sticks open) after relieving an overpressure situation.

SURVEILLANCE REQUIREMENTS

SR 3.4.12.36 (continued)

The 72 hour Frequency is considered adequate in view of other administrative controls available to the operator in the control room, such as valve position indication, that verify that the PORV block valve remains open.

SR 3.4.12.7 CL3.4-163

Each required RHR suction relief valve shall be demonstrated OPERABLE by verifying its RHR suction valve and RHR suction isolation valve are open and by testing it in accordance

(continued)

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CL3.4-162 CL3.4-271 PA3.4-211

BASES

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with the Inservice Testing Program. (Refer to SR 3.4.12.4 for the RHR suction valve Surveillance and for a description of the requirements of the Inservice Testing Program.) This Surveillance is only performed if the RHR suction relief valve is being used to satisfy this LCO.

Every 31 days the RHR suction isolation valve is verified locked open, with power to the valve operator removed, to ensure that accidental closure will not occur. The "locked open" valve must be locally verified in its open position with the manual actuator locked in its inactive position. The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve position.

SR 3.4.12.48

Performance of a COT is required within 12 hours after decreasing RCS temperature to ≤ [275]°F and every 31 days on each required PORVOPPS to verify and, as necessary, adjust the PORVits lift setpoints. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The COT will verify the setpoints areis within the PTLR allowed maximum limits in the PTLR. PORV actuation during this testing could depressurize the RCS and is not required. TA3.4-313

The 12 hour Frequency considers the unlikelihood of a low temperature overpressure event during this time.

(continued)

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CL3.4-162 CL3.4-271 PA3.4-211

BASES

A Note has been added indicating that this SR is required to be performed~~met~~ 12 hours after decreasing RCS cold leg temperature to ≤ the OPPS enable temperature specified in the PTLR~~[275] °F~~. The COT may not have been~~cannot be~~ performed before entry into~~until in~~ the LTOP MODES~~when the PORV lift setpoint can be reduced to the LTOP~~

TA3.4-157 TA3.4-119

~~SURVEILLANCE REQUIREMENTS~~ ~~SR 3.4.12.8 (continued)~~

~~setting. The test must be performed within 12 hours after entering the LTOP MODES~~. The 12 hour initial time considers the unlikehood of a low temperature overpressure event during this time.

SR 3.4.12.5~~9~~

CL3.4-107

Performance of a CHANNEL CALIBRATION on OPPS~~each required PORV actuation channel~~ is required every 24~~[18]~~ months to adjust the whole channel so that it responds and the valve opens within the required range and accuracy to known input.

R-2

REFERENCES

1. 10 CFR 50, Appendix G.
2. USAR, Section 4.4.
3. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix G, with ASME Code Case N-514~~Generic Letter 88-11~~.

~~3. ASME, Boiler and Pressure Vessel Code, Section III.~~

~~4. FSAR, Chapter [15]~~

~~5. 10 CFR 50, Section 50.46.~~

~~6. 10 CFR 50, Appendix K.~~

CL3.4-162 | CL3.4-271 | PA3.4-211 | R-9

BASES (continued)

~~7. Generic Letter 90-06.~~

~~8. ASME, Boiler and Pressure Vessel Code, Section XI.~~

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.13 Low Temperature Overpressure Protection (LTOP) - Reactor Coolant System Cold Leg Temperature (RCSCLT) ≤ Safety Injection (SI) Pump Disable Temperature R-9

BASES

BACKGROUND

The LTOP function limits RCS pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G (Ref. 1). The reactor vessel is the limiting RCPB component for demonstrating such protection. The Over Pressure Protection System (OPPS) provides the actuation setpoints for the pressurizer power operated relief valves (PORVs) for the LTOP function (Ref.2). The PTLR provides the maximum allowable OPPS actuation setpoints and the maximum RCS pressure for the existing RCS cold leg temperature during cooldown, shutdown, and heatup to meet the Reference 1 requirements during the LTOP MODES. The LTOP MODES are the MODES as defined in the Applicability statement of LCO 3.4.12 and LCO 3.4.13.

The pressurizer safety valves and PORVs at their normal setpoints do not provide overpressure protection for certain low temperature operational transients. Inadvertent pressurization of the RCS at temperatures below the OPPS enable temperature specified in the PTLR could result in exceeding the ASME Appendix G (Ref. 3) brittle fracture P/T limits. Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," requires administrative control of RCS pressure and temperature during heatup and cooldown to prevent exceeding the PTLR limits.

(continued)

This LCO provides RCS overpressure protection by restricting coolant input capability and ensuring adequate pressure relief capacity. In MODE 4, at or below the safety injection (SI) pump disable temperature, limiting coolant input capability requires both SI pumps incapable of injection into the RCS and isolating the emergency core cooling system (ECCS) accumulators. The pressure relief capacity requires either two redundant RCS relief valves or a depressurized RCS and an RCS vent of sufficient size. One PORV or the open RCS vent is the overpressure protection device that acts to terminate an increasing pressure event.

BACKGROUND (continued)

Limiting coolant input capability reduces the ability to provide core coolant addition. The LCO does not require the makeup control system deactivated or the SI actuation circuits blocked. Due to the lower pressures in the LTOP MODES and the expected core decay heat levels, the charging system can provide adequate flow. If conditions require the use of an SI pump for makeup in the event of loss of inventory, the pump can be made available through manual actions.

The LTOP pressure relief consists of two PORVs with reduced lift settings or a depressurized RCS and an RCS vent of sufficient size. Two PORVs are required for redundancy. One PORV has adequate relieving capability to prevent overpressurization for the required coolant input capability.

<u>OPPS and PORV Requirements</u>

As designed for the LTOP function, each PORV is signaled to open by OPPS if the RCS pressure approaches the lift setpoint provided when OPPS is enabled. The OPPS monitors both RCS temperature and RCS pressure and indicates when a condition not acceptable in the PTLR limits is approached. The wide range RCS temperature setpoints indicate conditions

(continued)

R-9

BASES

requiring enabling OPPS. The PTLR presents the OPPS setpoints for LTOP.

RCS Vent Requirements

Once the RCS is depressurized, a vent exposed to the containment atmosphere will maintain the RCS at containment ambient pressure in an RCS overpressure transient, if the relieving requirements of the transient do not exceed the capabilities of the vent. Thus, the vent path must be capable of relieving the flow resulting from the limiting LTOP mass or heat input transient, and maintaining pressure below the P/T limits. The required vent capacity may be provided by one or more vent paths.

APPLICABLE SAFETY ANALYSES

Safety analyses (Ref. 2) demonstrate that the reactor vessel is adequately protected against exceeding the Reference 1 P/T limits. In MODES 1, 2, and 3, and in MODE 4 with RCS cold leg temperature exceeding the OPPS enable temperature specified in the PTLR, the pressurizer safety valves will prevent RCS pressure from exceeding the Reference 1 limits. At about the OPPS enable temperature specified in the PTLR and below, overpressure prevention falls to two OPERABLE PORVs or to a depressurized RCS and a sufficiently sized RCS vent. Each of these means has a limited overpressure relief capability. LCO 3.4.12, "LTOP > SI Pump Disable Temperature," provides the requirements for overpressure prevention at temperatures above the SI Pump disable temperature.

The actual temperature at which the pressure in the P/T limit curve falls below the pressurizer safety valve setpoint increases as the reactor vessel material toughness decreases due to neutron embrittlement. Each time the PTLR

(continued)

curves are revised, LTOP must be re-evaluated to ensure its functional requirements can still be met using the PORV method or the depressurized and vented RCS condition.

The PTLR contains the acceptance limits that define the LTOP requirements. Any change to the RCS must be evaluated against the Reference 2 analyses to determine the impact of the change on the LTOP acceptance limits.

Transients that are capable of overpressurizing the RCS are categorized as either mass or heat input transients. The bounding mass input transient is inadvertent safety injection with injection from one SI pump and three charging pumps, and letdown isolated. The bounding heat input transient is reactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

The following limitations are required during the Applicability of this specification to ensure that mass and heat input transients in excess of analysis assumptions do not occur:

a. Rendering both SI pumps incapable of injection;

b. Deactivating the ECCS accumulator discharge isolation valves in their closed positions; and

c. Disallowing start of an RCP if secondary temperature is more than 50°F above primary temperature in any one loop. LCO 3.4.6, "RCS Loops – MODE 4," provides this protection.

The Reference 2 analyses demonstrate that either one PORV or the depressurized RCS and RCS vent can maintain RCS pressure below limits when all charging pumps are actuated. Neither one PORV nor the RCS vent can handle the pressure transient resulting from inadvertant SI pump or ECCS accumulator

(continued)

BASES

injection when the RCS is below the SI pump disable temperature. Thus, the LCO requires both SI pumps to be disabled below the temperature specified in the PTLR.

The LCO also requires ECCS accumulator isolation when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. The isolated ECCS accumulators must have their discharge valves closed and the valve power supply breakers fixed in their open positions. R-9

Fracture mechanics analyses established the temperature of LTOP Applicability at the OPPS enable temperature specified in the PTLR. The fracture mechanics analyses show that the vessel is protected when the PORVs are set to open at or below the limit shown in the PTLR. The OPPS setpoints are derived by analyses that model the performance of the system, assuming the limiting LTOP transient of all charging pumps injecting into the RCS. These analyses consider pressure overshoot and undershoot beyond the PORV opening and closing, resulting from signal processing and valve stroke times. The OPPS setpoints at or below the derived limit ensures the Reference 1 P/T limits will be met.

APPLICABLE SAFETY ANALYSES (continued)

The OPPS setpoints in the PTLR will be updated when the revised P/T limits conflict with the LTOP analysis limits. The P/T limits are periodically modified as the reactor vessel material toughness decreases due to neutron embrittlement caused by neutron irradiation. Revised limits are determined using neutron fluence projections and the results of examinations of the reactor vessel material irradiation surveillance specimens. The Bases for LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," discuss these examinations.

With the RCS depressurized, analyses show a vent size equivalent to the cross sectional flow area of a PORV is

(continued)

R-9

BASES

capable of mitigating the allowed LTOP overpressure transient. The capacity of a vent this size is greater than the flow of the limiting transient for the LTOP configuration, both SI pumps disabled and all charging pumps OPERABLE when the RCS is below the SI pump disable temperature, maintaining RCS pressure less than the maximum pressure on the P/T limit curve.

The RCS vent is passive and is not subject to active failure.

The LTOP function satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO requires that LTOP be provided, by limiting coolant input capability and by OPERABLE pressure relief capability. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient.

To limit the coolant input capability, the LCO requires both SI pumps be incapable of injecting into the RCS, and all ECCS accumulator discharge isolation valves be closed and deenergized (when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR). R-9

The LCO is modified by three Notes. Note 1 allows operation of both SI pumps for ≤ 1 hour for conducting SI system testing providing there is a steam or gas bubble in the pressurizer and at least one isolation valve between the SI pump and the RCS is shut. The purpose of this note is to permit the conduct of the integrated SI test and other SI system tests and operations that may be performed in MODES 4, 5 or 6. In this case, pressurizer level is maintained at less than 50% and a positive means of isolation is provided

(continued)

R-9

between the SI pumps and the RCS to prevent fluid injection to the RCS. This isolation is accomplished by either a closed manual valve or motor operated valve with the power removed. This combination of conditions under strict administrative control assure that overpressurization cannot occur.

Note 2 allows operation of an SI pump during reduced inventory conditions as required to maintain adequate core cooling and RCS inventory. The purpose of this note is to allow use of an SI pump in the event of a loss of other injection capability (e.g., loss of Residual Heat Removal System cooling while in reduced inventory conditions). The operation of an SI pump under such conditions would be controlled by an approved emergency operating procedure.

Note 3 states that ECCS accumulator isolation is only required when the ECCS accumulator pressure is more than or at the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR (less allowance for instrument uncertainty). This Note permits the ECCS accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions. R-9 R-9

The elements of the LCO that provide low temperature overpressure mitigation through pressure relief are:

a. An OPERABLE OPPS with two PORVs.

   A PORV is OPERABLE for LTOP when its block valve is open, its low pressure lift setpoint has been selected (OPPS enabled), and the backup air supply is charged.

b. A depressurized RCS and an RCS vent.

   An RCS vent is OPERABLE when open with an area of ≥ 3 square inches. Because the RCS vent opening

(continued)

a PORV maintained in the open position satisfies the RCS vent requirement.

Each of these methods of overpressure prevention is capable of mitigating the limiting LTOP transient.

APPLICABILITY

This LCO is applicable in MODE 4 when any RCS cold leg temperature is ≤ the SI pump disable temperature specified in the PTLR, in MODE 5, and in MODE 6 when the reactor vessel head is on and the SG primary system manways and pressurizer manway are closed and secured. The pressurizer safety valves provide overpressure protection that meets the Reference 1 P/T limits above the OPPS enable temperature specified in the PTLR. When the reactor vessel head is off, overpressurization cannot occur.

LCO 3.4.3 provides the operational P/T limits for all MODES. LCO 3.4.10, "Pressurizer Safety Valves," requires the OPERABILITY of the pressurizer safety valves that provide overpressure protection during MODES 1, 2, and 3, and MODE 4 above the OPPS enable temperature specified in the PTLR. LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) ≤ Safety Injection (SI) Pump Disable Temperature," provides the requirements for MODE 4 below the OPPS enable temperature and above the SI pump disable temperature.

Low temperature overpressure prevention is most critical during shutdown when the RCS is water solid, and a mass or heat input transient can cause a very rapid increase in RCS pressure when little or no time allows operator action to mitigate the event.

(continued)

R-9

BASES

ACTIONS

A.1

With one or more SI pumps capable of injecting into the RCS, RCS overpressurization is possible.

To immediately initiate action to restore restricted coolant input capability to the RCS reflects the urgency of removing the RCS from this condition.

B.1, C.1, and C.2

An unisolated ECCS accumulator requires isolation within 1 hour. This is only required when the ECCS accumulator pressure is at or more than the maximum RCS pressure for the existing temperature allowed by the P/T limit curves. R-9

If isolation is needed and cannot be accomplished in 1 hour, Required Action C.1 and Required Action C.2 provide two options, either of which must be performed in the next 12 hours. By increasing the RCS temperature to > the OPPS enable temperature specified in the PTLR, an ECCS accumulator pressure of 800 psig cannot exceed the LTOP analysis limits if the ECCS accumulators are fully injected. Depressurizing the accumulators below the LTOP limit from the PTLR also gives this protection. R-9 R-9

The Completion Times are based on operating experience that these activities can be accomplished in these time periods and on engineering evaluations indicating that an event requiring LTOP is not likely in the allowed times.

D.1

The consequences of operational events that will overpressurize the RCS are more severe at lower temperature.

(continued)

leg temperature is ≤ the SI Pump disable temperature specified in the PTLR, MODE 5 or in MODE 6 with the head on, the Completion Time to restore two valves to OPERABLE status is 24 hours. A Note clarifies that Condition D is only applicable when the OPPS and PORVs are being used to satisfy the pressure relief requirements of LCO 3.4.13.a.

The Completion Time represents a reasonable time to investigate and repair several types of relief valve failures without exposure to a lengthy period with only one OPERABLE PORV to protect against overpressure events.

ACTIONS (continued)

E.1

The RCS must be depressurized and a vent must be established within 8 hours when:

a. Both required PORVs are inoperable; or

b. A Required Action and associated Completion Time of Condition A, C, or D is not met; or

c. The OPPS is inoperable.

The vent must be sized ≥ 3 square inches to ensure that the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. The vent opening is based on the cross sectional flow area of a PORV. A PORV maintained in the open position satisfies the vent requirement. This action is needed to protect the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel.

The Completion Time considers the time required to place the plant in this Condition and the relatively low probability of an overpressure event during this time period due to

(continued)

R-9

BASES (continued)

increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1, and SR 3.4.13.2

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, both SI pumps are verified incapable of injecting into the RCS and the ECCS accumulator discharge isolation valves are verified closed and deenergized.

The SI pumps are rendered incapable of injecting into the RCS by employing at least two independent means to prevent a pump start such that a single failure or single action will not result in an injection into the RCS. This may be accomplished through the pump control switch being placed in pullout with a blocking device installed over the control switch that would prevent an unplanned pump start.

The ECCS accumulator motor operated isolation valves can be verified closed and deenergized by use of control board indication. SR 3.4.13.2 is modified by a Note specifying that this verification is only required when the ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. If ECCS accumulator pressure is less than this limit, no verification is required since the ECCS accumulator cannot pressurize the RCS to or above the OPPS setpoint.

R-9

R-9

R-9

The Frequency of 12 hours is sufficient, considering other indications and alarms available to the operator in the control room, to verify the required status of the equipment.

SR 3.4.13.3

(continued)

R-9

BASES (continued)

The required RCS vent of ≥ 3 square inches is proven OPERABLE by verifying its open condition either:

a. Once every 12 hours for a valve that is not locked, sealed, or secured in the open position.

b. Once every 31 days for other vent path(s) (e.g., a vent valve that is locked, sealed, or secured in position). A removed pressurizer safety valve or open manway also fits this category.

The passive vent path arrangement must only be open when required to be OPERABLE. This Surveillance is required if the vent is being used to satisfy the pressure relief requirements of LCO 3.4.13b.

R-9

SR 3.4.13.4

The PORV block valve must be verified open every 72 hours to provide the flow path for each required PORV to perform its function when actuated. The valve may be remotely verified open in the main control room. This Surveillance is performed if the PORV satisfies the LCO.

The block valve is a remotely controlled, motor operated valve. The power to the valve operator is not required to be removed, and the manual operator is not required to be locked in the inactive position. Thus, the block valve can be closed in the event the PORV develops excessive leakage or does not close (sticks open) after relieving an overpressure situation.

SURVEILLANCE REQUIREMENTS

SR 3.4.13.4 (continued)

The 72 hour Frequency is considered adequate in view of other administrative controls available to the operator in

(continued)

BASES (continued)

the control room, such as valve position indication, that verify that the PORV block valve remains open.

SR 3.4.13.5

Performance of a COT is required every 31 days on OPPS to verify and, as necessary, adjust the PORV lift setpoints. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The COT will verify the setpoints are within the PTLR allowed maximum limits in the PTLR. PORV actuation during this testing could depressurize the RCS and is not required.

Note 1 has been added indicating that this SR is not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ the OPPS enable temperature specified in the PTLR. The COT may not have been performed before entry into the LTOP MODES. The 12 hour initial time considers the unlikehood of a low temperature overpressure event during this time.

Note 2 has been added to specify that this SR is only required to be performed when OPPS and PORVs are providing the LTOP function per LCO 3.4.13.a.

SR 3.4.13.6

Performance of a CHANNEL CALIBRATION on OPPS is required every 24 months to adjust the whole channel so that it responds and the valve opens within the required range and accuracy to known input.

(continued)

R-9

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix G.
2. USAR, Section 4.4.
3. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix G, with ASME Code Case N-514.

(continued)

BASES

noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. These leakage detection systems are specified in LCO 3.4.165, "RCS Leakage Detection Instrumentation." CL3.4-331

The 7224 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage R-9

SURVEILLANCE REQUIREMENTS SR 3.4.13.1 (continued)

detection in the prevention of accidents. A Note under the Frequency column states that this SR is required to be performed during steady state operation. TA3.4-176

SR 3.4.143.2

This SR provides the means necessary to determine SG OPERABILITY in an operational MODE. The requirement to demonstrate SG tube integrity in accordance with the Steam Generator Tube Surveillance Program emphasizes the importance of SG tube integrity, even though this Surveillance cannot be performed at normal operating conditions. PA3.4-179

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30AEC "General Design Criteria for Nuclear Power Plant Construction Permits," Criterion 16, issued for comment July 10, 1967, as referenced in USAR Section 1.2. CL3.4-221

2. Regulatory Guide 1.45, May 1973.

3. UFSAR, Section 14.5[15].

PA3.4-211

BASES (continued)

ACTIONS

~~A Note to the ACTIONS excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE(S) while relying on the ACTIONS even though the ACTIONS may eventually require plant shutdown. This exception is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at, or proceeds to power operation.~~ TA3.4-314

A.1 and A.2

With the DOSE EQUIVALENT I-131 greater than the LCO limit,
samples at intervals of 4 hours must be taken to demonstrate that the limits of Figure 3.4.167-1 are not exceeded. The Completion Time of 4 hours is required to obtain and analyze a sample. Sampling is done to continue to provide a trend. R-9

The DOSE EQUIVALENT I-131 must be restored to within limits within 48 hours. The Completion Time of 48 hours is required, if the limit violation resulted from normal iodine spiking. R-9

Permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity greater than 1.0 μCi/gm DOSE EQUIVALENT I-131, but within the allowable limit shown on Figure 3.4.17-1, accommodates the possible iodine spiking phenomenon which may occur following changes in THERMAL POWER. Operation with specific activity levels exceeding 1.0 μCi/gm DOSE EQUIVALENT I-131 but within the limits shown on Figure 3.4.17-1 should be minimuzed since the activity levels allowed by the figure CL3.4-325

(continued)

BASES (continued) PA3.4-211

increase the dose at the site boundary following a postulated steam generator tube rupture.

A Note to the ACTIONS excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE(S) while relying on the ACTIONS even though the ACTIONS may eventually require plant shutdown. This exception is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at, or proceeds to power operation. TA3.4-314

B.1 and B.2

With the gross specific activity in excess of the allowed limit, the reactor must be placed in a MODE in which the requirement does not applyan analysis must be performed within 4 hours to determine DOSE EQUIVALENT I-131. The Completion Time of 4 hours is required to obtain and analyze a sample. TA3.4-201

The change within 6 hours to MODE 3 and RCS average temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems.

ACTIONS (continued)

C.1

(continued)

BASES

PA3.4-211

If a Required Action and the associated Completion Time of Condition A is not met or if the DOSE EQUIVALENT I-131 is in the unacceptable region of Figure 3.4.1~~6~~7-1, the reactor must be brought to MODE 3 with RCS average temperature < 500°F within 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner ~~and~~ without challenging plant systems. R-9

SURVEILLANCE REQUIREMENTS

SR 3.4.1~~6~~7.1

SR 3.4.1~~6~~7.1 requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant at least once every 7 days. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Surveillance is applicable in MODES 1 and 2, and in MODE 3 with T_{avg} at least 500°F. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.

SR 3.4.1~~6~~7.2

This Surveillance is performed in MODE 1 only to ensure iodine remains within limit during normal operation and following fast power changes when fuel failure is more apt to occur. The 14 day Frequency is adequate to trend R-9

(continued)

BASES

changes in the iodine activity level, considering gross activity is monitored every 7 days. The Frequency, between 2 and 6 hours after a power change ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following fuel failure; samples at other times would provide inaccurate results. R-9

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.167.3

A radiochemical analysis for Ē determination is required every 184 days (6 months) with the plant operating in MODE 1 equilibrium conditions. The Ē determination directly relates to the LCO and is required to verify plant operation within the specified gross activity LCO limit. The analysis for Ē is a measurement of the average energies per disintegration for isotopes with half lives longer than 15 minutes, excluding iodines. The Frequency of 184 days recognizes Ē does not change rapidly.

This SR has been modified by a Note that indicates sampling is required to be performed within 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for at least 48 hours. This ensures that the radioactive materials are at equilibrium so the analysis for Ē is representative and not skewed by a crud burst or other similar abnormal event.

REFERENCES

1. 10 CFR 100.11, 1973.

2. Letter from Dominic C. DiIanni, NRC, to L. O. Mayer, NSP, dated December 4, 1981. CL3.4-324

3. UFSAR, Section 14.5~~[15.6.3]~~.

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Difference Category	Difference Number 3.4-	Justification for Differences
CL	103	NUREG-1431 SR 3.4.1.3 was not included since PI CTS do not contain this requirement and the existing control board flow meters do not provide sufficient resolution to measure the specified values. These flow meters are 100% scale devices that are intended to provide operators with indication that RCS flow through each loop is approximately equal, but not an exact flow indication. Since a modification would be required to implement this SR, a reactor trip currently exists for low RCS flow, and RCS total flow rate is verified following startup from each refueling outage, this surveillance was not added.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	104	The Note for ISTS SR 3.4.1.4 was deleted. This SR provides for the verification of the RCS total flow rate. The associated Note states that this SR was not to be performed until 24 hours after ≥ [90]% RTP. PI CTS 3.10.J.c requires that the RCS flow be verified to be within its limits specified in the COLR after each refueling outage. The purpose of the SR is to measure RCS flow rate which allows for the installed RCS flow instrumentation to be calibrated and verifies actual RCS flow rate is greater than or equal to the minimum required RCS flow rate. PI currently performs this verification however, the CTS does not provide any specific time or RTP level as to when this verification must be performed. Even though the CTS does not require a specific time or RTP level, prudent operations would not allow PI to operate for a very long period of time at high power levels without performing this SR. In addition, during power escalation, various plant instrumentation and parameters are monitored to ensure that the reactor core is maintaining expected temperatures which provides further assurance that there is adequate RCS cooling (flow rate) until this verification can be performed. In accordance with the agreements made with the NRC for plants converting to the STS, plants are able to maintain their current license basis and CTS. As such, PI will maintain our CTS requirements and not place a specific time or RTP for verification of the RCS flow rate.

Difference Category	Difference Number 3.4-	Justification for Differences
	105	Not used.
PA	106	CTS does not specify a particular method for performing the RCS flow test. Thus the phrase, "by precision heat balance that" is not included in ITS SR 3.4.1.3.
CL	107	The CTS requirement for this surveillance requires the test to be performed each refueling cycle. Since PI intends to extend the plant refueling cycle up to 24 months, this Frequency is also extended to 24 months.
TA	108	This deviation implements approved TSTF-26.
TA	109	This change incorporates approved TSTF-339, Revision 1 except for the RCS flow which is already in the COLR per CTS. This is addressed in CL3.4-102. Since PI ITS retains the SL curves in Section SL 2.1.1, changes in the 3.4.1 Bases, Applicability, last paragraph, are not included.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	110	PI only has two groups of heaters to which this Specification applies and both groups are "required". Since both groups are required, the term "required" is not necessary and has been deleted in ITS 3.4.9, Condition B.
TA	111	This change implements TSTF-27, Rev. 3.
CL	112	Since PI is a two loop plant, "two" RCS loops has been specified and "all" has been replaced with "both".
CL	113	LCO, Actions, Surveillance Requirements and Bases are revised as appropriate to reflect that PI is a two loop plant. In some applications, use of "required" is not necessary or applicable since PI is a two loop plant; therefore, "required" has been deleted. (Markup did not include TSTF-263 since PI is a two loop plant).
CL	114	The Note to LCO 3.4.5 was modified by changing "All" to "Both" since PI is a two loop plant.
TA	115	This change incorporates TSTF-286, Revision 2.
	116	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	117	The allowed time and purpose of allowing both pumps to be not operating was extended to 12 hours and clarified that it is "to perform preplanned work activities". These changes were justified in a License Amendment Request dated November 19, 1999 (This LAR was approved by License Amendment 152/143, July 14, 2000). The justification presented in the LAR is factored in to the Bases. This justification argues that natural circulation provides sufficient flow for decay heat removal, and for boron addition requisite for provision of shutdown margin. The justification notes that this circulation may not be sufficient to respond to all potential dilution events. Thus, preplanned activities that stop forced flow must include actions to preclude the potential for events such as boron dilution.
TA	118	This change incorporated traveler TSTF-87, Rev. 2.
TA	119	This change incorporates TSTF-233. The specific phrase that has been inserted is modified to include PI specific terminology for the LTOP system, "Over Pressure Protection System (OPPS)."
	120	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	121	ISTS 3.4.5, 3.4.6, and 3.4.7 state in several places that the secondary side water levels for the steam generators will be ≥ [17%] for the required RCS loop. PI CTS does not require a specific water level in the SG. The CTS requires at least two methods of decay heat removal shall be OPERABLE with one in operation. Acceptable methods for removing decay heat are at least one reactor coolant pump and its associated steam generator. In addition, based on NRC Information Notice 95-32, TSTF 114, and WOG 155, the ITS statement has been revised to verify that the required steam generator is capable of removing decay heat. The current ISTS is incomplete and misleading. TSTF-114 revised the Bases for LCO 3.4.7 and incorporated a reference to IN 95-35, but did not include sufficient information for an operator to recognize the additional requirements discussed in the IN. The ISTS LCO 3.4.7 requirement that the secondary side water level of at least one SG be ≥ 17% is insufficient to ensure the SG can be relied upon to remove heat from the RCS in the applicable conditions. The wording of the LCO and the referencing of the IN create a condition in which the document referenced in the Bases contains additional requirements necessary to meet the intent of the LCO. As a result, LCO 3.4.7, SR 3.4.5.2 and SR.3.4.6.2 have been revised to only require verification of SG secondary side water level and removes the specific level values.

Difference Category	Difference Number 3.4-	Justification for Differences
	122	Not used.
CL	123	CTS require a steam or gas bubble in the pressurizer prior to low temperature starting of a RCP. This requirement has been included in the ITS for consistency with the current licensing basis.
	124	Not used.
TA	125	This change incorporates TSTF-265, Revision 2.
CL	126	CTS for this mode of operation require one SG to be operable; thus "one" is specified to retain current requirements.

Difference Category	Difference Number 3.4-	Justification for Differences
PA	127	Minor wording change to make the ITS wording consistent with the NUMARC 93-03, Writer's Guide for Restructured Technical Specifications.
CL	128	LCO, Actions, Surveillance Requirements and Bases are revised as appropriate to reflect that PI has only two RHR loops.
	129	Not used.
	130	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	131	The note has been revised to incorporate PI CLB and CTS. PI CLB, which has been approved by the NRC, allows that both RHR pumps may be shutdown for one hour provided the reactor is subcritical, no operations are permitted that would cause dilution of the reactor coolant boron concentration and core outlet temperature is maintained at least 10 ^{0}F below saturation temperature. PI did add two other restrictions; no RCS draining operations are permitted during this 1 hour period and that the pumps can only be shutdown for 1 hour during an 8 hour period. These two additions are consistent with NUREG-1431. This change is acceptable since the circumstances are to be limited when the outage time is short and the other conditions of the note are met. This change is consistent with PI CLB and CTS which has been approved by the NRC. One of the agreements between the industry and NRC is that during the conversion process to the ITS, a licensee is able to maintain their CLB or approved CTS. PI is exercising this agreement for this note.
CL	132	A Note has been included in Required Action B.2 to incorporate current licensing basis provisions. As allowed by the CTS, a Safety Injection pump may be operated if required to maintain adequate core cooling and RCS inventory during reduced RCS water inventory operations.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	133	The PI CTS require the pressurizer to be operable with a steam bubble and no specific level is specified. The bracketed level has been replaced with the Pressurizer High Water Level Allowable Value. Use of this level assures that the reactor trips prior to exceeding the TS value.
CL	134	Since no specific power capacity is specified in the CTS, this requirement has been deleted. Approved TSTF-94 was not incorporated since the changes were not applicable to PI. PI CTS require two groups of heaters to be operable and this requirement is retained in the ITS.
	135	Not used.
X	136	This SR should be performed in conjunction with the plant refueling cycle. PI intends to extend the refueling cycle to 24 months and accordingly this frequency is changed to 24 months.
CL	137	As discussed in CL3.4-134, above, the CTS do not require a specified pressurizer heater capacity. Likewise it does not require testing of the heaters to a specified capacity. Thus this SR is not included in the PI ITS.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	138	This LCO is revised to reflect the PI design with two PSVs and incorporate the CTS PSV OPERABILITY pressure range.
TA	139	This change incorporates TSTF-352, Revision 1.
	140	Not used.
PA	141	The bracketed time in the Note which allows final setting of the PSV under hot conditions allows 36 hours since PI has two PSVs.
CL	142	Condition B is modified to account for the PI design which has only two PSVs.
PA	143	The nominal setpoint pressure range is provided for clarity since it is not stated in the LCO or anywhere else in the TS.
TA	144	Incorporates TSTF-247. The portions of this TSTF which relate to a plant with three block valves were not included since PI has two PORVs and two block valves.

Difference Category	Difference Number 3.4-	Justification for Differences
	145	Not used.
CL	146	Condition A and associated Required Action, Completion Time and Bases are modified to incorporate CTS provisions which require remedial actions if one or both PORVs are inoperable solely due to excessive seat leakage.
CL	147	Condition B and associated Required Action, Completion Time and Bases are modified to incorporate CTS provisions remedial actions if a PORV is inoperable for reasons other than excessive seat leakage.
TA	148	This change incorporated TSTF-309, Revision 2 with minor modifications to make it correct with approved TSTF-247.
	149	Not used.
	150	Not used.
	151	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	152	Condition E is modified to incorporate the PI design which comprises two PORVs and the CTS LCO related to inoperability due to causes other than excessive seat leakage.
	153	Not used.
	154	Not used.
	155	Not used.
	156	Not used.
TA	157	This change incorporates TSTF-284, Revision 3.
CL	158	NUREG-1431 SR 3.4.11.3 and the associated Bases are not included since all required subcomponent testing is included in SR 3.4.11.2. Verification of the automatic PORV components is not required in order to meet the definition of PORV OPERABILITY as specified in the LCO Bases. Therefore this SR is not included.

Difference Category	Difference Number 3.4-	Justification for Differences
PA	159	The Required Action has been modified by requiring action to "assure" a maximum of one SI pump is capable of injecting into the RCS in lieu of "verifying". Use of the term "verify" is passive and inconsistent with the urgency of the situation where the operators should immediately take decisive action to make one pump incapable of injecting.
	160	Not used.
CL	161	NUREG-1431 SR 3.4.11.4 and the associated Bases are not included. Since the manual PORV function and block valves are supplied with permanent 1E power supplies, in accordance with the provisions of the Bases this SR is not required.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	162	The applicability of this Specification has been revised to apply only to MODE 4 when any RCS cold leg is less than the OPPS enable temperature and greater than the SI pump disable temperature to be consistent with CTS requirements. Accordingly, the title has been revised. Also the name of this Section is revised by deleting "System" to be consistent with the title of new Specification 3.4.13. These sections are not narrowly focused on a LTOP System but rather provide options for low temperature protection measures one of which is the LTOP System which at PI is titled, "Over Pressure Protection System (OPPS)". Thus the title, "Low Temperature Overpressure Protection" is more appropriate. The provisions of this Specification which apply when the RCS temperature is below the SI pump disable temperature are not included since they have been relocated to the new Specification 3.4.13. SRs 3.4.12.4 and 3.4.12.5 have also been revised to account for the OPPS circuitry which requires testing to support this Specification.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	163	The PI CTS and supporting analyses require that only one SI pump be capable of injecting in MODE 4 when the RCS temperature is below the LTOP enable temperature and above the SI pump disable temperature. CTS and design basis analyses do not require any restrictions on charging pump operation during RCS low temperature operations. Thus the bracketed requirements in NUREG-1431 LCO, Action, Surveillances Requirements and Bases have been deleted and NUREG-1431 SR 3.4.12.2 is not included. Since the system which provides LTOP at PI is the OPPS, this has been included in the LCO statement. To clarify the presentation of the LCO statement, the three provisions have been designated by a), b) and c). The complete name, "emergency core cooling system", is included in the LCO to make clear which accumulators are the subject of this Specification. The PORVs utilize back-up air accumulators; thus to prevent confusion, this clarifying phrase was added to the first use of accumulators in this Specification and the term "ECCS" is used thereafter. The LCO, Required Actions and Bases are revised to reflect that only the PORVs function as the RCS relief valves in the LTOP function. Since the RHR relief valve is not used in the LTOP function, NUREG-1431 SRs 3.4.12.4 and 3.4.12.7 were not

Difference Category	Difference Number 3.4-	Justification for Differences
CL	163	(continued) incorporated into the PI ITS. Since depressurizing and venting of the RCS is not an option in MODE 4, paragraph b. was deleted.
CL	164	A Note is included incorporating CTS 3.3.A.3 which provides for SI system testing (head removal is not included since it is not a viable option in MODE 4).
TA	165	This change incorporates TSTF-243.
TA	166	The Applicability Note was relocated to the LCO and reworded consistent with the guidance of approved TSTF-285, Revision 1. Since PI does not have restrictions on charging pump operation at low temperatures, the other portions of TSTF-285 are not applicable and have not been incorporated.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	167	The Applicability, Actions and Bases were revised to delete MODES 5 and 6 from this Specification since a new Specification, 3.4.13, "Low Temperature Overpressure Protection (LTOP) ≤ Safety Injection (SI) Pump Disable Temperature," has been included to address CTS requirements for operation in these MODES.
PA	168	Since the LTOP requirements have been split into two Specifications, PI ITS Required Action E has been split into E.1 which requires the plant to go to MODE 5. In NUREG-1431, when depressurizing and venting the RCS, the plant was still in a MODE included in the Applicability. Since MODE 5 is not applicable to Specification 3.4.12, the explicit requirement to change Modes is included.
CL	169	Plant specific vent area is provided in lieu of the bracketed value. This is specified as a nominal 3 square inches since the Bases, consistent with CTS Bases, states that the PORV opening of 2.956 square inches fulfills this requirement.
	170	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
X	171	ITS SR 3.4.12.2 includes a Note consistent with the LCO Note that these ECCS accumulator isolation SRs are only applicable when the accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR.
CL	172	A new Specification is included to incorporate CTS requirements that below the SI pump disable temperature (currently 218 F) both SI pumps shall be incapable of injecting into the RCS when it is intact and capable of maintaining pressure. All subsequent Specifications have been renumbered to incorporate this new Specification. This new Specification includes applicable portions of approved TSTF-205 Rev. 3, TSTF-233, TSTF-243, TSTF-271 Rev. 1; TSTF-280 Rev. 1, TSTF-284 Rev. 3 and TSTF-285 Rev. 1.
CL	173	The 1 gpm SG leakage limit has not been included since the CTS does not have this limit. The 1 gpm limit is enveloped by the 150 gpd limit and is unnecessary. This change is also consistent with current industry initiatives to remove this limit from NUREG-1431.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	174	Action statements A and B and the Bases have been revised to be consistent with CTS. Two new Action statements C and D have been included to develop the succession of possible events from unidentified LEAKAGE to pressure boundary LEAKAGE existing or SG LEAKAGE not within limits consistent with PI CTS. Supporting changes have also been made in the Bases.
CL	175	The CTS value of 150 gallons per day primary to secondary leakage is included.
TA	176	Incorporates TSTF-116, Rev. 2. "Equilibrium xenon" has been included in the Bases list of considerations for "steady state operating condition", since at PI this is a significant consideration affecting the RCS water inventory balance.
TA	177	Incorporates approved TSTF-61.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	178	The Applicability, Surveillance Requirements and Bases are revised to eliminate discussion concerning the exclusion for PIVs in the RHR flow path during the RHR mode of operation. The only PIV in the RHR system which is governed by this LCO is a check valve in the flow path which provides normal plant cooldown flow into the reactor vessel; thus this exception does not apply.
PA	179	In accordance with current industry guidance, "Tube Surveillance" is not included in the program title and the title has been changed to "Steam Generator Program". This change is also consistent with the program title and description in ITS 5.5.8.
	180	Not used.
X	181	The second option for Required Action A.2 was selected with the Bases revised accordingly. Since the second option does not require use of additional valves, SR 3.4.15.1 should not refer to Required Action A.2.

Difference Category	Difference Number 3.4-	Justification for Differences
PA	182	Minor change to delete reference to Condition A which is not required since Condition A is the only Action statement to which Condition B can apply per the Writer's Guide.
	183	Not used.
CL	184	The Frequency and Bases are revised to incorporate the CTS requirements for testing Frequency such as every 24 months, prior to entering Mode 2 under the specified conditions and prior to returning a PIV to service after maintenance, repair or replacement. The CTS require testing following each refueling outage; thus the Frequency is specified as 24 months to accommodate 24 month refueling cycles. These changes are acceptable since they are part of the plant current licensing basis and assure acceptable performance of these valves. NUREG-1431 requirements to test the valves following each use have not been included, since this is not a CTS requirement.
	185	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	186	The bracketed Condition C for the RHR System auto closure interlock (ACI) is not included in the PI ITS. This plant design feature is not included in the PI CTS and thus is not included in the ITS. The associated SRs (ISTS SR 3.4.14.2 and 3.4.14.3) have not been included. Likewise, the Bases associated with Condition C and the associated SR Bases have not been included.
X	187	This SR should be performed in conjunction with the plant refueling cycle. PI intends to extend the refueling cycle to 24 months and accordingly this frequency is changed to 24 months. Since this SR is new for the PI plant, there is no historical basis for not performing the SR at 24 month intervals.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	188	The LCO, Actions and Bases are revised to incorporate CTS requirements which make containment radionuclide monitoring one form of required RCS leakage detection instrumentation. The SRs associated with maintaining the radionuclide monitoring instrumentation have been included in the PI ITS. To be consistent with PI CTS which requires two methods for detecting RCS leakage, containment sump A pump run time monitoring is also included with appropriate Actions, SRs and Bases. PI uses other methods for RCS leakage detection, as discussed in the ITS Bases and the USAR; however, these other methods are not amenable to incorporation into the ITS and are not part of CTS. Operating experience for over twenty-five years has demonstrated on numerous occasions that the PI leakage detection methods, TS and non-TS, are adequate to provide early detection of RCS leakage.
CL	189	PI does not have CTS requirements for containment air cooler condensate flow rate monitoring and does not have a system which is amenable for inclusion in the ITS. Thus the LCO, Action, SR and associated Bases are not included in the PI ITS.
	190	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	191	The SR Note which eliminates a repetitive testing loop is not included in the PI ITS. CTS do not require testing of the PIVs after each use and thus the testing requirements do not introduce the possibility of a repetitive testing loop.
CL	192	The clause "reactor coolant pressure boundary [or the" has not been included since the PI system design does not include any isolation valves in the RCPB which will perform this function.
	193	Not used.
TA	194	This change incorporates TSTF-60. Some minor changes have been made to use PI terminology.
	195	Not used.
	196	Not used.
	197	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
	198	Not used.
	199	Not used.
	200	Not used.
TA	201	This change incorporates TSTF-28.
	202	Not used.
	203	Not used.
CL	204	NUREG-1431 Specifications 3.4.17 and 3.4.18 are not included since PI does not have RCS loop isolation valves.
	205	Not used.
TA	206	Incorporates TSTF-108, Rev. 1.

Difference Category	Difference Number 3.4-	Justification for Differences
	207	Not used.
	208	Not used.
	209	Not used.
	210	Not used.
PA	211	Included throughout the Bases are reference corrections, renumbering and relettering of paragraphs and minor wording changes which have been made to accommodate changes to the Specifications and PI unique needs. These changes are not identified by change numbers.
CL	212	In Bases 3.4.1, deleted discussion of a specific DNBR limit. More than one limit is used in the PI safety analysis, depending on the event analyzed.
TA	213	This change incorporates TSTF-136

Difference Category	Difference Number 3.4-	Justification for Differences
CL	214	In Bases 3.4.1, revised discussion of the source of the DNB limits to agree with their development in the PI specific safety analysis. The safety analysis does not use the term analytical limits. It does use conservative assumptions for transient initial conditions.
CL	215	In Bases 3.4.1, revised discussion of treatment of the RCS flow uncertainty to agree with plant specific implementation, and clarified the purpose of the DNB parameter allowances.
PA	216	In Bases 3.4.1, revised discussion to clarify the significance of increasing vs. decreasing transients.
CL	217	PI CTS requirements are all based on isothermal temperature coefficient (ITC). Consistent with ITS Section 3.1.3, moderator temperature coefficient (MTC) is changed to ITC throughout B3.4.2.

Difference Category	Difference Number 3.4-	Justification for Differences
PA	218	PI transient analyses assume a conservatively high or conservatively low HZP temperature, depending on the transient analyzed. The range around nominal HZP is selected to account for the assumptions. The minimum temperature for criticality is the lower value of this range.
PA	219	In Bases 3.4.1, Applicability, deleted the last sentence. The sentence presents an expectation for operator action that is not prescribed in the Specification. Chapter 2 covers operator response to potential SL violations.
	220	Not used.
CL	221	PI was licensed prior to issuance of 10CFR50 Appendix A. PI did commit, to the extent described in the USAR Section 1, to the Atomic Energy Commission (AEC) draft General Design Criteria (GDC) which were issued for comment July 10, 1967. Generally the AEC GDC number is different than the 10CFR50 Appendix A GDC number.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	222	Discussion of the reactor vessel material surveillance program is revised to reflect the status of the planned program. The USAR description of the program and requirements is referenced to ensure consistency with current licensing basis.
PA	223	In Bases 3.4.4, Background, removed the secondary function that is not relevant during the MODES of APPLICABILITY covered by this Specification.
CL	224	In Bases 3.4.4, revised the Applicable Safety Analysis discussion to more clearly represent PI specific analyses accounting for RCS flow, DNBR and applicable events. These changes are made to avoid possible misinterpretation of the analysis.
	225	Not used.
CL	226	In Bases 3.4.5, Applicable Safety Analysis, deleted discussion of a power excursion due to rod ejection. PI does not specifically analyze this transient for sub-critical conditions since it would not result in a power excursion and the reactor would remain sub-critical irrespective of the number of RC loops in operation.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	227	Clarified discussion of safety analyses to more closely represent the PI specific analysis methodology, assumptions, transients analyzed, and results acceptability. The only transient analyzed from sub-critical is accidental rod withdrawal, which assumes both loops in operation.
PA	228	Edited discussion of the testing campaign that is used as the basis for the LCO Note to more closely present that campaign as historical, is not expected to be repeated, and likely would require new test procedures.
PA	229	In Bases 3.4.5, Action D, deleted second occurrence of the sentence regarding opening RTB's or de-energizing MG sets. This sentence is redundant due to the change earlier in the paragraph from TSTF-87.
	230	Not used.
	231	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
PA	232	In Sections 3.4.5, 3.4.6 and 3.4.7, Bases LCO, the statement defining an OPERABLE SG is edited. The terminology "...Steam Generator Tube Surveillance Program," is not utilized in the PI ITS. Operability is sufficiently defined in other sections of ITS; thus this clarification is not necessary. The clarification that is unique to operation in the shutdown modes of a minimum wide range level, specified in SR 3.4.7.2, is added to Bases 3.4.7, LCO. This is consistent with the other Bases, 3.4.5 and 3.4.6.
	233	Not used.
	234	Not used.
	235	Not used.
	236	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	237	Section 3.4.6, 3.4.7 and 3.4.8 Bases, Applicable Safety Analysis, is edited to recognize that while it is acknowledged that forced RCS circulation increases the time available, PI does not have a current licensing basis analysis that quantifies the relationship to the time available.
PA	238	NUREG 1431 Section 3.4.6 Bases, Applicability, statements regarding the purpose of requiring forced circulation are not included in PI ITS. The purpose of providing forced flow, and redundant forced flow, is sufficiently discussed in the Background and LCO discussion, phrased in a manner that is not inconsistent with current licensing basis. Also, providing this additional clarification in B3.4.6 Applicability is inconsistent with B3.4.5 Applicability.
PA	239	Added clarification in Section 3.4.6 Bases, Action A, to emphasize the importance of immediate restoration of an RCS or RHR loop to provide forced flow in the Condition where both RHR loops are inoperable. This emphasis notes that remaining in MODE 4 with an RCS loop providing forced flow is more conservative than entry to a reduced MODE that would necessitate use of other inoperable cooling mechanisms.
	240	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
	241	Not used.
	242	Not used.
	243	Not used.
	244	Not used.
	245	Not used.
TA	246	Incorporated approved TSTF-114.
CL	247	NUREG Section 3.4.7 Bases, Background, includes "protection" in the sentence defining what constitutes an operable RHR loop. The flow and temperature instrumentation associated with the RHR System at PI do not provide any form of protection, so this term is not included in the ITS.
	248-255	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
TA	256	Incorporated approved TSTF-162.
PA	257	Statements are added to Bases Section 3.4.9 Background to clarify the discussion of small amounts of non-condensible gases. The added statements point out that the existence of these gases is to be expected, and that this presence is not significant when there is a steam bubble. These editorial additions are to improve operator understanding.
PA	258	NUREG 1431 SR 3.4.9.1 Bases statements "...corresponds to verifying the parameter each shift." and "...verify that operation is within safety analysis assumptions." are not included in ITS. Over the plant life, the operator shift duration has varied between 8 hours and 12 hours. Including the statement would result in the need revise this Bases when the shift is other than 12 hours. Although there is tacit assumption in the safety analysis that the pressurizer is not water solid, there is no basis in the assumption from which to quantify a level as a basis for any particular surveillance criteria. Other areas of the Bases discuss the purpose of the level in general terms. These discussions provide sufficient insight. The NUREG statement can be misinterpreted as implying specific SR criteria. Since it could be misleading, and is otherwise addressed, it is not included in the SR Bases.

Difference Category	Difference Number 3.4-	Justification for Differences
	259	Not used.
	260	Not used.
CL	261	NUREG 1431 Section 3.4.10 Bases, Applicable Safety Analysis, includes the statement "Safety valve actuation is required in events c, d, and e (above) to limit the pressure increase." The set of transients that require safety valve operation per the PI safety analysis is cycle specific. The results of these analyses is documented in the cycle specific COLR. Thus the statement is not included in the ITS Bases.
	262-266	Not used.
TA	267	Incorporates TSTF-151 as modified by WOG-ED-20.

Difference Category	Difference Number 3.4-	Justification for Differences
PA	268	Bases Section 3.4.11 Applicability is edited to emphasize the SGTR event which per safety analysis and procedures is the event that utilizes the PORV's for mitigation and recovery. The secondary purpose of PORV and block valve operability, which is not assumed in safety analysis, is clarified to be consistent with operational use of these valves. This is consistent with TSTF-151. ISTS discussion related to potential causes of PORV spurious opening is deleted. This discussion is inconsistent with 2-loop plant control system design and is extraneous. As determined in post-TMI control system evaluation, the 2-loop plant control system does not utilize a rate circuit similar to the 3 and 4-loop plant control system, thus is not susceptible to the postulated spurious operation. The remaining discussion provides sufficient basis to support the MODE Applicability requirements. These changes eliminate possible operator confusion by clarifying the need for the valves. This is considered an editorial change.
	269	Not used.
	270	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	271	The original implementation of the LTOP requirements at PI involved installation of the Over Pressure Protection System (OPPS) and air accumulators for the PORV's. OPPS used existing RCS parameters as inputs. OPPS provides the algorithms, logic, and setpoints for alarms and PORV actuation. The input instrumentation and the PORV's retain the original systems assignment. Thus, an "LTOP system" does not exist within PI terminology. The "LTOP function" used in the ITS Specification is provided by components assigned to multiple plant systems. The Bases is revised throughout to clearly identify OPPS, the functionality OPPS provides, and the distinction between OPPS and the components that are part of other systems.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	272	The LTOP requirements have been split into two Specifications based on mass input limits established in the PI specific analyses. Bases Section 3.4.12 and new Bases Section 3.4.13, Background and Applicable Safety Analyses are edited to correlate to the PI specific analyses. To ensure consistency with the analyses and avoid statements that may be inaccurate for the plant conditions within the applicable operating regime of each Specification, the summary purpose for provision of low temperature overpressure protection is replaced with CTS Bases statements. The analyzed transients, resultant limitations and mitigation requirements are edited to be consistent with the PI specific analysis and LCO. NUREG-1431 statements regarding analysis results that are not clearly stated within the PI analyses are not included. Since the Applicability split between the two Sections is a point that does not align with the MODE definitions in NUREG-1431, use of the term "LTOP MODES" is not directly applicable to either Specification. In order to provide a simple, understandable replacement for "LTOP MODES", reference to the Applicability statement of the Specification is inserted.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	273	The NUREG 1431 SR 3.4.12.1 and 3.4.12.2 Bases are edited to PI specific current license requirements and practices. The NUREG alternative methods for LTOP control other than removing power from the SI pumps. The ITS delineates the methods provided for in CTS. These methods are consistent with the criteria for acceptable alternatives listed in the NUREG bases. The method of verifying accumulator discharge valve status is delineated.
	274-296	Not used.
CL	297	The PIVs are included in the PI ITS as the result of an Order for Modification of License issued by the NRC April 20, 1981. Since the Regulations listed in the Bases Background are not the basis for including these valves in this Specification, they are not included in the discussion or as references in this Bases.
PA	298	The Background paragraph which discussed what LCO 3.4.14 (ISTS 3.4.13) is not included since this is not accurate for PI and this paragraph is not necessary in the Bases.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	299	The Bases Applicable Safety Analyses have been revised to provide clarification and agree with the USAR and CTS Bases for RCS leakage TS.
PA	300	Clarification is provided that leakage past pressurizer safety valve seats does not meet the definition of reactor coolant pressure boundary leakage. This is explicitly stated since it has been an issue with the PI operators previously.
CL	301	PI is not committed to R.G. 1.45 and thus the leakage detection requirements are referenced to the leakage detection instrumentation specification.
TA	302	This change incorporates TSTF-54, Revision 1.
CL	303	The 150 gallon per day SG primary to secondary leakage rate is based on the Steam Generator Voltage Based Alternate Repair Criteria approved for PI in License Amendments 133/125 issued November 18, 1997.
CL	304	CTS Bases discussion of the role of seal welds at threaded joints are included in the ITS to provide clarification.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	305	CTS requirements have been relocated to the ITS Bases.
CL	306	The PI list of PIVs is in the CTS and has been relocated to the Bases LCO discussion. Reference to a separate list in the USAR is not required. This list is based on the NRC study provided in the letter from Robert A. Clark, NRC, to L. O. Mayer, NSP, subject: "Order for Modification of License Concerning Primary Coolant System Pressure Isolation Valves," dated April 20, 1981.
CL	307	The CTS required minimum test pressure differential across the PIVs has been relocated to the Bases.
	308	Not used.
CL	309	The definition of PIVs provided in these Bases is very broad and thus the Bases are clarified to assure that only the PIVs included in the CTS are included in this LCO. The CTS lists PIVs based on the NRC study which identified the risk significant configurations. Thus the Bases are modified to clarify that this Specification applies to the risk significant valves as identified in the LCO section of the Bases.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	310	CTS Bases and the USAR (Ref. 2) describe methods for leakage detection at PI which are not included in the ISTS. Discussion of these methods have been included in the PI ITS Bases to make the presentation complete. As noted in the proposed Bases, these methods are not required by this LCO. Reference to Regulatory Guide 1.45 is not included since PI is not committed to this document.
CL	311	The NUREG-1431 discussion of air cooler condensate flow rates is not applicable to PI and has been replaced with a discussion of Sump A pump run time monitoring which provides comparable indication. Although run time instrumentation is not required by the CTS, it is included in the ITS.
	312	Not used.
TA	313	This change incorporates TSTF-205, Revision 3.
TA	314	This change incorporates TSTF-137.
	315	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
TA	316	This change incorporates TSTF-154, Revision 2.
CL	317	Clarification is provided in the LCO discussion of the Bases as to the purpose of this specification.
	318	Not used.
CL	319	The discussion of humidity measurements has been modified to reflect monitoring capabilities at PI.
	320	Not used.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	321	CTS require two methods of instrumentation to detect RCS leakage; however, the second method, other than radionuclide monitoring, is not required to indicate in the control room. The ITS includes containment sump monitoring because it is closest to the methods given in NUREG-1431 and is one of the methods currently used at PI. This is in addition to other indications in the control room such as containment pressure, temperature, humidity and pressurizer level. Some of these parameters are required to be monitored by other Specifications for other reasons, but would certainly be evaluated for RCS leakage if they indicated abnormally. However, containment sump monitoring is not installed instrumentation in the control room. A physical plant modification would be required to allow it to indicate in the control room. Therefore, the Bases Applicable Safety Analyses discussion references 10 CFR 50.36 (c)(2)(ii) Criterion 4 for this instrumentation.
CL	322	Since PI is extending the refueling cycle to 24 months through this license amendment, operating experience with this interval does not exist.
CL	323	Specific instruments which satisfy the requirements of this LCO have been included for clarity.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	324	The NUREG-1431 discussion of the analyses which support Specification 3.4.17 have not been included and have been replaced by the discussion from PI CTS. In 1979 PI was requested by the NRC to incorporate RCS Specific Activity limits which are equivalent to those in Specification 3.4.17. These limits were issued by the NRC on December 4, 1981 (ITS Bases 3.4.17 Ref. 2). However, NSP was not provided with the analyses which support these limits; thus the Bases were revised stating that the limits are based on NRC parametric evaluations. In November 1999 NSP requested these evaluations, but the NRC was unable to find them. Since PI does not have USAR analyses which support these limits, we continue to depend on the NRC parametric evaluations as stated in the Bases for ITS LCO 3.4.17. to determine that the NUREG-1431 Bases 3.4.16.
CL	325	NUREG-1431 does not provide a basis for operating within the limits of Figure 3.4.17-1; therefore, discussion from the CTS Bases is included.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	326	The PI CTS and ITS specify instrumentation allowable values and do not specify setpoints. The values of these setpoints are determined by the PI Setpoint Methodology Program. Therefore the specific setpoints have been removed from the Bases for ITS 3.4.18. Placing setpoint requirements in the Bases is an obscure location for them.
PA	327	The NUREG-1431 discussion of tests which will be performed is not included since PI has already performed the tests required to operate. Any tests which may have to be performed in the future will be defined when they are required.
CL	328	An additional paragraph has been included in the Bases for 3.4.5 Required Action A.1. This information makes it clear to the operators that the plant may be in natural circulation mode of core cooling for up to 72 hours in MODE 3 if neither reactor coolant pump can be made operational. The format of NUREG-1431 provides this course of action, but without this additional paragraph, the Bases do not provide any corroborating guidance, thus this paragraph is necessary. This change also is consistent with CTS guidance for the operators if neither reactor coolant pump is OPERABLE.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	329	ISTS Bases 3.4.3, Required Action A.1 and A.2 has been revised to include relocated information from the CTS. Therefore, the ISTS Bases has been revised as follows: "Several methods may be used, including an engineering evaluation to determine effects of the out-of-limit condition on the structural integrity of the RCS, a comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components." The addition of the subject CTS statement provides clarification for an evaluation in order to determine if the RCS is acceptable for continued operation in the event the RCS pressure and temperature are not within limits.
TA	330	This change incorporates TSTF 263, Rev 3 as modified to PI. PI is only a two loop plant, therefore, some of the TSTF was editorially changed to reflect this.

Difference Category	Difference Number 3.4-	Justification for Differences
CL	331	CTS Table requires that the Primary System Leakage be evaluated daily. ITS SR 3.4.14.1 requires verification that the RCS operational leakage is within limits every 72 hours. PI has changed the Frequency from 72 hours to 24 hours to be consistent with the CTS. The 24 hours is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.

PART G

PACKAGE 3.4

REACTOR COOLANT SYSTEM (RCS)

NO SIGNIFICANT HAZARDS DETERMINATION AND ENVIRONMENTAL ASSESSMENT

NO SIGNIFICANT HAZARDS DETERMINATION

The proposed changes to the Operating License have been evaluated to determine whether they constitute a significant hazards consideration as required by 10CFR Part 50, Section 50.91 using the standards provided in Section 50.92.

For ease of review, the changes are evaluated in groupings according to the type of change involved. A single generic evaluation may suffice for some of the changes while others may require specific evaluation in which case the appropriate reference change numbers are provided.

A - Administrative (GENERIC NSHD)
(A3.4-00, A3.4-03, A3.4-08, A3.4-14, A3.4-18, A3.4-22, A3.4-28, A3.4-39, A3.4-46, A3.4-49, A3.4-61, A3.4-71, A3.4-73, A3.4-77, A3.4-78, A3.4-83, A3.4-99, A3.4-100, A3.4-102, A3.4-103, A3.4-104, A3.4-105, A3.4-106, A3.4-107, A3.4-110, A3.4-111, A3.4-112, A3.4-113, A3.4-114, A3.4-120, A3.4-121, A3.4-122, A3.4-124, A3.4-125, A3.3-127)

Most administrative changes have not been marked-up in the Current Technical Specifications, and may not be specifically referenced to a discussion of change. This No Significant Hazards Determination (NSHD) may be referenced in a discussion of change by the prefix "A" if the change is not obviously an administrative change and requires an explanation.

These proposed changes are editorial in nature. They involve reformatting, renaming, renumbering, or rewording of existing Technical Specifications to provide consistency

<u>M - More restrictive</u> **(GENERIC NSHD)**
(M3.4-04, M3.4-06, M3.4-07, M3.4-11, M3.4-12, M3.4-13, M3.4-17, M3.4-21, M3.4-26, M3.4-31, M3.4-32, M3.4-33, M3.4-34, M3.4-37, M3.4-38, M3.4-41, M3.4-42, M3.4-43, M3.4-44, M3.4-45, M3.4-51, M3.4-52, M3.4-54, M3.4-57, M3.4-62, M3.4-63, M3.4-64, M3.4-72, M3.4-81, M3.4-84, M3.4-85, M3.4-117, M3.4-123)

This proposed Technical Specifications revision involves modifying the Current Technical Specifications to impose more stringent requirements upon plant operations to achieve consistency with the guidance of NUREG-1431, correct discrepancies or remove ambiguities from the specifications. These more restrictive Technical Specifications have been evaluated against the plant design, safety analyses, and other Technical Specifications requirements to ensure the plant will continue to operate safely with these more stringent specifications.

1. The proposed amendment will not involve a significant increase in the probability <u>or consequences of an accident previously evaluated.</u>

   The proposed changes provide more stringent requirements for operation of the plant. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event.

   These more restrictive requirements continue to ensure process variables, structures, systems, and components are maintained consistent with the safety analyses and licensing basis. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind <u>of accident from any accident previously analyzed.</u>

   The proposed changes do not involve a physical alteration of the plant, that is, no new or different type of equipment will be installed, nor do they change the methods governing normal plant operation.

   These more stringent requirements do impose different operating restrictions. However, these operating restrictions are consistent with the boundaries established by the assumptions made in the plant safety analyses and licensing bases. Therefore, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

LR - Less restrictive, Relocated details (GENERIC NSHD)
(LR3.4-01, LR3.4-24, LR3.4-53, LR3.4-74, LR3.4-94, LR3.4-96, LR3.4-97, LR3.4-98, LR3.4-101)

Some information in the Prairie Island Current Technical Specifications that is descriptive in nature regarding the equipment, system(s), actions or surveillances identified by the specification has been removed from the proposed specification and relocated to the proposed Bases, Updated Safety Analysis Report or licensee controlled procedures. The relocation of this descriptive information to the Bases of the Improved Technical Specifications, Updated Safety Analysis Report or licensee controlled procedures is acceptable because these documents will be controlled by the Improved Technical Specifications required programs, procedures or 10CFR50.59. Therefore, the descriptive information that has been moved continues to be maintained in an appropriately controlled manner.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed changes relocate detailed, descriptive requirements from the Technical Specifications to the Bases, Updated Safety Analysis Report or licensee controlled procedures. These documents containing the relocated requirements will be maintained under the provisions of 10CFR50.59, a program or procedure based on 10CFR50.59 evaluation of changes, or NRC approved methodologies. Since these documents to which the Technical Specifications requirements have been relocated are evaluated under 10CFR50.59 or its guidance, or in accordance with NRC approved methodologies, no increase in the probability or consequences of an accident previously evaluate will be allowed without prior NRC approval. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   These proposed changes do not necessitate physical alteration of the plant, that is, no new or different type of equipment will be installed, or change parameters governing normal plant operation. The proposed changes will not impose any different requirements and adequate control of the information will be maintained. Thus, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

Specific NSHD for Change L3.4-23 (Deleted)

Specific NSHD for Change L3.4-23 (Deleted)

Specific NSHD for Change L3.4-89 (deleted)

Specific NSHD for Change L3.4-109

This change involves increasing the Completion Time for shutting down the plant from 12 hours to 24 hours in the event that the pressurizer safety valve cannot be restored to OPERABLE status within 15 minutes or if both pressurizer safety valves are inoperable.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The ITS specifically requires both pressurizer valves to be OPERABLE in MODES 1, 2, 3, or MODE 4 with all RCS cold leg temperatures > OPPS enable temperature specified in the PTLR. In the event one pressurizer safety valve is inoperable, restoration must be completed in 15 minutes. If the valve cannot be restored in the 15 minutes, or if both pressurizer safety valves are inoperable, the unit must be placed in MODE 3 within 6 hours and MODE 4 in 24 hours with any RCS cold leg temperature ≤ the OPPS enable temperature specified in the PTLR. In the same condition, the CTS requires that the reactor be in MODE 3 within 6 hours and reduce reactor coolant system average temperature below 350 degrees F within the next 6 hours (12 hours total). The ITS would allow 24 hours to reduce cold leg temperature to ≤ OPPS enable temperature per the PTLR. Although the ITS requires that the plant be cooled down further, the increased Completion Time to 24 hours is considered to be a less restrictive change. The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, or the setpoints at which these actions are initiated. This change does not affect the performance of any credited equipment or involve any instrumentation setpoints. As a result, no new instrument drift or supporting calculation assumptions are introduced. The increased Completion Time provides reasonable time based on operating experience to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. With any RCS cold leg temperature at or below the OPPS enable temperature specified in the PTLR, overpressure protection is provided by the LTOP function. The 24 hours is reasonable based on operating experience to reach the required plant conditions from full power in a orderly manner and without challenging plant systems. Decreasing power from Modes 1, 2, or 3 to Mode 4 reduces the RCS energy (core pressure and power), lowers the potential for large pressurizer insurges, and thereby removes the need for overpressure protection by both pressurizer safety valves. In addition, at lower temperature and pressure conditions, LTOP will still provide added protection. Thus this change does not involve a significant increase in the probability of an accident.

   Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Specific NSHD for Change L3.4-109 (continued)

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   This proposed change does not involve a physical alteration of the plant; that is, no new or different type of equipment will be installed. The proposed change does not introduce a new mode of plant operation or changes in the methods governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are initiated. This proposed change allows an additional 12 hours (24 hours total) to place the reactor in MODE 4 with any RCS cold leg temperature ≤ the OPPS enable temperature specified in the PTLR. This is a reasonable Completion Time, based on operating experience to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. With any RCS cold leg temperature at or below the OPPS enable temperature specified in the PTLR, overpressure protection is provided by the function.

   Thus, increasing the Completion Time does not involve a significant reduction in a margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This change is consistent with the guidance of NUREG-1431.

Specific NSHD for Change L3.4-118

This change provides for various options of placing the rod control drive system in a condition incapable of rod withdrawal in the event that two RCS loops are inoperable or the required RCS loop is not in operation. This change is consistent with the guidance of NUREG-1431 as revised by TSTF-87, Rev. 2.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The CTS specifically requires only one method, de-energizing the control rod drive system, for assuring that the System is incapable of rod withdrawal in the event that both RCS loops are inoperable or if the required RCS loop in not in operation. ISTS LCO 3.4.5, Required Action D.1 provides additional flexibility by allowing the control rod drive system to be placed in a condition incapable of rod withdrawal. This flexibility allows other methods to be used to assure that the rod control drive system is incapable of rod withdrawal. These methods may include but not limited to de-energization of the control rod drive system, de-energization of all CRDM's by opening the RTBs, or de-energization of the MG sets. The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, or the setpoints at which these actions are initiated. This change does not affect the performance of any credited equipment or involve any instrumentation setpoints. As a result, no new instrument drift or supporting calculation assumptions are introduced. The subject Required Action only provides optional methods of assuring that the control rod drive system is incapable of rod withdrawal in the event that both RCS loops are inoperable or the required loop is not in operation. Since this change still prohibits the control rods to be withdrawn, there would not be any mechanism or potential of generating additional heat generated from the reactor core. Thus this change does not involve a significant increase in the probability of an accident.

   Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Specific NSHD for Change L3.4-118 (continued)

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   This proposed change does not involve a physical alteration of the plant; that is, no new or different type of equipment will be installed. The proposed change does not introduce a new mode of plant operation or changes in the methods governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are initiated. This propose change provides additional methods for assuring that the control rod drive system is incapable of rod withdrawal in the event that both RCS loops are inoperable or that the required RCS loop is not in operation. The overall intent, assuring that the control rods can not be withdrawn and thereby increasing the potential heat input to the reactor coolant is maintained. Since the revised Actions still assure rod withdrawal is precluded, details of specifically stating de-energization of the control rod drive system is not necessary nor required to provide adequate protection of the public health and safety. This change allows alternate operation to preclude rod withdrawal.

   Thus, revising this requirement does not involve a significant reduction in a margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This change is consistent with the guidance of NUREG-1431.

Specific NSHD for Change L3.4-126

CTS 3.1.A.c (1) requires two methods for removing decay heat with one of the methods in operation. The CTS further states that acceptable methods for removing decay heat are at least on reactor coolant pump (RCP) and its associated steam generator (SG) or a residual heat removal loop including its associated heat exchanger. This change eliminates the CTS requirement of having the associated RCP OPERABLE when the SG is being used for decay heat removal.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The CTS specifically requires two methods for removing decay heat with one of the methods in operation. The CTS further states that acceptable methods for removing decay heat are at least one reactor coolant pump (RCP) and its associated steam generator (SG) or a residual heat removal loop including its associated heat exchanger. The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, or the setpoints at which these actions are initiated. This change does not affect the performance of any credited equipment or involve any instrumentation setpoints. As a result, no new instrument drift or supporting calculation assumptions are introduced. The subject change only eliminates the requirement for an RCP to be OPERABLE in the event its associated SG is being used as a second method of decay heat removal when the reactor is in Mode 5 with its loops filled. This change is acceptable since the only RHR loop that is OPERABLE and in operation provides forced circulation to perform the safety functions of the reactor coolant under Mode 5, loops filled condition. An additional RHR loop is required to be OPERABLE to provide redundancy. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is a SG. The SG could be used to remove decay heat via natural circulation. This change still provides acceptable and adequate methods of decay heat removal. As stated above, the associated RCP is not needed to perform any function to ensure RCS circulation since there will still be a RHR loop OPERABLE and in operation. In addition, the SG would provide sufficient heat sink and the RCS could be continued to be cooled by natural circulation in

Specific NSHD for Change L3.4-126 (continued)

the event the second RHR loop also became inoperable. Thus, this change does not involve a significant increase in the probability of an accident. Thus this change does not involve a significant increase in the probability of an accident.

Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   This proposed change does not involve a physical alteration of the plant; that is, no new or different type of equipment will be installed. The proposed change does not introduce a new mode of plant operation or changes in the methods governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are initiated. This propose change provides additional methods for assuring adequate RCS cooling through the OPERABLE RHR loop or SG, if relied upon as a second method of decay heat removal. The associated RCP is not needed to perform any function in order to ensure RCS circulation since there will be a RHR loop OPERABLE and inoperation. In addition, the SG would provide a sufficient heat sink and the RCS could continued to be cooled by natural circulation in the event the second RHR loop also became inoperable.

   Thus, revising this requirement does not involve a significant reduction in a margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This change is consistent with the guidance of NUREG-1431.

ENVIRONMENTAL ASSESSMENT

The Nuclear Management Company has evaluated the proposed changes and determined that:

1. The changes do not involve a significant hazards consideration, or
2. The changes do not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or
3. The changes do not involve a significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR Part 51 Section 51.22(c)(9). Therefore, pursuant to 10 CFR Part 51 Section 51.22(b), an environmental assessment of the proposed changes is not required.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ------------NOTE----------- Only applicable to penetration flow paths with two containment isolation valves. ------------------------------ One or more penetration flow paths with one containment isolation valve inoperable for reasons other than Condition D.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated or mechanically blocked power operated valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	4 hours
	<u>AND</u>	
	A.2 ------------NOTES------------ 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. --------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment <u>AND</u>

3.6 CONTAINMENT SYSTEMS

3.6.8 Vacuum Breaker System

LCO 3.6.8 Two vacuum breaker trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Vacuum relief function of one or both valves in one vacuum breaker train inoperable.	A.1 Restore vacuum breaker train to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.8.1	Verify each vacuum breaker train opens on an actual or simulated containment vacuum equal to or less than 0.5 psi and closes on an actual or simulated containment isolation signal.	92 days
SR 3.6.8.2	Perform CHANNEL CALIBRATION.	24 months

BASES

BACKGROUND (continued)

the operators depending on the accident progression and mitigation requirements.

Upon receipt of a containment pressure High-High signal, both main steam isolation valves close which also causes the instrument air line to containment to isolate if a containment isolation signal is also present. In addition to the isolation signals listed above, the containment purge and inservice purge supply and exhaust line valves and dampers receive isolation signals on a safety injection signal, a containment high radiation condition, a manual containment isolation actuation and manual containment spray initiation. As a result, the containment isolation valves (and blind flanges) help ensure that the containment atmosphere will be isolated from the outside environment in the event of a release of fission product radioactivity to the containment atmosphere resulting from a DBA.

The OPERABILITY requirements for containment isolation valves help ensure that containment is isolated within the time limits assumed in the safety analyses. Therefore, the OPERABILITY requirements provide assurance that the containment function assumed in the safety analyses will be maintained.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Containment isolation also isolates the RCS to prevent the release of radioactive material. However, RCS isolation, not isolation of containment, is required for events which result in failed fuel and do not breach the integrity of the RCS (e.g., reactor coolant pump locked rotor). The isolation of containment following these events also isolates the RCS from all non-essential systems to prevent the release of radioactive material outside the RCS. The containment isolation time requirements for these events are bounded by those for the LOCA.

The Containment Isolation System is designed to provide two in series boundaries for each penetration such that no single credible failure or malfunction (expected fault condition) occurring in any active system component can result in loss of isolation or intolerable leakage in compliance with the AEC GDC 53, "Containment Isolation Valves," (Ref. 4).

The containment isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

The containment isolation devices covered by this LCO consist of isolation valves (manual valves, check valves, air operated valves, and motor operated valves), pipe and end caps, closed systems, and blind flanges.

BASES

LCO (continued)

Vent and drain valves located between two isolation valves are also containment isolation devices. Test connections located between two isolation valves are similar to vent and drain lines except that no valve may exist in the test line. A cap or blind flange, as applicable, must be installed on these vent, drain and test lines. A cap or blind flange installed on these lines make them "otherwise secured" for SR considerations.

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. The 36 inch purge valves must be blind flanged in MODES 1, 2, 3, and 4. The valves covered by this LCO are listed in Reference 2.

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic power operated valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves/devices are those listed in Reference 2.

Inservice purge valves with resilient seals (when in service) and secondary containment (shield building and auxiliary building special ventilation zone) bypass valves must meet additional leakage rate requirements. The other containment isolation valve leakage rates are addressed by LCO 3.6.1, "Containment," as Type C testing.

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment isolation valves are not required to be OPERABLE in MODE 5. The requirements for containment isolation valves during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

ACTIONS

The ACTIONS are modified by four Notes. The first Note allows penetration flow paths, except for 36 inch containment purge system penetration flow paths, to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for containment isolation is indicated. Due to the blind flanges on the containment purge system lines during plant operation, the penetration flow path containing these flanges may not be opened under administrative controls.

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable containment isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable containment isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

BASES

ACTIONS (continued)

In the event containment isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

A.1 and A.2

In the event one containment isolation valve in one or more penetration flow paths is inoperable, except for inservice purge penetrations (when in service) or secondary containment bypass leakage not within limit, the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated or mechanically blocked power operated containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within 4 hours. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

For affected penetration flow paths that cannot be restored to OPERABLE status within the 4 hour Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated will be in the isolation position should an event occur. This Required Action does not

BASES

ACTIONS

A.1 and A.2 (continued)

require any testing or device manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

Condition A has been modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two containment isolation valves. For penetration flow paths with only one containment isolation valve and a closed system, Condition C provides the appropriate actions.

Required Action A.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position, is small.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.8 Vacuum Breaker System

BASES

BACKGROUND

The purpose of the vacuum breaker system is to protect the containment vessel against negative pressure (i.e., a lower pressure inside than outside). Excessive negative pressure inside containment can occur if there is an inadvertent actuation of containment cooling features, such as the Containment Spray System or Containment Cooling System. Multiple equipment failures or human errors are necessary to cause inadvertent actuation of these systems.

The containment pressure vessel contains two 100% vacuum breaker trains that protect the containment from excessive external loading.

The characteristics of the vacuum breakers and their locations in the containment pressure vessel are as follows:

Two vacuum breakers are used in each of two large vent lines which permit air to flow from the Shield Building annulus into the Reactor Containment Vessel. The vacuum breakers consist of an air to close, spring loaded to open butterfly valve and a self-actuated horizontally installed, swinging disc check valve. An air accumulator is provided for each of the air-operated vacuum breakers to allow vacuum breaker operation in the event of a loss of instrument air. The vent lines enter the containment vessel through independent and widely separated containment penetration nozzles. The vacuum breakers serve dual functions in that they are also required to isolate containment following an accident if containment becomes pressurized greater than negative 0.2 psid relative to the shield building annulus.

BASES (continued)

APPLICABLE SAFETY ANALYSES

Design of the vacuum breaker system involves calculating the effect of inadvertent actuation of containment cooling features, which can reduce the atmospheric temperature (and hence pressure) inside containment (Ref. 1). Conservative assumptions are used for all the relevant parameters in the calculation: for example, for the Containment Spray System, the minimum spray water temperature, maximum initial containment temperature, maximum spray flow, all spray trains operating, all four containment fan units operating with maximum cooling water flow rate with minimum inlet water temperature, etc. The resulting containment pressure versus time is calculated, including the effect of the opening of the vacuum relief lines when their negative pressure setpoint is reached. It is also assumed that one valve fails to open.

The containment shell was designed for an external pressure load equivalent to 0.8 psi greater than the internal pressure. The inadvertent actuation of the containment cooling features was analyzed to determine the resulting reduction in containment pressure. The analysis shows that one vacuum breaker train will terminate this transient before 0.8 psi pressure differential is reached.

The vacuum breaker system must also perform the containment isolation function in a containment high pressure event. For this reason, the system is designed to take the full containment positive design pressure and the environmental conditions (temperature, pressure, humidity, radiation, chemical attack, etc.) associated with the containment DBA.

The vacuum relief valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES (continued)

LCO

The LCO establishes the minimum equipment required to accomplish the vacuum relief function following the inadvertent actuation of containment cooling features. Two 100% vacuum breaker trains are required to be OPERABLE to ensure that at least one is available, assuming one or both valves in the other line fail to open.

A vacuum breaker train is OPERABLE when both valves, including air supplies, instrumentation, controls and actuating and power circuits, are OPERABLE.

APPLICABILITY

In MODES 1, 2, 3, and 4, the containment cooling features, such as the Containment Spray System, are required to be OPERABLE to mitigate the effects of a DBA. Excessive negative pressure inside containment could occur whenever these systems are required to be OPERABLE due to inadvertent actuation of these systems. Therefore, the vacuum breaker trains are required to be OPERABLE in MODES 1, 2, 3, and 4 to mitigate the effects of inadvertent actuation of the Containment Spray System, or Containment Cooling System.

In MODES 5 and 6, the probability and consequences of a DBA are reduced due to the pressure and temperature limitations of these MODES. The Containment Spray System, and Containment Cooling System are not required to be OPERABLE in MODES 5 and 6. Therefore, maintaining OPERABLE vacuum relief valves is not required in MODE 5 or 6.

BASES (continued)

ACTIONS

A.1 and A.2

When the vacuum relief function of one vacuum breaker train is inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The allowed Completion Time is reasonable considering the redundancy of the other vacuum breaker train, its reliable vacuum relief capability due to the passive design and the low probability of an event requiring use of the vacuum breaker system during this time.

B.1 and B.2

If the vacuum breaker train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply.

To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.8.1

This SR requires verification that each automatic function of each vacuum breaker train actuates as required to perform its safety function. Testing shall include demonstration that an actual or simulated containment vacuum equal to or less than 0.5 psi will open the air-operated valve and an actual or simulated containment isolation signal with containment pressure greater than negative 0.2 psid relative to the shield building annulus will close the valve. The 92 day Frequency is based on engineering judgment and has been shown to be acceptable through operating experience.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.8.2

This SR requires the performance of a CHANNEL CALIBRATION. A CHANNEL CALIBRATION is performed every 24 months, or approximately at every refueling. Operating experience has shown that these components usually pass the Surveillance when performed.

REFERENCES

1. USAR, Section 5.2.

A3.6-00

3.6 CONTAINMENT SYSTEM

R-2

Applicability

Applies to the integrity of the containment system.

A3.6-09

Objective

To define the operating status of the containment system for plant operation.

Specification

A. Containment Integrity

A3.6-03

LCO3.6.1 1. A reactor in MODES 1, 2, 3 and 4 shall have not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless CONTAINMENT INTEGRITY is maintained.

2. If these conditions cannot be satisfied, within one hour initiate the action necessary to place the unit in MODE 3HOT SHUTDOWN, and be in at least MODE 3HOT SHUTDOWN within the next 6 hours and in MODE 5COLD SHUTDOWN within the following 3630 hours.

A3.6-03
A3.6-11

B. Vacuum Breaker System

LR3.6-16
A3.6-03

LCO3.6.8 1. Both valves in each of two vacuum breaker systems, including actuating and power circuits, shall be OPERABLE in MODES 1, 2, 3 and 4hen CONTAINMENT INTEGRITY is required (except as specified in 3.6.B.2 and 3.6.B.3 below).

LCO3.6.3 2 With one vacuum breaker inoperable with respect to its containment isolation function, apply the requirements of Specification 3.6.C.3, to the isolation valves associated with the inoperable vacuum breaker.

L3.6-83

LCO3.6.8A 3. One or both valves in one vacuum breaker train may be inoperable with respect to its vacuum relief function for 7 days.

LCO3.6.8B Vacuum breaker train not restored within 7 days, be in MODE 3 in 6 hours and MODE 5 in 36 hours.

M3.6-82
M3.6-17

R-9

C. Containment Isolation Valves

LCO3.6.3 1. Non-automatic containment isolation valves shall be OPERABLE. locked closed or shall be

L3.6-21

Penetration flow paths may be unisolated intermittently under direct administrative control and capable of being closed within one minute following an accident when CONTAINMENT INTEGRITY is required (except as specified in 3.6.C.3 below).

A3.6-19

LCO3.6.3 Note 2 Separate Condition entry is allowed for each penetration flow path.

NSHD Category	Change Number 3.6-	Discussion of Change
L	81	CTS 3.3.B.2. The CTS clause which states, "...any one of the following conditions of inoperability may exist..." is not included in the PI ITS. This change will allow simultaneous inoperability of one containment fan cooler train, one containment spray train and the spray additive tank. Since this change allows more equipment to be inoperable at any given time, this is a less restrictive change. This change is acceptable because each containment fan cooler train is a 100% capacity train and each containment spray train is a 100% capacity train. This means that the safety function of containment cooling and containment spray are met providing one train of each of these systems is operable. Since the spray additive tank supplies both trains of containment spray, the impact of its inoperability does not change depending on whether one train or two trains of containment spray are operable. Spray additive tank inoperability does not impact the containment fan cooler system. Thus these plant safety functions will continue to be provided at the same level of effectiveness when these inoperabilities are allowed to exist simultaneously. This change is consistent with the guidance of NUREG-1431 which allows coincident inoperability of these systems.

NSHD Category	Change Number 3.6-	Discussion of Change
M	82	CTS 3.8.B.3. CTS allows the vacuum relief function to be inoperable for 7 days. If the vacuum relief function is not restored to OPERABLE status within 7 days the plant must enter LCO 3.0.C (ITS 3.0.3) which allows one hour for planning and remedial action prior to plant shutdown. ITS does not allow one hour, but requires shutdown when the 7 day period ends. Since the plant has one less hour to deal with the inoperability, this is a more restrictive change. This change is acceptable since the 6 hours to be in MODE 3 and 36 hours to be in MODE 5 is sufficient time to safely shut down the plant.
L	83	CTS 3.6.B.2 and 3.6.B.3. The CTS requirements for inoperable containment vacuum breaker valves has been changed to "trains". CTS would require the plant to enter CTS 3.0.C if two valves in the vacuum breaker system were inoperable with respect to their vacuum relief function. This change will allow the plant to continue operation if two valves in the same train are inoperable with respect to their two valves in the same train are inoperable with respect to their vacuum relief function. Since the plant may continue to operate with more than one valve inoperable, this is a less restrictive change. This change will allow two valves in one vacuum breaker train to be inoperable with respect to their vacuum relief function. A second valve in the train inoperable with respect to vacuum relief will not further degrade the vacuum relief capability of the penetration nor will it require additional remedial actions. Once one valve in the train has lost its vacuum relief capability, that train has totally lost its vacuum relief capability independent of the operability or inoperability of the other vacuum breaker. Therefore, the same degree of plant safety is maintained by the TS Required Actions when one or both valves in one train are inoperable with respect to their vacuum relief function.

NSHD Category	Change Number 3.6-	Discussion of Change
	84	Not used.
	85	Not used.
	86	Not used.
L	87	CTS 4.4.B.3.c. The surveillance interval for testing the Shield Building Ventilation System, initiated from a safety injection signal, is increased from 18 months to 24 months. In accordance with CTS 3.0.2, the interval is currently limited at a maximum of 24 months. Increasing this interval from 18 to 24 months is acceptable since it is within the bounds of the CTS, there is not any time dependent degradation of any equipment, no instrumentation drift, nor historical operability issues associated with this increased Frequency. This change is consistent with NUREG 1431, Rev. 1, and the guidance provided by GL 91-04.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. -------NOTE------- Only applicable to penetration flow paths with two containment isolation valves. ------------------ One or more penetration flow paths with one containment isolation valve inoperable ~~[except for purge valve or shield building bypass leakage not within limit]~~ for reasons other than Condition D.	A.1	Isolate the affected penetration flow path by use of at least one closed and de-activated or mechanically blocked power operated ~~automatic~~ valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	4 hours PA3.6-117 PA3.6-125 TA3.6-124 R-9 CL3.6-121 R-2
	AND		
			(continued)

 CL3.6-167

3.6 CONTAINMENT SYSTEMS

CL3.6-167

3.6.8~~12~~ Vacuum Breaker System~~Relief Valves (Atmospheric and Ice Condenser)~~

LCO 3.6.8~~12~~ ~~[~~Two~~]~~ vacuum breaker trains~~relief lines~~ shall be OPERABLE.

PA3.6-171

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Vacuum relief function of o~~O~~ne or both valves in one vacuum breaker train~~relief line~~ inoperable.	A.1 Restore vacuum ~~relief~~breaker train ~~line~~ to OPERABLE status.	7~~2~~ days ~~hours~~ CL3.6-170
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

R-9

CL3.6-167

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.812.1	Verify each vacuum breaker trainrelief line is OPERABLE in accordance with the Inservice Testing Program opens on an actual or simulated containment vacuum equal to or less than 0.5 psi and closes on an actual or simulated containment isolation signal.	CL3.6-173 92 days In accordance with the Inservice Testing Program R-9
SR 3.6.8.2	Perform CHANNEL CALIBRATION.	24 months CL3.6-181

~~Accident (~~DBA~~)~~.

The OPERABILITY requirements for containment isolation valves help ensure that containment is isolated within the time limits assumed in the safety analyses. Therefore, the OPERABILITY requirements provide assurance that the containment function assumed in the safety analyses will be maintained.

R-9

In addition to the normal fluid systems which penetrate containment, two systems which can provide direct access from inside containment to the outside environment are described below. PA3.6-211

Containment~~Shutdown~~ Purge System (36~~[42]~~ inch purge valves)

The Containment~~Shutdown~~ Purge System operates to supply outside air into the containment for ventilation and cooling or heating and may also be used to reduce the concentration of noble gases within containment prior to and during personnel access in MODES 5 and 6. The supply and exhaust lines each contain one~~two~~ isolation valve~~s~~, one isolation damper and a blind flange. ~~Because of their large size,~~ T~~t~~he 36~~[42]~~ inch purge valves and dampers ~~in some units~~ are not tested to verify their leakage rate is within the acceptance criteria of the Containment Leakage Rate Testing Program~~qualified for automatic closure from~~ CL3.6-212

(continued)

~~required to remain sealed closed during MODES 1, 2, 3, and 4. In this case, the single failure criterion remains applicable to the containment purge valves due to failure in~~

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~the control circuit associated with each valve. Again, the purge system valve design precludes a single failure from compromising the containment boundary as long as the system is operated in accordance with the subject LCO.]~~

The containment isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii)~~the NRC Policy Statement~~.

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

PA3.6-213

The containment isolation devices covered by this LCO consist of isolation valves (manual valves, check valves, air operated valves, and motor operated valves), pipe and end caps, closed systems, and blind flanges.

PA3.6-214

Vent and drain valves located between two isolation valves are also containment isolation devices. Test connections located between two isolation valves are similar to vent and drain lines except that no valve may exist in the test line. A cap or blind flange, as applicable, must be installed on these vent, drain and test lines. A cap or blind flange installed on these lines make them "otherwise secured" for SR considerations.

R-9

(continued)

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. The 36~~[42]~~ inch purge valves must be blind flanged in MODES 1, 2, 3, and 4~~maintained sealed closed [or have blocks installed to prevent full opening]~~. ~~[Blocked purge valves also actuate on an automatic signal.]~~ The valves covered by this LCO are listed in Reference 2~~along with their associated stroke times in the FSAR (Ref. 2)~~. CL3.6-112 R-2 R-9

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic power operated valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves/devices are those listed in Reference 2~~1~~. PA3.6-125 R-9

LCO (continued)

Inservice p~~P~~urge valves with resilient seals (when in operation) ~~[~~and secondary containment (shield building and auxiliary building special ventilation zone) bypass valves~~]~~ must meet additional leakage rate requirements. The other containment isolation valve leakage rates are addressed by LCO 3.6.1, "Containment," as Type C testing. PA3.6-219 R-6

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

(continued)

allow for continued operation, and subsequent inoperable containment isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

PA3.6-216

In the event containment isolation valvethe air lock leakage results in exceeding the overall containment leakage rate acceptance criteria, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

A.1 and A.2

In the event one containment isolation valve in one or more penetration flow paths is inoperable, {except for inservice purge penetrations (when in operation) valve or secondary containmentshield building bypass leakage not within limit}, the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated or mechanically blocked power operatedautomatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within 4 hours. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

R-6

PA3.6-117

R-9

PA3.6-125

TA3.6-124

(continued)

B 3.6 CONTAINMENT SYSTEMS

PA3.6-186

B 3.6.8~~12~~ Vacuum Breaker System~~Relief Valves (Atmospheric and Ice Condenser)~~

CL3.6-167 CL3.6-171

BASES

BACKGROUND

The purpose of the vacuum breaker system~~relief lines~~ is to protect the containment vessel against negative pressure (i.e., a lower pressure inside than outside). Excessive negative pressure inside containment can occur if there is an inadvertent actuation of containment cooling features, such as the Containment Spray System or Containment Cooling System. Multiple equipment failures or human errors are necessary to cause inadvertent actuation of these systems. PA3.6-270

The containment pressure vessel contains two 100% vacuum breaker trains~~relief lines~~ that protect the containment from excessive external loading.
~~For this facility,~~ T~~t~~he characteristics of the vacuum breakers~~relief valves~~ and their locations in the containment pressure vessel are as follows: Two vacuum breakers are used in each of two large vent lines which permit air to flow from the Shield Building annulus into the Reactor Containment Vessel. The vacuum breakers consist of an air to close, spring loaded to open butterfly valve and a self-actuated horizontally installed, swinging disc check valve. An air accumulator is provided for each of the air-operated vacuum breakers to allow vacuum breaker operation in the event of a loss of instrument air. The vent lines enter the containment vessel through independent and widely separated containment penetration nozzles. The vacuum breakers serve dual functions in that they are also required to isolate containment following an accident if containment becomes pressurized greater than negative 0.2 psid relative to the shield building annulus. CL3.6-271

R-9

(continued)

ACTIONS

R-9

A.1

When the vacuum relief function of one ~~of the required~~ vacuum breaker train~~relief lines~~ is inoperable, the inoperable train~~line~~ must be restored to OPERABLE status within 7 days ~~72 hours~~. The allowed Completion Time is reasonable considering the redundancy of the other vacuum breaker train, its reliable vacuum relief capability due to the passive design and the low probability of an event requiring use of the vacuum breaker system during this time. ~~The specified time period is consistent with other LCOs for the loss of one train of a system required to mitigate the consequences of a LOCA or other DBA.~~ PA3.6-180

BASES

ACTIONS (continued)

B.1 and B.2

If the vacuum breaker train~~relief line~~ cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. CL3.6-170

R-9

To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.8~~12~~.1

This SR requires verification that each automatic function of each vacuum breaker train actuates as required to perform its safety function. ~~cites the Inservice Testing Program, which establishes the requirement that inservice testing of the ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME, Boiler and Pressure Vessel Code and applicable Addenda (Ref. 2). Therefore, SR Frequency is governed by the Inservice Testing Program.~~ Testing shall include demonstration that an actual or simulated containment vacuum equal to or less than 0.5 psi will open the air-operated valve and an actual or simulated containment isolation signal with containment pressure greater than negative 0.2 psid relative to the shield building annulus will close the valve. The 92 day Frequency is based on engineering judgement and has been shown to be acceptable through operating experience. CL3.6-181 R-9

SR 3.6.8.2

This SR requires the performance of a CHANNEL CALIBRATION. A CHANNEL CALIBRATION is performed every 24 months, or approximately at every refueling. Operating experience has shown that these components usually pass the Surveillance when performed.

CL3.6-173

REFERENCES

1. U~~F~~SAR, Section 5.2~~[6.2]~~.

~~2. ASME, Boiler and Pressure Vessel Code, Section XI.~~

(continued)

Difference Category	Difference Number 3.6-	Justification for Differences
	116	Not used.
CL	117	One containment penetration flow path, the vacuum breaker system, requires that the butterfly valve be mechanically blocked in addition to de-activating the valve. Thus, the phrase, "or mechanically blocked" has been added to the Required Actions.
	118	Not used.
TA	119	This change incorporates TSTF-269, Revision 2.
	120	Not used.

Difference Category	Difference Number 3.6-	Justification for Differences
	172	Not used.

Difference Category	Difference Number 3.6-	Justification for Differences
CL	173	SR 3.6.8.1 has been revised to incorporate the CTS requirements for vacuum breaker train functional testing in CTS Table 4.1-1C, Functional Unit 10, 4.4.C and the setpoint required by CTS Table 3.5-1, Functional Unit 7. The test Frequency requirement is 92 days to be consistent with CTS 4.4.C requirements.
PA	174	The plant title for the system that draws a vacuum on the shield building annulus and filters the air is the Shield Building Ventilation System. To facilitate operator familiarity with this terminology, this title and its abbreviation, SBVS, is used throughout this Specification and associated Bases.
	175	Not used.
CL	176	Since the PI SBVS design does not have filter bypass dampers, ISTS SR 3.6.13.4 is not included and instead, CTS SR 4.4.E requirements are included.

Difference Category	Difference Number 3.6-	Justification for Differences
	180	Not used.
CL	181	A new SR 3.6.8.2 has been included to incorporate CTS Table 4.1-1C Functional Unit 10 requirements to perform CHANNEL CALIBRATION on each vacuum breaker train. The test Frequency requirement is 24 months to be consistent with CTS which requires calibration on a refueling outage frequency.
CL	182	The PI Shield Building and SBVS design do not maintain a negative pressure in the annulus during normal operating conditions; thus ISTS SR 3.6.19.1 is not included in the PI ITS.
TA	183	This change incorporates TSTF-18, Revision 1.
CL	184	CTS do not require a structural inspection of the shield building and therefore this requirement is not included in the ITS.

Difference Category	Difference Number 3.6-	Justification for Differences
PA	214	Clarification from current interpretations of TS on the role of caps on vents and drains as part of containment isolation.
	215	Not used.
PA	216	Clarification is provided to make this Bases discussion consistent with the requirements of Note 4 in the Specification.
	217	Not used.
	218	Not used.
PA	219	Plant specific terminology is included to further define what constitutes "secondary containment" at Prairie Island.
	220	Not used.

Part G

PACKAGE 3.6

CONTAINMENT SYSTEMS

NO SIGNIFICANT HAZARDS DETERMINATION AND ENVIRONMENTAL ASSESSMENT

NO SIGNIFICANT HAZARDS DETERMINATION

The proposed changes to the Operating License have been evaluated to determine whether they constitute a significant hazards consideration as required by 10 CFR Part 50, Section 50.91 using the standards provided in Section 50.92.

For ease of review, the changes are evaluated in groupings according to the type of change involved. A single generic evaluation may suffice for some of the changes while others may require specific evaluation in which case the appropriate reference change numbers are provided.

A - Administrative (GENERIC NSHD)
(A3.6-00, A3.6-03, A3.6-05, A3.6-09, A3.6-11, A3.6-22, A3.6-23, A3.6-24, A3.6-26, A3.6-42, A3.6-48, A3.6-49, A3.6-54, A3.6-62, A3.6-80)

Most administrative changes have not been marked-up in the Current Technical Specifications, and may not be specifically referenced to a discussion of change. This No Significant Hazards Determination (NSHD) may be referenced in a discussion of change by the prefix "A" if the change is not obviously an administrative change and requires an explanation.

These proposed changes are editorial in nature. They involve reformatting, renaming, renumbering, or rewording of existing Technical Specifications to provide consistency with NUREG-1431 or conformance with the Writer's Guide, or change of current plant terminology to conform to NUREG-1431. Some administrative changes involve relocation of requirements within the Technical Specifications without affecting their technical content. Clarifications within the new Prairie Island Improved Technical Specifications which do not impose new requirements on plant operation are also considered administrative.

M More restrictive (GENERIC NSHD)
(M3.6-04, M3.6-13, M3.6-14, M3.6-17, M3.6-28, M3.6-29, M3.6-31, M3.6-32, M-3.6-34, M3.6-37, M3.6-38, M3.6-39, M3.6-41, M3.6-44, M3.6-51, M3.6-52, M3.6-61, M3.6-68, M3.6-82, M3.6-89)

This proposed Technical Specifications revision involves modifying the Current Technical Specifications to impose more stringent requirements upon plant operations to achieve consistency with the guidance of NUREG-1431, correct discrepancies or remove ambiguities from the specifications. These more restrictive Technical Specifications have been evaluated against the plant design, safety analyses, and other Technical Specifications requirements to ensure the plant will continue to operate safely with these more stringent specifications.

1. The proposed amendment will not involve a significant increase in the probability or consequenc3es of an accident previously evaluated.

   The proposed changes provide more stringent requirements for operation of the plant. These more stringent requirements do not result in operation that will increases the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event.

   These more restrictive requirements continue to ensure process variables, structures, systems, and components are maintained consistent with the safety analyses and licensing basis. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   The proposed changes do not involve a physical alteration of the plant, that is, no new or different type of equipment will be installed, nor do they change the methods governing normal plant operation.

   These more stringent requirements do impose different operating restrictions. However, these operating restrictions are consistent with the boundaries established by the assumptions made in the plant safety analyses and licensing bases. Therefore, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

Specific NSHD for Change L3.6-83

The proposed change defines vacuum breaker inoperabilities for "trains" rather than individual valves. This change allows both valves in one train to be inoperable with respect to the loss of vacuum relief capability, whereas, CTS only allows one valve to be inoperable. This change is acceptable since when one valve in a train is inoperable with respect to its vacuum relief function, that whole train is inoperable with respect to this function. That is, inoperability of the other valve with respect to vacuum relief does not further degrade the function of the train and there are no additional Required Actions which should be implemented.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed change allows both valves in one train to be inoperable with respect to loss of the vacuum relief function whereas CTS only allows one valve to be inoperable. Since containment vacuum breaker valves are not assumed accident initiators, this change does not involve a significant increase in the probability of an accident previously evaluated.

   The valves in a vacuum breaker train are installed in series. When one vacuum breaker is inoperable with respect to its vacuum relief function, the vacuum relief function of that penetration is assumed completely lost and the other vacuum breaker train is relied upon for vacuum relief. The capability of the other vacuum breaker in the affected train to open is not important since that flow path is inoperable when one valve will not open properly. Therefore, this change does not involve a significant increase in the consequences of an accident previously evaluated when both valves in one train are inoperable with respect to their vacuum relief function.

   In conclusion, this proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   The proposed change allows both valves in one train to be inoperable with respect to the same function and does not involve a physical alteration of the plant, that is, no new or different type of equipment will be installed. The proposed change does not change the operating parameters governing normal plant operation. Thus, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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3. The proposed amendment will not involve a significant reduction in the margin of safety.

   The proposed change allows both valves in one train to be inoperable with respect to the vacuum relief function whereas CTS only allows one valve to be inoperable. When one valve in a vacuum breaker penetration is inoperable with respect to its vacuum relief function, the vacuum relief function of that whole train is inoperable. Inoperability of the other valve in the affected train does not further degrade the plant vacuum relief capability. Thus, two valves in a vacuum breaker train inoperable with respect to their vacuum relief function does not involve a significant reduction in the margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration.