B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.5 RCS Loops – MODE 3

BASES

BACKGROUND

In MODE 3, the primary function of the reactor coolant is removal of decay heat and transfer of this heat, via the steam generator (SG), to the secondary plant fluid. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

The reactor coolant is circulated thr ough two RCS loops, connected in parallel to the reactor vessel, each containing an SG, a reactor coolant pump (RCP), and appropriate flow, pressure, level, and temperature instrumentation for control, protection, and indication. The reactor vessel contains the clad fuel. The SGs provide the heat sink. The RCPs circulate the water through the reactor vessel and SGs at a sufficient rate to ensure proper heat transfer and prevent fuel damage.

In MODE 3, RCPs are used to provide forced circulation for heat removal during heatup and cooldown. The MODE 3 decay heat removal requirements are low enough that a single RCS loop with one RCP running is sufficient to remove core decay heat. However, two RCS loops are required to be OPERABLE to ensure redundant capability for decay heat removal.

APPLICABLE SAFETY ANALYSES

Whenever the reactor trip breakers (RTBs) are in the closed position and the control rod drive mechanisms (CRDMs) a re energized, an inadvertent rod withdrawal from subcritical, resulting in a power excursion, is possible. Such a transient could be caused by a malfunction of the rod control system. In addition, the possibility of a power excursion due to the ejection of an inserted control rod is possible with the breakers closed or open. Such a transient could be caused by the mechanical failure of a CRDM.

Therefore, in MODE 3 with the Rod Control System capable of rod withdrawal, accidental control rod withdrawal from subcritical is postulated and requires at least one RCS loop to be OPERABLE and in operation to ensure that the accident analyses limits are met. For those conditions when the Rod Control System is not capable of rod withdrawal, two RCS loops are required to be OPERABLE, but only one RCS loop is

BASES

APPLICABLE SAFETY ANALYSES (continued)

required to be in operation to be consistent with MODE 3 accident analyses.

Failure to provide decay heat removal may result in challenges to a fission product barrier. The RCS loops are part of the primary success path that functions or actuates to prevent or mitigate a Design Basis Accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

RCS Loops – MODE 3 satisfy Criterion 3 of the NRC Policy Statement.

LCO

The purpose of this LCO is to require that at least two RCS loops be OPERABLE. In MODE 3 with the Rod Control System capable of rod withdrawal, one RCS loop must be in operation. One RCS loop is required to be in operation in MODE 3 with the 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 Safety Limit criteria will be met for all of the postulated accidents.

When the Rod Control System is not capable of rod withdrawal 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 that safety analyses limits are met.

The Note permits all RCPs to be not in operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to perform tests that are designed to validate various accident analyses values.

The 1 hour time period specified is adequate to perform the desired tests, and operating experience has shown that boron stratification is not a problem during this short period with no forced flow.

BASES

LCO (continued)

Utilization of the Note is permitted provided the following conditions are met, along with any other conditions imposed by initial startup test procedures:

a. No operations are permitted that would dilute the RCS boron concentration, thereby maintaining the margin to criticality. Boron reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation;

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; and

c. The Rod Control System is not capable of rod withdrawal, to preclude the possibility of an inadvertent control rod withdrawal and associated power excursion.

An OPERABLE RCS loop consists of one OPERABLE RCP and one OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which has the minimum water level specified in SR 3.4.5.2. The OPERABLE RCP and SG must be in the same loop for the RCS loop to be considered OPERABLE. An RCP is OPERABLE if it is capable of being powered and is able to provide forced flow if required.

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. One RCS loop provides sufficient circulation for these purposes. However, one additional RCS loop is required to be OPERABLE to ensure redundant capability for decay heat removal.

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 3.9.4, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

BASES

ACTIONS

A.1

If one required RCS loop is inoperable, redundancy for heat removal is lost. The Required Action is restoration of the required RCS loop to OPERABLE status within the Completion Time of 72 hours. This time allowance is a justified period to be without the redundant, nonoperating loop because a single loop in operation has a heat transfer capability greater than that needed to remove the decay heat produced in the reactor core and because of the low probability of a failure in the remaining loop occurring during this period.

B.1

If restoration is not possible within 72 hours, the unit must be brought to MODE 4. In MODE 4, the unit may be placed on the Residual Heat Removal System. The additional Completion Time of 12 hours is compatible with required operations to achieve cooldown and depressurization from the existing plant conditions in an orderly manner and without challenging plant systems.

C.1, C.2, and C.3

If two RCS loops are inoperable or no RCS loop is in operation, except as during conditions permitted by the Note in the LCO section, place the Rod Control System in a condition incapable of rod motion (e.g.) CRDMs must be de-energized by opening the RTBs or de -energizing the MG sets. All operations involving a reduction of RCS boron concentration must be suspended, and action to restore one of the RCS loops to OPERABLE status and operation must be initiated. Boron dilution requires forced circulation for proper mixing, and opening the RTBs or de -energizing the MG sets removes the possibility of an inadvertent rod withdrawal. 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 one RCS loop is in operation. Verification includes flow rate.

BASES

SURVEILLANCE REQUIREMENTS (continued)

temperature, and pump status monitoring, which help 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 of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side narrow range water level is ≥ 30% for required RCS loops. If the SG secondary side narrow range water level is < 30%, the tubes may become 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 other indications available in the control room to alert the operator to a loss of SG level.

SR 3.4.5.3

Verification that the required RCPs are 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 the required RCPs.

REFERENCES None.

Cross-Reference Report - NUREG-1431 Section 3.04.06

ITS to CTS

13-Nov-99

ITS	CTS	DOC
LCO 3.04.06	15.03.01.A.03	A.01
	15.03.01.A.03 *	A.02
	15.03.01.A.03.A	A.01
	15.03.01.A.03.A	L.01
	15.03.01.A.03.A.01	A.01
	15.03.01.A.03.A.01.A	A.01
	15.03.01.A.03.A.01.A	M.01
	15.03.01.A.03.A.01.B	A.01
	15.03.01.A.03.A.01.B	M.01
	15.03.01.A.03.A.01.C	A.01
	15.03.01.A.03.A.01.C *	LA.01
	15.03.01.A.03.A.01.D	A.01
	15.03.01.A.03.A.01.D *	LA.01
	15.03.01.A.03.A.04	A.01
LCO 3.04.06 COND A	15.03.01.A.03.A.02	A.04
LCO 3.04.06 COND A RA A.1	15.03.01.A.03.A.02	A.01
LCO 3.04.06 COND B	NEW	M.04
LCO 3.04.06 COND B RA B.1	NEW	M.04
LCO 3.04.06 COND C	15.03.01.A.03.A.03	A.01
LCO 3.04.06 COND C RA C.1	15.03.01.A.03.A.03	A.01
LCO 3.04.06 COND C RA C.2	15.03.01.A.03.A.03	A.01
LCO 3.04.06 NOTE 1	15.03.01.A.03.A.04.A	A.01
LCO 3.04.06 NOTE 1.A	15.03.01.A.03.A.04.A.01	A.01
LCO 3.04.06 NOTE 1.B	15.03.01.A.03.A.04.A.02	A.01
LCO 3.04.06 NOTE 2	15.03.15.B.02	A.01
	15.03.15.B.02	LA.02
	15.03.15.B.02.B	A.01
SR 3.04.06.01	NEW	M.05
SR 3.04.06.02	NEW	M.05
SR 3.04.06.03	NEW	M.05

Cross-Reference Report - NUREG-1431 Section 3.04.06

CTS to ITS

13-Nov-99

CTS	ITS	DOC
15.03.01.A.01	N/A	A.01
15.03.01.A.01 *	N/A	A.02
15.03.01.A.01.C	N/A	A.03
15.03.01.A.03	LCO 3.04.06	A.01
15.03.01.A.03 *	LCO 3.04.06	A.02
15.03.01.A.03.A	LCO 3.04.06	A.01
	LCO 3.04.06	L.01
15.03.01.A.03.A.01	LCO 3.04.06	A.01
15.03.01.A.03.A.01.A	LCO 3.04.06	A.01
	LCO 3.04.06	M.01
15.03.01.A.03.A.01.B	LCO 3.04.06	A.01
	LCO 3.04.06	M.01
15.03.01.A.03.A.01.C	LCO 3.04.06	A.01
15.03.01.A.03.A.01.C *	LCO 3.04.06	LA.01
15.03.01.A.03.A.01.D	LCO 3.04.06	A.01
15.03.01.A.03.A.01.D *	LCO 3.04.06	LA.01
15.03.01.A.03.A.02	LCO 3.04.06 COND A	A.04
	LCO 3.04.06 COND A RA A.1	A.01
15.03.01.A.03.A.03	LCO 3.04.06 COND C	A.01
	LCO 3.04.06 COND C RA C.1	A.01
	LCO 3.04.06 COND C RA C.2	A.01
	N/A	A.05
15.03.01.A.03.A.04	LCO 3.04.06	A.01
15.03.01.A.03.A.04.A	LCO 3.04.06 NOTE 1	A.01
15.03.01.A.03.A.04.A.01	LCO 3.04.06 NOTE 1.A	A.01
15.03.01.A.03.A.04.A.02	LCO 3.04.06 NOTE 1.B	A.01
15.03.15.B.02	LCO 3.04.06 NOTE 2	A.01
	LCO 3.04.06 NOTE 2	LA.02
15.03.15.B.02.A	N/A	M.02
	N/A	M.03
15.03.15.B.02.B	LCO 3.04.06 NOTE 2	A.01

Description of Changes - NUREG-1431 Section 3.04.06

13-Nov-99

DOC Number	DOC Text

A.01

In the conversion of Point Beach current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the Standard Technical Specifications, Westinghouse Plants, NUREG-1431, Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

CTS:	ITS:
15.03.01.A.01	N/A
15.03.01.A.03	LCO 3.04.06
15.03.01.A.03.A	LCO 3.04.06
15.03.01.A.03.A.01	LCO 3.04.06
15.03.01.A.03.A.01.A	LCO 3.04.06
15.03.01.A.03.A.01.B	LCO 3.04.06
15.03.01.A.03.A.01.C	LCO 3.04.06
15.03.01.A.03.A.01.D	LCO 3.04.06
15.03.01.A.03.A.02	LCO 3.04.06 COND A RA A.1
15.03.01.A.03.A.03	LCO 3.04.06 COND C
	LCO 3.04.06 COND C RA C.1
	LCO 3.04.06 COND C RA C.2
15.03.01.A.03.A.04	LCO 3.04.06
15.03.01.A.03.A.04.A	LCO 3.04.06 NOTE 1
15.03.01.A.03.A.04.A.01	LCO 3.04.06 NOTE 1.A
15.03.01.A.03.A.04.A.02	LCO 3.04.06 NOTE 1.B
15.03.15.B.02	LCO 3.04.06 NOTE 2
15.03.15.B.02.B	LCO 3.04.06 NOTE 2

A.02

CTS 15.3.1.A.1 and 15.3.1.A.3 are both modified by Note *. This Note states, "Applicable only when one or more fuel assemblies are in the reactor vessel." Proposed ITS LCO 3.4.6 is applicable in MODE 4. ITS section 1.1, Definitions, states "A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel." As specified in CTS 15.3.1.A.1 and 15.3.1.A.3, Note *, ITS 3.4.6 only applies with fuel in the reactor vessel. Therefore, this change is administrative.

CTS:	ITS:
15.03.01.A.01 *	N/A
15.03.01.A.03 *	LCO 3.04.06

DOC Number	DOC Text
A.03	CTS 15.3.1.A.1.c requires at least one reactor coolant pump or residual heat removal system be in operation when a reduction is made in the boron concentration of the reactor coolant. This requirement is retained in ITS 3.4.6, Note 1, which specifies all reactor coolant pumps and RHR pumps may not be in operation for less than or equal to 1 hour per 8 hour period, provided no operations are permitted that would cause a reduction of the RCS boron concentration. Additionally, ITS LCO 3.4.6, Condition C requires the immediate suspension all operations involving a reduction of RCS boron concentration, if the required RCS or RHR loops are inoperable or no RCS or RHR loop is in operation. Therefore, this CTS requirement is retained in ITS and this change is administrative. **CTS:** 15.03.01.A.01.C **ITS:** N/A
A.04	CTS 15.3.1.A.3.a(2) specifies, if the required decay heat removal methods of CTS 15.3.1.A.3.a(1) are not met, corrective action to return a second decay heat removal method to operable status as soon as possible, shall be initiated immediately. Proposed ITS LCO 3.4.6, Condition A, specifies if one required RCS loop is inoperable and two RHR loops are inoperable, immediately initiate action to restore a second loop to operable status. The scope of this condition has been changed to only address the condition where two RHR loops and one RCS loop are inoperable. Proposed LCO 3.4.6, Condition B, is being adopted to address the required actions in the event of a loss of two RCS loops and one RHR loop (See DOC M.1). Therefore, this change is administrative. **CTS:** 15.03.01.A.03.A.02 **ITS:** LCO 3.04.06 COND A
A.05	CTS 15.3.1.A.3.a(3) requires the suspension of all operations causing an increase in the reactor decay heat load, if no decay heat removal method is in operation when reactor coolant temperature is less than 350 F and greater than 140 F. CTS defines Refueling Shutdown as a condition where the reactor is subcritical by at least 5% reactivity and Tavg is less than or equal to 140 F. Therefore operations causing an increase in the reactor decay heat load can not occur during the condition that CTS 15.3.1.A.3.a(3) is applicable, and actions requiring their suspension in the event of a loss of all decay heat removal methods will not be required. Furthermore, proposed ITS LCO 3.9.4 provides actions to immediately suspend loading irradiated fuel assemblies in the core when RHR loop requirements are not met. Therefore, not retaining this requirement in ITS does not result in a reduction in the margin of safety and is administrative. **CTS:** 15.03.01.A.03.A.03 **ITS:** N/A

DOC Number	DOC Text
L.01	CTS 15.3.1.A.3.a provides requirements for redundant decay heat removal capability with reactor coolant temperature less than 350 F and greater than 140 F. Proposed ITS LCO 3.4.6 provides forced flow requirements for decay heat removal and transport in MODE 4. ITS definition of MODE 4 includes the condition whereby 350 F > Tavg > 200 F. Therefore, adopting an applicability of MODE 4 for this requirement results in a less restrictive requirement. This change is acceptable because the 140 F limit is based on the definition of refueling shutdown in CTS 15.1.G.3. The principle difference in the refueling shutdown condition and the cold shutdown condition is the reactivity margin required. Refueling shutdown requires a 5% reactivity shutdown margin versus a 1% reactivity shutdown margin required in cold shutdown. The additional margin required in refueling shutdown ensures a shutdown condition is maintained during reactivity changes associated with moving fuel into and out of the core. The temperature limit of 140 F is an artificial limit not related to any physical system limitation or condition. While the lower temperature provides some additional subcooling margin in the event of a temporary loss of shutdown cooling, the Tech Specs ensure appropriate redundancy of shutdown cooling such that the potential for a loss of cooling is minimized. Raising the temperature to 200 F does not increase the probability of a loss of cooling. The RHR system is designed, operated and maintained to ensure operability under these temperature conditions. Therefore, this change to the applicability does not adversely affect the operation of the plant or reduce any margin of safety. **CTS:** 15.03.01.A.03.A **ITS:** LCO 3.04.06
LA.01	CTS 15.3.1.A.3.a(1)(c) and (d), Residual Heat Removal Loop A(B), respectively, are modified by Note *. This Note provides information regarding the mechanical design provisions of the residual heat removal system, affords the necessary flexibility to allow an operable residual heat removal loop to consist of the RHR pump from one loop coupled with the RHR heat exchanger from the other loop. This information is not retained in ITS, but is moved to the FSAR. This information provides details or design or process which are not directly pertinent to the actual requirement, i.e., Limiting Condition of Operation or Surveillance Requirement, but rather describe an acceptable method of compliance. Since these details are not necessary to adequately describe the actual regulatory requirement, they can be moved to other documents without impact on safety. Changes to the FSAR will be controlled in accordance with the 10 CFR 50.59 process. **CTS:** 15.03.01.A.03.A.01.C * **ITS:** LCO 3.04.06 **CTS:** 15.03.01.A.03.A.01.D * **ITS:** LCO 3.04.06

DOC Number	DOC Text
LA.02	The value of the LTOP enabling temperature is removed from the Specifications and placed in the Pressure Temperature Limits Report (PTLR). This information provides details of design or process that are not directly pertinent to the actual requirement, i.e., Limiting Condition for Operation or Surveillance Requirement, but rather describe frequently changing parameters of the specification. This detail is not necessary to adequately describe the actual regulatory requirement, and can be moved to licensee controlled documents without a significant impact on safety. Administrative controls are included in Section 5 of the proposed ITS to control revisions to these values. **CTS:** 15.03.15.B.02 **ITS:** LCO 3.04.06 NOTE 2
M.01	CTS 15.3.1.A.3.a(1)(a) and (b) specify "Reactor Coolant Loop A(B), its associated steam generator and either reactor coolant pump", respectively, as decay heat removal methods. ITS LCO 3.4.6 specifies a "RCS Loop" as a decay heat removal method. ITS 3.4.6 Bases define an OPERABLE RCS loop as comprising an OPERABLE RCP and an OPERABLE SG. By not specifying either RCP can be used with an operable SG to comprise an operable RCS Loop, ITS 3.4.6 imposes additional requirements on unit operation and is more restrictive. Although utilizing either RCP with an operable SG may be a viable method of decay heat removal in MODE 4, the plant conditions that would necessitate this lineup in order to meet DHR redundancy requirements are unlikely and are not retained in ITS 3.4.6. **CTS:** 15.03.01.A.03.A.01.A **ITS:** LCO 3.04.06 **CTS:** 15.03.01.A.03.A.01.B **ITS:** LCO 3.04.06
M.02	CTS 15.3.15.B.2 prohibits starting a RCP with RCS temperature < 355 F, unless compliance with one of the conditions provided in CTS 15.3.15.B.2.a or 15.3.15.B.2.b is met. One of the conditions provided in CTS 15.3.15.B.2.a is a pressure absorbing volume in the pressurizer. In order to retain this allowable condition in ITS 3.4.6, a quantifiable pressurizer water level would need to be specified, to ensure adequate volume exists in the pressurizer to accommodate the swell resulting from the RCP start, to prevent a low temperature overpressure event that could place the plant in an unanalyzed condition. No such value could be found in the Point Beach CLB; therefore, this condition is not being retained in ITS 3.4.6, resulting in more restrictive requirements for plant operation. **CTS:** 15.03.15.B.02.A **ITS:** N/A

DOC Number	DOC Text
M.03	CTS 15.3.15.B.2 prohibits starting a RCP with RCS temperature is < 355 F, unless compliance with one of the conditions provided in CTS 15.3.15.B.2.a or 15.3.15.B.2.b is met. One of the conditions provided in CTS 15.3.15.B.2.a is a pressure absorbing volume in the steam generator tubes. This condition is not being retained in ITS LCO 3.4.6, because no method exists to verify the volume in the steam generator tubes that would be required to accommodate the swell resulting from a RCP start. Therefore, prevention of a low temperature overpressure event cannot be ensured, and the plant may be placed in an unanalyzed condition as a result of the RCP start.

CTS:	ITS:
15.03.15.B.02.A	N/A

DOC Number	DOC Text
M.04	CTS 15.3.1.A.3.a(2) specifies, if the required decay heat removal methods of CTS 15.3.1.A.3.a(1) are not met, corrective action to return a second decay heat removal method to operable status as soon as possible, shall be initiated immediately. Proposed ITS LCO 3.4.6, Condition B, requires that if one required RHR loop is inoperable and two required RCS loops are inoperable, the unit must be brought to MODE 5 within 24 hours. This imposes additional requirements on plant operation and is more restrictive. Bringing the unit to MODE 5 is a conservative action with regard to decay heat removal. With only one RHR train operable, redundancy for decay heat removal is lost and, in the event of a loss of the remaining RHR train, it would be safer to initiate that loss from MODE 5 rather than MODE 4. 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.

CTS:	ITS:
NEW	LCO 3.04.06 COND B LCO 3.04.06 COND B RA B.1

DOC Number	DOC Text
M.05	The CTS is revised to adopt ITS SR 3.4.6.1, SR 3.4.6.2 and SR 3.4.6.3 to require that decay heat removal capability be available in MODE 4. SR 3.4.6.1 requires verification every 12 hours that one RCS loop or RHR train is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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 and RHR train performance. SR 3.4.6.2 requires verification of SG operability. SG operability is verified by ensuring that the secondary side narrow range water level is greater than or equal to 30%. If the SG secondary side narrow range water level is < 30%, 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 other indications available in the control room to alert the operator to the loss of SG level. SR 3.4.6.3 requires verification that the required pump is operable to ensure that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. 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. Since these changes impose new requirements, they are more restrictive and have no adverse impact on safety. **CTS:** NEW **ITS:** SR 3.04.06.01 SR 3.04.06.02 SR 3.04.06.03

A.1

15.3 LIMITING CONDITIONS FOR OPERATION

15.3.1 REACTOR COOLANT SYSTEM

Applicability

Applies to the operating status of the Reactor Coolant System.

Objective

To specify those limiting conditions for operation of the Reactor Coolant System which must be met to ensure safe reactor operation.

Specification

A. OPERATIONAL COMPONENTS

1. Coolant Pumps* A.2

< See LCO 3.4.4 >

a. When the reactor is critical, both reactor coolant pumps shall be in operation.
   (1) If one or both reactor coolant pump(s) cease operating, the reactor shall be placed in hot shutdown within 6 hours.

b. When the reactor is subcritical and the average reactor coolant temperature is greater than 350°F, except for tests, at least one reactor coolant pump shall be in operation.
   (1) Both reactor coolant pumps may be deenergized provided:
      a. No operations are permitted that would cause dilution of the reactor coolant system boron concentration,
      b. Core outlet temperature is maintained at least 10°F below saturation temperature, and
      c. The reactor trip breakers are open.

< See LCO 3.4.5 >

c. At least one reactor coolant pump or residual heat removal system shall be in operation when a reduction is made in the boron concentration of the reactor coolant. A.3

2. Steam Generator*

< See LCO 3.4.5 >

a. One steam generator shall be operable whenever the average reactor coolant temperature is above 350°F.

3. Components Required for Redundant Decay Heat Removal Capability* A.2

LCO 3.4.6

a. Reactor coolant temperature less than 350°F and greater than 140°F. L.1
   (1) At least two of the decay heat removal methods listed shall be operable.
      (a) Reactor Coolant Loop A, ~~its associated steam generator and either reactor coolant pump~~
      (b) Reactor Coolant Loop B, ~~its associated steam generator and either reactor coolant pump~~

M.1

* Applicable only when one or more fuel assemblies are in the reactor vessel. A.2

LCO 3.4.6

(c) Residual Heat Removal Loop (A)*
(d) Residual Heat Removal Loop (B)*

LA.1

A.4

COND A

(2) If the conditions of specification (1) above cannot be met, corrective action to return a second decay heat removal method to operable status as soon as possible shall be initiated immediately.

COND C

(3) If no decay heat removal method is in operation, except as permitted by (4) below, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately .

A.5

LCO 3.4.6

(4) At least one of the above decay heat removal methods shall be in operation.

LCO 3.4.6 NOTE 1

(a) All reactor coolant pumps and residual heat removal pumps may be deenergized for up to 1 hour in any 8 hour period provided:

(1) No operations are permitted that would cause dilution of reactor coolant system boron concentration, and

(2) Core outlet temperature is maintained at least 10°F below saturation temperature.

< See LCOs 3.4.7, 3.4.8, 3.9.5 & 3.9.6 >

b. Reactor Coolant Temperature Less Than 140°F

(1) Both residual heat removal loops shall be operable except as permitted in items (3) or (4) below.

(2) If no residual heat removal loop is in operation, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately.

(3) One residual heat removal loop may be out of service when the reactor vessel head is removed and the refueling cavity flooded.

(4) One of the two residual heat removal loops may be temporarily out of service to meet surveillance requirements.

4. Pressurizer Safety Valves

< See LCO 3.4.10 >

a. At least one pressurizer safety valve shall be operable whenever the reactor head is on the vessel.

b. Both pressurizer safety valves shall be operable whenever the reactor is critical.

---

* Mechanical design provisions of the residual heat removal system afford the necessary flexibility to allow an operable residual heat removal loop to consist of the RHR pump from one loop coupled with the RHR heat exchanger from the other loop. Electrical design provisions of the residual heat removal system afford the necessary flexibility to allow the normal or emergency power source to be inoperable or tied together when the reactor coolant temperature is less than 200°F.

LA.1

< See LCO 3.4.12 >

c. With both power operated relief valves inoperable while the reactor coolant system temperature is < 355°F, the reactor coolant system must be depressurized and vented within 8 hours.

3. If the reactor coolant system is vented per Specification 15.3.15.A.2.a, b, or c, the pathway must be verified at least once every 31 days when it is provided by a non-isolable pathway or by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise, verify the pathway every 12 hours.

B. Additional Limitations

< See LCO 3.4.12 >

1. When LTOP is required to be enabled by Specification 15.3.15.A.1, no more than one high pressure safety injection pump shall be operable. The second high pressure safety injection pump shall be rendered inoperable whenever LTOP is required to be enabled by verifying that the motor circuit breakers have been removed from their electrical power supply circuits or by verifying that the discharge valves from the high pressure safety injection pumps to the reactor coolant system are shut and that power is removed from their operators.

LCO 3.4.6 NOTE 2

2. A reactor coolant pump shall not be started when the reactor coolant system temperature is < 355°F unless: LA.2 M.2 M.3

a. There is a pressure absorbing volume in the pressurizer ~~or in the steam~~ M.3 ~~generator tubes~~ or

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

Basis

The Low Temperature Overpressure Protection System consists of a redundant means of relieving pressure during periods of water solid operation and when the reactor coolant system temperature is < 355°F. This method of water < See LCO 3.4.12 >

Add Condition B. See Insert 3.4.6-1. M.4

Add SR 3.4.6.1, SR 3.4.6.2 and SR 3.4.6.3. See Insert 3.4.6-2. M.5

Section 3.4.6 CTS Markup Insert

Insert 3.4.6-1:

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required RHR loop inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours

Insert 3.4.6-2:

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	12 hours
SR 3.4.6.2	Verify SG secondary side water levels are ≥ 30% for required RCS loops.	12 hours
SR 3.4.6.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	7 days

Justification For Deviations - NUREG-1431 Section 3.04.06

13-Nov-99

JFD Number	JFD Text	
01	The wording of the LCO 3.4.6, Note 1, and associated Bases was changed from "...may be de-energized..." to "...may not be in operation...", per approved TSTF 153. However, "...may not be in operation..." could easily be interpreted to imply a condition that forbids RCP operation. To prevent this misunderstanding, the wording has been changed to, "...may be not in operation..."	
	ITS:	**NUREG:**
	B 3.04.06	B 3.04.06
	LCO 3.04.06 NOTE 1	LCO 3.04.06 NOTE 1
02	The actual numerical values for LTOP enabling temperature are replaced with a reference to the temperature specified in the PTLR. The LTOP enabling temperature will then be calculated and controlled by the licensee in accordance with the topical reports identified in the PTLR.	
	ITS:	**NUREG:**
	B 3.04.06	B 3.04.06
	LCO 3.04.06 NOTE 2	LCO 3.04.06 NOTE 2
03	The brackets have been removed and the proper plant specific information has been provided.	
	ITS:	**NUREG:**
	B 3.04.06	B 3.04.06
	LCO 3.04.06 NOTE 2	LCO 3.04.06 NOTE 2
	SR 3.04.06.02	SR 3.04.06.02
04	NUREG-1431, LCO 3.4.6 Bases description of startup testing is revised to reflect the actual testing performed at PBNP. Per CTS 15.4.1, Table 15.4.1-2, Note (3), the rod drop test is only performed at rated reactor coolant flow. Therefore, this specific example of stopping the RCP for testing is not retained in the ITS Bases.	
	ITS:	**NUREG:**
	B 3.04.06	B 3.04.06
05	LCO 3.9.2 "Unborated Water Source Isolation Valves" was not adopted, based on the Point Beach design. Accordingly, the references to LCO 3.9.5 and 6 within the Bases for LCO 3.4.6 have been revised to reflect the renumbering that has occurred in Section 3.9 of the ITS.	
	ITS:	**NUREG:**
	B 3.04.06	B 3.04.06

Justification For Deviations - NUREG-1431 Section 3.04.06

13-Nov-99

JFD Number	JFD Text	
06	LCO 3.4.6 Bases, Action B.1, provides a temperature band of 200 to 300 F, for MODE 4. This band has been revised to 200 to 350 F, to more closely coincide with the Section 1.1 definition of MODE 4.	
	ITS:	**NUREG:**
	B 3.04.06	B 3.04.06
07	A sentence has been added to the LCO 3.4.6 Bases to clarify that the OPERABLE RCP and SG must be in the same loop for the RCS loop to be considered OPERABLE. This sentence was added because the NUREG-1431 Bases did not specify this condition for an OPERABLE RCS loop, and this condition was considered to be a necessary attribute for Point Beach.	
	ITS:	**NUREG:**
	B 3.04.06	B 3.04.06

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops – MODE 4

Approved TSTF 153

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.

1 be not in operation → not be in operation

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

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

   Approved TSTF 153

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

   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 ≤ [275]°F unless the secondary side water temperature of each steam generator (SG) is ≤ [50]°F above each of the RCS cold leg temperatures.

   2 → Low Temperature Overpressure Protection (LTOP) enabling temperature specified in the PTLR.

   3 → 50

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.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required RHR loop inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours
C. Required RCS or RHR loops inoperable. OR No RCS or RHR loop in operation.	C.1 Suspend all operations involving a reduction of RCS boron concentration. AND C.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	12 hours
SR 3.4.6.2	Verify SG secondary side water levels are ≥ ~~[17]%~~ 30 for required RCS loops.	12 hours

(continued)

3

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.6.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	7 days

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.6 RCS Loops – MODE 4

BASES

BACKGROUND

In MODE 4, the primary function of the reactor coolant is the removal of decay heat and the transfer of this heat to either the steam generator (SG) secondary side coolant or the component cooling water via the residual heat removal (RHR) heat exchangers. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

The reactor coolant is circulated through [four] RCS loops connected in parallel to the reactor vessel, each loop containing an SG, a reactor coolant pump (RCP), and appropriate flow, pressure, level, and temperature instrumentation for control, protection, and indication. The RCPs circulate the coolant through the reactor vessel and SGs at a sufficient rate to ensure proper heat transfer and to prevent boric acid stratification.

In MODE 4, either RCPs or RHR loops can be used to provide forced circulation. The intent of this LCO is to provide forced flow from at least one RCP or one RHR loop for decay heat removal and transport. The flow provided by one RCP loop or RHR loop is adequate for decay heat removal. The other intent of this LCO is to require that two paths be available to provide redundancy for decay heat removal.

APPLICABLE SAFETY ANALYSES

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

RCS Loops – MODE 4 have been identified in the NRC Policy Statement as important contributors to risk reduction.

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

Approved TSTF 153

BASES

LCO (continued)

1 be not in operation

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.

not be in operation

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 is the validation of rod drop times during cold conditions, both with and without flow. 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 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 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 a problem during this short period with no forced flow.

4

Approved TSTF 153

stopping

tests

4

Utilization of Note 1 is permitted provided the following conditions are met along with any other conditions imposed by initial startup test procedures:

a. No operations are permitted that would dilute the RCS boron concentration, therefore maintaining the margin to criticality. Boron reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; 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.

3 50

Note 2 requires that the secondary side water temperature of each SG be ≤ 50]°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature ≤ 275°F. This restraint is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

the Low Temperature Overpressure Protection (LTOP) enabling temperature specified in the PTLR

2

An OPERABLE RCS loop comprises an OPERABLE RCP and an OPERABLE SG in accordance with the Steam Generator Tube

BASES

LCO (continued)

7

The OPERABLE RCP and SG must be in the same loop for the RCS loop to be considered OPERABLE.

Surveillance Program, which has the minimum water level specified in SR 3.4.6.2.

Similarly for the RHR System, an OPERABLE RHR loop comprises 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.

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 3.9.6, "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).

5 → 4, 5

ACTIONS

A.1

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.

B.1

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

BASES

ACTIONS (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 restored, 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 300°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.

6 → 350

C.1 and C.2

If no loop is OPERABLE or in operation, except during conditions permitted by Note 1 in the LCO section, all operations involving a reduction of RCS boron concentration 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 the margin to criticality must not be reduced in this type of operation. 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.

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This SR requires verification every 12 hours that one RCS or RHR loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.2

3 → 30

SR 3.4.6.2 requires verificati on of SG 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 other indications available in the control room to alert the operator to the loss of SG level.

SR 3.4.6.3

Verification that 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 the required pump. 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.

REFERENCES None.

No Significant Hazards Considerations - NUREG-1431 Section 3.04.06

13-Nov-99

NSHC Number	NSHC Text
A	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change involves reformatting and rewording of the current Technical Specifications. The reformatting and rewording process involves no technical changes to existing requirements. As such, this change is administrative in nature and does not impact initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The proposed change will not significantly reduce the margin of safety because it has no impact on any safety analysis assumptions. This change is administrative. As such, there is no technical change to the requirements and, therefore, there is no reduction in the margin of safety.

NSHC Number	NSHC Text
L.01	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. This change modifies the applicability of the LCO from "reactor coolant temperature less than 350 F and greater than 140 F" to "MODE 4." This change is acceptable because the 140 F limit is based on the definition of refueling shutdown in CTS 15.1.G.3. The principle difference in the refueling shutdown condition and the cold shutdown condition is the reactivity margin required. Refueling shutdown requires a 5% reactivity shutdown margin versus a 1% reactivity shutdown margin required in cold shutdown. The additional margin required in refueling shutdown ensures a shutdown condition is maintained during reactivity changes associated with moving fuel into and out of the core. The temperature limit of 140 F is an artificial limit not related to any physical system limitation or condition. While the lower temperature provides some additional subcooling margin in the event of a temporary loss of shutdown cooling, the Tech Specs ensure appropriate redundancy of shutdown cooling such that the potential for a loss of cooling is minimized. Raising the temperature to 200 F does not increase the probability of a loss of cooling. The RHR system is designed, operated and maintained to ensure operability under these temperature conditions. Therefore, this change does not involve an increase in the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, nor does it alter parameters governing normal plant operation. The proposed change does not introduce a new mode of operation or alter the method of normal plant operation. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created. 3. Does this change involve a significant reduction in a margin of safety? There are no margins of safety related to safety analyses that are dependent upon the proposed change. The requirements will continue to assure that limiting conditions for the RCS are properly maintained. Therefore, this change does not involve a reduction in a margin of safety.

NSHC Number	NSHC Text
LA	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change relocates requirements from the Technical Specifications to the Bases, FSAR, or other plant controlled documents. The Bases and FSAR will be maintained using the provisions of 10 CFR 50.59. In addition to 10 CFR 50.59 provisions, the Technical Specifications Bases are subject to the change process in the Administrative Controls Chapter of the ITS. Plant procedures and other plant controlled documents are subject to controls imposed by plant administrative procedures, which endorse applicable regulations and standards. Changes to the Bases, FSAR, or other plant controlled documents will be evaluated in accordance with the requirements of the Bases Control Program in Chapter 5.0 of the ITS, 10 CFR 50.59, or plant administrative processes. Therefore, no increase in the probability or consequences of an accident previously evaluated will be allowed. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will not impose any different requirements and adequate control of the information will be maintained. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The proposed change will not reduce a margin of safety because it has no impact on any safety analysis assumptions. In addition, the requirements to be moved from the Technical Specifications to the Bases, FSAR, or other plant controlled documents are as they currently exist. Future changes to the requirements in the Bases, FSAR, or other plant controlled documents will be evaluated in accordance with the requirements of 10 CFR 50.59, the Bases Control Program in Chapter 5.0 of the ITS, or the applicable plant process and no reduction in a margin of safety will be allowed.

NSHC Number	NSHC Text
M	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change provides more restrictive requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter the assumptions relative to the 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. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change does impose different requirements. However, these changes are consistent with assumptions made in the safety analysis. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The imposition of more restrictive requirements either has no affect on or increases the margin of safety. Each change is providing additional restrictions to enhance plant safety. These changes are consistent with the safety analysis. Therefore, this change does not involve a reduction in a margin of safety.

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----------

1. All reactor coolant pumps (RCPs) and RHR pu mps may be not in operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

   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 ≤ Low Temperature Overpressure Protection (LTOP) enabling temperature specified in the PTLR unless the secondary side water temperature of each steam generator (SG) is ≤ 50°F above each of the RCS cold leg temperatures.

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.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required RHR loop inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours
C. Required RCS or RHR loops inoperable. OR No RCS or RHR loop in operation.	C.1 Suspend all operations involving a reduction of RCS boron concentration. AND C.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	12 hours
SR 3.4.6.2	Verify SG secondary side water levels are ≥ 30% for required RCS loops.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.6.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	7 days

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.6 RCS Loops – MODE 4

BASES

BACKGROUND

In MODE 4, the primary function of the re actor coolant is the removal of decay heat and the transfer of this heat to either the steam generator (SG) secondary side coolant or the component cooling water via the residual heat removal (RHR) heat exchangers. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

The reactor coolant is circulated through two RCS loops connected in parallel to the reactor vessel, each loop containing an SG, a reactor coolant pump (RCP), and appropriate flow, pressure, level, and temperature instrumentation for control, protection, and indication. The RCPs circulate the coolant through the reactor vessel and SGs at a sufficient rate to ensure proper heat transfer and to prevent boric acid stratification.

In MODE 4, either RCPs or RHR loops can be used to provide forced circulation. The intent of this LCO is to provide forced flow from at least one RCP or one RHR loop for decay heat removal and transport. The flow provided by one RCP loop or RHR loop is adequate for decay heat removal. The other intent of this LCO is to require that two paths be available to provide redundancy for decay heat removal.

APPLICABLE SAFETY ANALYSES

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

RCS Loops – MODE 4 have been identified in the NRC Policy Statement as important contributors to risk reduction.

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

BASES

LCO (continued)

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.

Note 1 permits all RCPs or RHR pumps to be not in operation 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. The Note permits the stopping of the pumps in order to perform tests 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 a problem during this short period with no forced flow.

Utilization of Note 1 is permitted provided the following conditions are met along with any other conditions imposed by initial startup test procedures:

a. No operations are permitted that would dilute the RCS boron concentration, therefore maintaining the margin to criticality. Boron reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; 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.

Note 2 requires that the secondary side water temperature of each SG be ≤ 50°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature ≤ the Low Temperature Overpressure Protection (LTOP) enabling temperature specified in the PTLR. This restraint is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

An OPERABLE RCS loop comprises an OPERABLE RCP and an OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which has the minimum water level

BASES

LCO (continued)

specified in SR 3.4.6.2. The OPERABLE RCP and SG must be in the same loop for the RCS loop to be considered OPERABLE.

Similarly for the RHR System, an OPERABLE RHR loop comprises 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.

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 3.9.4, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A.1

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.

B.1

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

BASES

ACTIONS (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 restored, 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 350°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.

C.1 and C.2

If no loop is OPERABLE or in operation, except during conditions permitted by Note 1 in the LCO section, all operations involving a reduction of RCS boron concentration 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 the margin to criticality must not be reduced in this type of operation. 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.

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This SR requires verification every 12 hours that one RCS or RHR loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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.

SR 3.4.6.2

SR 3.4.6.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side

BASES

SURVEILLANCE REQUIREMENTS (continued)

narrow range water level is ≥ 30%. If the SG secondary side narrow range water level is < 30%, 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 other indications available in the control room to alert the operator to the loss of SG level.

SR 3.4.6.3

Verification that 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 the required pump. 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.

REFERENCES None.

Cross-Reference Report - NUREG-1431 Section 3.04.07

ITS to CTS

13-Nov-99

ITS	CTS	DOC
LCO 3.04.07	15.03.01.A.03.B	M.01
	15.03.01.A.03.B.01	A.04
LCO 3.04.07 A	15.03.01.A.03.B.01	L.01
LCO 3.04.07 B	NEW	L.01
LCO 3.04.07 COND A	NEW	M.05
LCO 3.04.07 COND A RA A.1	NEW	M.05
LCO 3.04.07 COND A RA A.2	NEW	M.05
LCO 3.04.07 COND B	15.03.01.A.03.B.02	A.05
LCO 3.04.07 COND B RA B.1	15.03.01.A.03.B.02	A.01
LCO 3.04.07 COND B RA B.2	15.03.01.A.03.B.02	A.01
LCO 3.04.07 NOTE 1	NEW	L.02
LCO 3.04.07 NOTE 1A	NEW	L.02
LCO 3.04.07 NOTE 1B	NEW	L.02
LCO 3.04.07 NOTE 2	15.03.01.A.03.B.04	M.02
LCO 3.04.07 NOTE 3	15.03.15.B.02	A.01
	15.03.15.B.02	LA.01
	15.03.15.B.02.B	A.01
LCO 3.04.07 NOTE 4	NEW	L.03
SR 3.04.07.01	NEW	M.06
SR 3.04.07.02	NEW	M.06
SR 3.04.07.03	NEW	M.06

Cross-Reference Report - NUREG-1431 Section 3.04.07

CTS to ITS

13-Nov-99

CTS	ITS	DOC
15.03.01.A.01 *	N/A	A.02
15.03.01.A.01.C	N/A	A.03
15.03.01.A.03.B	LCO 3.04.07	M.01
15.03.01.A.03.B.01	LCO 3.04.07	A.04
	LCO 3.04.07 A	L.01
15.03.01.A.03.B.02	LCO 3.04.07 COND B	A.05
	LCO 3.04.07 COND B RA B.1	A.01
	LCO 3.04.07 COND B RA B.2	A.01
15.03.01.A.03.B.04	LCO 3.04.07 NOTE 2	M.02
15.03.15.B.02	LCO 3.04.07 NOTE 3	LA.01
	LCO 3.04.07 NOTE 3	A.01
15.03.15.B.02.A	N/A	M.04
	N/A	M.03
15.03.15.B.02.B	LCO 3.04.07 NOTE 3	A.01

Description of Changes - NUREG-1431 Section 3.04.07

13-Nov-99

DOC Number	DOC Text

A.01

In the conversion of Point Beach current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the Standard Technical Specifications, Westinghouse Plants, NUREG-1431, Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

CTS:	ITS:
15.03.01.A.03.B.02	LCO 3.04.07 COND B RA B.1
	LCO 3.04.07 COND B RA B.2
15.03.15.B.02	LCO 3.04.07 NOTE 3
15.03.15.B.02.B	LCO 3.04.07 NOTE 3

A.02

CTS 15.3.1.A.1 is modified by Note *. This Note states, "Applicable only when one or more fuel assemblies are in the reactor vessel." Proposed ITS LCO 3.4.7 is applicable in MODE 5 with RCS loops filled. ITS section 1.1, Definitions, states "A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel." As specified in CTS 15.3.1.A.1 Note *, ITS 3.4.7 applies with fuel in the reactor vessel. Therefore, this change is administrative.

CTS:	ITS:
15.03.01.A.01 *	N/A

A.03

CTS 15.3.1.A.1.c requires at least one reactor coolant pump or residual heat removal system be in operation when a reduction is made in the boron concentration of the reactor coolant. This requirement is retained in ITS 3.4.7, Note 1, which specifies the RHR pump of the loop in operation may not be in operation for less than or equal to 1 hour per 8 hour period, provided no operations are permitted that would cause a reduction of the RCS boron concentration.

Additionally, ITS LCO 3.4.7, Condition B requires the immediate suspension all operations involving a reduction of RCS boron concentration, if the required RHR loops are inoperable or no RHR loop is in operation. Therefore, this CTS requirement is retained in ITS and this change is administrative.

CTS:	ITS:
15.03.01.A.01.C	N/A

DOC Number	DOC Text
A.04	CTS 15.3.1.A.3.b(1) requires both RHR loops be operable with reactor coolant temperature less than 140 F. Proposed ITS 3.4.7 requires, in addition to either an operable RHR loop or SG, one operable RHR loop in operation. The CTS does not specifically require a RHR loop to be in operation. However, in the event no RHR loops are in operation, CTS 15.3.1.A.3.b(2) requires action be taken to return a decay heat removal method to operation. This implies that at least one RHR loop must be in operation with reactor coolant temperature < 140F. Therefore, specifically stating one RHR loop is required to be in operation is an administrative change. **CTS:** 15.03.01.A.03.B.01 **ITS:** LCO 3.04.07
A.05	CTS 15.3.1.A.3.b(1) requires both RHR loops be operable. CTS 15.3.1.A.3.b(2) provides actions in the event no RHR loop is in operation. ITS LCO 3.4.7 provides required actions in the event no RHR loop is in operation or if no RHR loop is operable. Implicit in the actions required by CTS 15.3.1.A.3.b(2) is the assumption that when no RHR loop can be placed in operation, both RHR loops are inoperable. Therefore, modifying the specification to specifically address the condition whereby no RHR loop is operable, is an administrative change. **CTS:** 15.03.01.A.03.B.02 **ITS:** LCO 3.04.07 COND B
L.01	CTS Specification 15.3.1.A.3.b(1) requires that both RHR loops be OPERABLE with reactor coolant temperature < 140 F. Proposed ITS Specification 3.4.7 requires, when in MODE 5 with the RCS loops filled, that either both RHR loops be operable, or one RHR loop and one SG be operable. This change provides more flexibility in operation, and is therefore less restrictive. This change is acceptable, however, because with either choice, redundant decay heat removal systems are operable and available for use. Forced circulation of the reactor coolant will be maintained and require rapid restoration if lost (in accordance with ITS required actions), to ensure reactor coolant mixing is in agreement with the assumptions for the boron dilution event. In MODE 5 with the RCS loops filled, the primary function of the reactor coolant is the removal of decay heat and transfer of this heat either to the steam generator (SG) secondary side coolant or the component cooling water via the residual heat removal (RHR) heat exchangers. Even though the SGs cannot produce steam in this MODE, they are capable of being a heat sink due to their large contained volume of secondary water. As long as the SG secondary side water is at a lower temperature than the reactor coolant, heat transfer will occur. The rate of heat transfer is directly proportional to the temperature difference. **CTS:** 15.03.01.A.03.B.01 **ITS:** LCO 3.04.07 A NEW LCO 3.04.07 B

Description of Changes - NUREG-1431 Section 3.04.07

13-Nov-99

DOC Number	DOC Text
L.02	The CTS is revised by adopting ITS LCO 3.4.7, Note 1. This Note permits the RHR pump of the loop in operation to not be in operation for up to 1 hour in any 8 hour period, to permit tests that are designed to validate various accident analyses values. The allowance for no RHR pump to be in operation is a relaxation of requirements, and is less restrictive. This change is acceptable, however, because such an operation would be performed as part of a special test, and be controlled under close scrutiny by shift operating personnel. In addition, the allowances of the Note may only be used if no operations which could cause a reduction of RCS boron concentration are being performed and core outlet temperature is maintained at least 10 °F below saturation temperature. Industry operating experience has also shown that boron stratification is not a problem during this short period with no forced flow. Natural circulation provides adequate heat removal in this condition during the limited time period in the Note. **CTS:** NEW **ITS:** LCO 3.04.07 NOTE 1 LCO 3.04.07 NOTE 1A LCO 3.04.07 NOTE 1B
L.03	The CTS is revised by adopting ITS LCO 3.4.7, Note 4. This Note 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 also allows the RHR loops to be removed from service, when at least one RCS loop is in operation, to perform RCS PIV leakage testing. This is necessary, because the Point Beach RHR System configuration requires the RHR System to be removed from service to perform the PIV leakage test. This Note results in a relaxation of the CTS requirements by allowing an RCS loop to be in operation and replace the RCS circulation function provided by the RHR loops below 140 °F. This change is acceptable, because the CTS lower limit of 140 °F is an arbitrary number based on refueling operations. During refueling operations, the RCS loops may, or may not, be filled. ITS LCO 3.4.7 applies in MODE 5 with the RCS loops filled. Therefore, allowing the use of RCS loop(s) for decay heat removal below 140 °F is acceptable. **CTS:** NEW **ITS:** LCO 3.04.07 NOTE 4
LA.01	The value of the LTOP enabling temperature is removed from the Specifications and placed in the Pressure Temperature Limits Report (PTLR). This information provides details of design or process that are not directly pertinent to the actual requirement, i.e., Limiting Condition for Operation or Surveillance Requirement, but rather describe frequently changing parameters of the specification. This detail is not necessary to adequately describe the actual regulatory requirement, and can be moved to licensee controlled documents without a significant impact on safety. Administrative controls are included in Section 5 of the proposed ITS to control revisions to these values. **CTS:** 15.03.15.B.02 **ITS:** LCO 3.04.07 NOTE 3

DOC Number	DOC Text
M.01	CTS 15.3.1.A.3.b provides decay heat removal requirements for conditions where reactor coolant temperature is < 140 F. The requirements of this specification with the reactor vessel head less than fully tensioned, are addressed in ITS LCO 3.9.4 and 3.9.5. Proposed ITS LCO 3.4.7 and 3.4.8 address the decay heat removal requirements in MODE 5, with LCO 3.4.7 addressing the condition with the RCS loops filled and LCO 3.4.8 addressing the condition with RCS loops not filled. The ITS definition of MODE 5 includes the conditions whereby Tavg is less than or equal to 200 F. Therefore, the proposed revision changes the applicability of the RHR requirements from less than 140 F to less than or equal to 200 F. The 140 F limit is based on the CTS definition of refueling shutdown and is an artificial limit not related to any physical system limitation or condition. While the lower temperature provided some additional subcooling margin in the event of a temporary loss of shutdown cooling, the Technical Specifications ensure appropriate redundancy of shutdown cooling such that the potential for a loss of cooling is minimized. Raising the temperature limit to 200 F does not increase the probability of a loss of cooling. The RHR System is designed, operated and maintained to ensure operability under these temperature conditions. **CTS:** 15.03.01.A.03.B **ITS:** LCO 3.04.07
M.02	The CTS 15.3.1.A.3.b(4) allows one of the two RHR loops to be temporarily out of service to meet surveillance requirements. Proposed ITS LCO 3.4.7, Note 2, allows one required RHR pump to be inoperable for a period of up to 4 hours for surveillance testing, provided that the other RHR loop is operable and in operation. Changing "temporarily" out of service to inoperable for "up to 4 hours", places additional requirements on plant operation and is more restrictive. Four hours is a reasonable time to conduct surveillances including those required by ASME Section XI and the Technical Specifications, without unnecessarily challenging decay heat removal. Note 2 also ensures that a residual heat removal loop is in operation as required by the existing Specifications and ITS LCO 3.4.7. **CTS:** 15.03.01.A.03.B.04 **ITS:** LCO 3.04.07 NOTE 2

DOC Number	DOC Text
M.03	CTS 15.3.15.B.2 prohibits starting a RCP with RCS temperature < 355 F, unless compliance with one of the conditions provided in CTS 15.3.15.B.2.a or 15.3.15.B.2.b is met. One of the conditions provided in CTS 15.3.15.B.2.a is a pressure absorbing volume in the pressurizer. In order to retain this allowable condition in ITS 3.4.7, a quantifiable pressurizer water level would need to be specified, to ensure adequate volume exists in the pressurizer to accommodate the swell resulting from the RCP start, to prevent a low temperature overpressure event that could place the plant in an unanalyzed condition. No such value could be found in the Point Beach CLB; therefore, this condition is not being retained in ITS 3.4.7, resulting in more restrictive requirements for plant operation. **CTS:** 15.03.15.B.02.A **ITS:** N/A
M.04	CTS 15.3.15.B.2 prohibits starting a RCP with RCS temperature < 355 F, unless compliance with one of the conditions provided in CTS 15.3.15.B.2.a or 15.3.15.B.2.b is met. One of the conditions provided in CTS 15.3.15.B.2.a is a pressure absorbing volume in the steam generator tubes. This condition is not being retained in ITS LCO 3.4.7, because no method exists to verify the volume in the steam generator tubes that would be required to accommodate the swell resulting from a RCP start. Therefore, prevention of a low temperature overpressure event cannot be ensured, and the plant may be placed in an unanalyzed condition as a result of the RCP start. **CTS:** 15.03.15.B.02.A **ITS:** N/A
M.05	CTS 15.3.1.A.3.b is revised to adopt the actions associated with ITS LCO 3.4.7 Condition A. If one RHR train is inoperable and the required SG has secondary side water level < 30% narrow range, redundancy for heat removal is lost. Action must be initiated immediately to restore a second RHR train to OPERABLE status or to restore the required SG secondary side water level. 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. This change imposes additional requirements on plant operation and, therefore, is more restrictive. **CTS:** NEW **ITS:** LCO 3.04.07 COND A LCO 3.04.07 COND A RA A.1 LCO 3.04.07 COND A RA A.2

DOC Number	DOC Text
M.06	The CTS is revised to adopt ITS SR 3.4.7.1, SR 3.4.7.2, and SR 3.4.7.3, to require that decay heat removal capability be available in MODE 5. SR 3.4.7.1 requires verification every 12 hours that the required train is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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 train performance. SR 3.4.7.2 requires verifying the required SG is OPERABLE by ensuring its secondary side narrow range water level is greater than or equal to 30% narrow range. This ensures an alternate decay heat removal method in the event that the second RHR train is not OPERABLE. The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to the loss of SG level or the RCS pressure boundary. SR 3.4.7.3 requires verification that a second RHR pump is OPERABLE. This 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 RHR pump. If secondary side water level is greater than or equal to 30% narrow range in at least one SG, this Surveillance is not needed. 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. Since this change imposes new requirements, it is more restrictive and has no adverse impact on safety.

CTS:	ITS:
NEW	SR 3.04.07.01
	SR 3.04.07.02
	SR 3.04.07.03

15.3 LIMITING CONDITIONS FOR OPERATION

15.3.1 REACTOR COOLANT SYSTEM

Applicability

Applies to the operating status of the Reactor Coolant System.

Objective

To specify those limiting conditions for operation of the Reactor Coolant System which must be met to ensure safe reactor operation.

Specification

A. OPERATIONAL COMPONENTS

1. Coolant Pumps* A.2 < See LCO 3.4.4 >
   a. When the reactor is critical, both reactor coolant pumps shall be in operation.
      (1) If one or both reactor coolant pump(s) cease operating, the reactor shall be placed in hot shutdown within 6 hours.
   b. When the reactor is subcritical and the average reactor coolant temperature is greater than 350°F, except for tests, at least one reactor coolant pump shall be in operation.
      (1) Both reactor coolant pumps may be deenergized provided:
         a. No operations are permitted that would cause dilution of the reactor coolant system boron concentration,
         b. Core outlet temperature is maintained at least 10°F below saturation temperature, and < See LCO 3.4.5 >
         c. The reactor trip breakers are open.
   c. At least one reactor coolant pump or residual heat removal system shall be in operation when a reduction is made in the boron concentration of the reactor coolant. A.3
2. Steam Generator*
   a. One steam generator shall be operable whenever the average reactor coolant temperature is above 350°F. < See LCO 3.4.5 >
3. Components Required for Redundant Decay Heat Removal Capability*
   a. Reactor coolant temperature less than 350°F and greater than 140°F.
      (1) At least two of the decay heat removal methods listed shall be operable.
         (a) Reactor Coolant Loop A, its associated steam generator and either reactor coolant pump
         (b) Reactor Coolant Loop B, its associated steam generator and either reactor coolant pump < See LCO 3.4.6 >

~~* Applicable only when one or more fuel assemblies are in the reactor vessel.~~

A.2

A.1

< See LCO 3.4.6 >

(c) Residual Heat Removal Loop (A)*

(d) Residual Heat Removal Loop (B)*

(2) If the conditions of specification (1) above cannot be met, corrective action to return a second decay heat removal method to operable status as soon as possible shall be initiated immediately.

(3) If no decay heat removal method is in operation, except as permitted by (4) below, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately .

(4) At least one of the above decay heat removal methods shall be in operation.

(a) All reactor coolant pumps and residual heat removal pumps may be deenergized for up to 1 hour in any 8 hour period provided:

M.1 L.1 A.4

(1) No operations are permitted that would cause dilution of reactor coolant system boron concentration, and

(2) Core outlet temperature is maintained at least 10°F below saturation temperature.

Replace with LCO 3.4.7. See Insert 3.4.7-1.

b. Reactor Coolant Temperature Less Than 140°F

< See LCO 3.9.5 >

(1) Both residual heat removal loops shall be operable except as permitted in items (3) or (4) below.

< See LCO 3.9.5 >

(2) If no residual heat removal loop is in operation, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately.

Replace with Condition B. See Insert 3.4.7-2.

A.5

(3) One residual heat removal loop may be out of service when the reactor vessel head is removed and the refueling cavity flooded. < See LCO 3.9.5 >

Replace with LCO 3.4.7 Note 2. See Insert 3.4.7-1.

M.2

(4) One of the two residual heat removal loops may be temporarily out of service to meet surveillance requirements.

4. Pressurizer Safety Valves

a. At least one pressurizer safety valve shall be operable whenever the reactor head is on the vessel.

b. Both pressurizer safety valves shall be operable whenever the reactor is critical.

< See LCO 3.4.10 >

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* Mechanical design provisions of the residual heat removal system afford the necessary flexibility to allow an operable residual heat removal loop to consist of the RHR pump from one loop coupled with the RHR heat exchanger from the other loop. Electrical design provisions of the residual heat removal system afford the necessary flexibility to allow the normal or emergency power source to be inoperable or tied together when the reactor coolant temperature is less than 200°F.

< See LCO 3.4.6 >

< See LCO 3.4.12 >

c. With both power operated relief valves inoperable while the reactor coolant system temperature is < 355°F, the reactor coolant system must be depressurized and vented within 8 hours .

3. If the reactor coolant system is vented per Specification 15.3.15.A.2.a, b, or c, the pathway must be verified at least once every 31 days when it is provided by a non-isolable pathway or by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise, verify the pathway every 12 hours.

B. Additional Limitations

1. When LTOP is required to be enabled by Specification 15.3.15.A.1, no more than one high pressure safety injection pump shall be operable. The second high pressure safety injection pump shall be rendered inoperable whenever LTOP is required to be enabled by verifying that the motor circuit breakers have been removed from their electrical power supply circuits or by verifying that the discharge valves from the high pressure safety injection pumps to the reactor coolant system are shut and that power is removed from their operators.

2. A reactor coolant pump shall not be started when the reactor coolant system temperature is < 355°F unless:

Replace with LCO 3.4.7 Note 3. See Insert 3.4.7-1.

~~a. There is a pressure absorbing volume in the pressurizer or in the steam generator tubes or~~ M.4 M.3 M.4

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

Basis

The Low Temperature Overpressure Protection System consists of a redundant means of relieving pressure during periods of water solid operation and when the reactor coolant system temperature is < 355°F. This method of water

< See LCO 3.4.12 >

Add LCO 3.4.7 NOTE 1. See Insert 3.4.7-1. L.2

Add LCO 3.4.7 NOTE 4. See Insert 3.4.7-1. L.3

Add Condition A. See Insert 3.4.7-2. M.5

Add SR 3.4.7.1, SR 3.4.7.2 and SR 3.4.7.3. See Insert 3.4.7-3. M.6

Section 3.4.7 CTS Markup Inserts

Insert 3.4.7-1:

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

A.4

a. One additional RHR loop shall be OPERABLE; or

L.1

b. The secondary side water level of at least one steam generator (SG) shall be ≥ 30% narrow range.

NOTES

L.2

1. The RHR pump of the loop in operation may be not in operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

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

M.2

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

LA.1

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ Low Temperature Overpressure Protection (LTOP) enabling temperature specified in the PTLR unless the secondary side water temperature of each SG is ≤ 50°F above each of the RCS cold leg temperatures.

L.3

4. All RHR loops may be removed from operation during planned heatup to MODE 4 or during the performance of SR 3.4.14.1 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled. M.1

Insert 3.4.7-2:

M.5

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable. AND Required SG secondary side water level 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 secondary side water level to within limit.	Immediately Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving a reduction of RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

A.5

Insert 3.4.7-3:

M.6

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	12 hours
SR 3.4.7.2	Verify SG secondary side water level is ≤ 30% narrow range in required SG.	12 hours
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

Justification For Deviations - NUREG-1431 Section 3.04.07

13-Nov-99

JFD Number	JFD Text
01	The brackets have been removed and the proper plant specific information has been provided. In some instances, even though the information was designated as plant specific information in the LCO (bracketed), the corresponding Bases information was not bracketed. These cases are self evident, corresponding to the bracketed information in the LCO, and have had the appropriate site specific information provided.

ITS:	NUREG:
B 3.04.07	B 3.04.07
LCO 3.04.07 B	LCO 3.04.07 B
LCO 3.04.07 COND A	LCO 3.04.07 COND A
LCO 3.04.07 COND A RA A.2	LCO 3.04.07 COND A RA A.2
LCO 3.04.07 NOTE 3	LCO 3.04.07 NOTE 3
SR 3.04.07.02	SR 3.04.07.02

JFD Number	JFD Text
02	The actual numerical values for LTOP enabling temperature are replaced with a reference to the temperature specified in the PTLR. The LTOP enabling temperature will then be calculated and controlled by the licensee in accordance with the topical reports identified in the PTLR.

ITS:	NUREG:
B 3.04.07	B 3.04.07
LCO 3.04.07 NOTE 3	LCO 3.04.07 NOTE 3

JFD Number	JFD Text
03	LCO 3.4.7 Bases description of startup testing is revised to reflect the actual testing performed at Point Beach. Per CTS 15.4.1, Table 15.4.1-2, Note (3), rod drop tests are only performed at rated RCS flow. Therefore, this example of stopping the RCPs for testing is deleted.

ITS:	NUREG:
B 3.04.07	B 3.04.07

JFD Number	JFD Text
04	LCO 3.9.2 "Unborated Water Source Isolation Valves" was not adopted, based on the Point Beach design. Accordingly, the references to LCO 3.9.5 and 6 within the Bases for LCO 3.4.7 have been revised to reflect the renumbering that has occurred in Section 3.9 of the ITS.

ITS:	NUREG:
B 3.04.07	B 3.04.07

Justification For Deviations - NUREG-1431 Section 3.04.07

13-Nov-99

JFD Number	JFD Text	
05	LCO 3.4.7, Note 2 is modified to allow one required RHR loop to be inoperable for up to 4 hours for surveillance testing. CTS 15.3.1.A.3.b.4 allows one RHR loop to be out of service temporarily to meet surveillance requirements. Past experience has shown that a 2 hour allowance would be too limiting to perform the required surveillances.	
	ITS:	**NUREG:**
	B 3.04.07	B 3.04.07
	LCO 3.04.07 NOTE 2	LCO 3.04.07 NOTE 2
06	The wording of the LCO 3.4.7 Note and Bases was changed from "...may be de-energized..." to "...may not be in operation...", per approved TSTF 153. However, "...may not be in operation..." could easily be interpreted to imply a condition that forbids RCP operation. To prevent this misunderstanding, the wording has been changed to, "...may be not in operation..."	
	ITS:	**NUREG:**
	B 3.04.07	B 3.04.07
	LCO 3.04.07 NOTE 1	LCO 3.04.07 NOTE 1
07	"Narrow range" was added to the description of the required secondary side water level of the steam generators. NUREG-1431 did not specify a level indication instrumentation reference for the steam generator water level. To avoid possible interpretation, "narrow range" was added to specify that the required steam generator water level percentage is indicated narrow range. 30% narrow range level indication is a much higher water level (i.e. more conservative) than 30% wide range indication and ensures that the steam generator tubes are covered.	
	ITS:	**NUREG:**
	B 3.04.07	B 3.04.07
	LCO 3.04.07 B	LCO 3.04.07 B
	SR 3.04.07.02	SR 3.04.07.02
08	An allowance is being added to LCO 3.4.7 NOTE 4 and the applicable Bases to allow both RHR loops to be removed from operation when at least one RCS loop is in operation to allow for the performance of SR 3.4.14.1, RCS PIV leakage testing. The CTS allows reactor coolant loops for decay heat removal when the RCS temperature is > 140 °F and < 350 °F in accordance with CTS 15.3.1.A.3.a(1). This allowance is necessary based on the design of the Point Beach RHR System configuration, which requires the system to be removed from service to perform the required PIV leakage testing.	
	ITS:	**NUREG:**
	B 3.04.07	B 3.04.07
	LCO 3.04.07 NOTE 4	LCO 3.04.07 NOTE 4

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] steam generator~~s~~ (SG~~s~~) shall be ≥ [17]%.

---NOTES---

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

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

   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.

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ [275]°F unless the secondary side water temperature of each SG is ≤ [50]°F above each of the RCS cold leg temperatures.

4. All RHR loops may be removed from operation during planned heatup to MODE 4 or during the performance of SR 3.4.14.1 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable. 1 AND Required SG~~s~~ secondary side water level~~s~~ not within limits. 1	A.1 Initiate action to restore a second RHR loop to OPERABLE status.	Immediately
	OR	
	A.2 Initiate action to restore required SG secondary side water level~~s~~ to within limit~~s~~. 1	Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving a reduction of RCS boron concentration.	Immediately
	AND	
	B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	12 hours
SR 3.4.7.2	Verify SG secondary side water level is ≥ [17]% in required SG~~s~~ 30 narrow range 1 1 7	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.7 RCS Loops – MODE 5, Loops Filled

BASES

BACKGROUND

Approved TSTF-114

In MODE 5 with the RCS loops filled, the primary function of the reactor coolant is the removal of decay heat and transfer this heat either to the steam generator (SG) secondary side coolant or the component cooling water via the residual heat removal (RHR) heat exchangers. While the principal means for decay heat removal is via the RHR System, the SGs are specified as a backup means for redundancy. Even though the SGs cannot produce steam in this MODE, they are capable of being a heat sink due to their large contained volume of secondary water. As long as the SG secondary side water is at a lower temperature than the reactor coolant, heat transfer will occur. The rate of heat transfer is directly proportional to the temperature difference. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

via natural circulation (Ref. 1)

In MODE 5 with RCS loops filled, the reactor coolant is circulated by means of two RHR loops connected to the RCS, each loop containing an RHR heat exchanger, an RHR pump, and appropriate flow and temperature instrumentation for control, protection, and indication. One RHR pump circulates the water through the RCS at a sufficient rate to prevent boric acid stratification.

The number of loops in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR loop for decay heat removal and transport. The flow provided by one RHR loop is adequate for decay heat removal. The other intent of this 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 two SGs with secondary side water levels above [17]% to provide an alternate method for decay heat removal.

one SG 1

30 narrow range 7

1

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation.

RCS Loops – MODE 5 (Loops Filled) have been identified in the NRC Policy Statement as important contributors to risk reduction.

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 two SG~~s~~ with 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 meet single failure considerations. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is two SG~~s~~ with ~~their~~ its secondary side water level ~~s~~ ≥ [17]%. Should the operating RHR loop fail, the SG~~s~~ could be used to remove the decay heat via natural circulation (Ref. 1).

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 is the validation of rod drop times during cold conditions, both with and without flow. 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 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.

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

LCO (continued)

a. No operations are permitted that would dilute the RCS boron concentration, therefore maintaining the margin to criticality. Boron reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; 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.

2 5 → 4

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.

Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR.

1 → 50

Note 3 requires 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 ≤ [275] °F. This restriction is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

Note 4 also allows both RHR loops to be removed from operation when at least one RCS loop is in operation to allow for the performance of SR 3.4.14.1, RCS PIV leakage testing. This allowance is necessary based on the design of the Point Beach RHR System configuration, which requires the system to be removed from service to perform the required PIV leakage testing.

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.

via natural circulation (Ref. 1)

8

RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required. An OPERABLE SG can perform as a heat sink when it has an adequate water level and is OPERABLE in accordance with the Steam Generator Tube Surveillance Program.

Approved TSTF-114

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,

APPLICABILITY (continued)

or the secondary side water level of at least [two] SGs is required to be ≥ [17]%.

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

A.1 and A.2

If one RHR loop is inoperable and the required SG secondary side water level(s) < [17]%, redundancy for heat removal is lost. Action must be initiated immediately to restore a second RHR loop to OPERABLE status or to restore the required SG secondary side water level(s). 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.

B.1 and B.2

If no RHR loop is in operation, except during conditions permitted by Note 1, or if no loop is OPERABLE, all operations involving a reduction of RCS boron concentration 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. The immediate Completion Times reflect the importance of maintaining operation for heat removal.

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification every 12 hours that the required loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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 3.4.7.2

Verifying that at least two SGs are OPERABLE by ensuring their secondary side narrow range water level ~~is~~ 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 the loss of SG level.

SR 3.4.7.3

Verification that 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 RHR pump. If secondary side water level is ≥ [17]% in at least two SGs, this Surveillance is not needed. 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.

REFERENCES

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

No Significant Hazards Considerations - NUREG-1431 Section 3.04.07

13-Nov-99

NSHC Number	NSHC Text
A	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change involves reformatting and rewording of the current Technical Specifications. The reformatting and rewording process involves no technical changes to existing requirements. As such, this change is administrative in nature and does not impact initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The proposed change will not significantly reduce the margin of safety because it has no impact on any safety analysis assumptions. This change is administrative. As such, there is no technical change to the requirements and, therefore, there is no reduction in the margin of safety.

NSHC Number	NSHC Text
L.01	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. This change provides more flexibility in operation, by modifying the RHR requirements with reactor coolant temperature < 140 F. The CTS require both RHR loops to be operable. Proposed ITS requires either both RHR loops to be operable, or one operable RHR loop and one operable SG. This change is acceptable, because with either choice, redundant decay heat removal systems are operable and available for use. In MODE 5 with the RCS loops filled, the primary function of the reactor coolant is to remove decay heat and transfer this heat either to the steam generator (SG) secondary side coolant or the component cooling water via the residual heat removal (RHR) heat exchangers. Even though the SGs cannot produce steam in this MODE, they are capable of being a heat sink due to their large contained volume of secondary water. As long as the SG secondary side water is at a lower temperature than the reactor coolant, heat transfer will occur. The rate of heat transfer is directly proportional to the temperature difference. Forced circulation of the reactor coolant will be maintained and require rapid restoration if lost (in accordance with ITS required actions), to ensure reactor coolant mixing is in agreement with the assumptions for the boron dilution event. Therefore, this change does not involve an increase in the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, nor does it alter parameters governing normal plant operation. The proposed change does not introduce a new manner of operation or alter the method of normal plant operation. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created. 3. Does this change involve a significant reduction in a margin of safety? There are no margins of safety related to safety analyses that are dependent upon the proposed change. The requirements will continue to assure that limiting conditions for the RCS are properly maintained. Therefore, this change does not involve a reduction in a margin of safety.

NSHC Number	NSHC Text
L.02	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. This change results in adopting ITS LCO 3.4.7, Note 1. This Note permits the RHR pump of the loop in operation to not be in operation for up to 1 hour in any 8 hour period, to permit tests that are designed to validate various accident analyses values. This change is acceptable, because such an operation would be performed as part of a special test, and be controlled under close scrutiny by shift operating personnel. In addition, the allowances of the Note may only be used if no operations which could cause a reduction of RCS boron concentration are being performed and core outlet temperature is maintained at least 10 °F below saturation temperature. Industry operating experience has also shown that boron stratification is not a problem during this short period with no forced flow. Natural circulation provides adequate heat removal in this condition during the limited time period in the Note. Therefore, this change does not involve an increase in the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, nor does it alter parameters governing normal plant operation. The proposed change does not introduce a new mode of operation or alter the method of normal plant operation. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created. 3. Does this change involve a significant reduction in a margin of safety? There are no margins of safety related to safety analyses that are dependent upon the proposed change. The requirements will continue to assure that limiting conditions for the RCS are properly maintained. Therefore, this change does not involve a reduction in a margin of safety.

NSHC Number	NSHC Text
L.03	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. This change results in adopting ITS LCO 3.4.7, Note 4. This Note 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 also allows the RHR loops to be removed from service, when at least one RCS loop is in operation, to perform RCS PIV leakage testing. This is necessary, because the Point Beach RHR System configuration requires the RHR System to be removed from service to perform the PIV leakage test. This Note results in a relaxation of the CTS requirements by allowing an RCS loop to be in operation and replace the RCS circulation function provided by the RHR loops below 140 °F. This change is acceptable, because the CTS lower limit of 140 °F is an arbitrary number based on refueling operations. During refueling operations, the RCS loops may, or may not, be filled. ITS LCO 3.4.7 applies in MODE 5 with the RCS loops filled. Therefore, allowing the use of RCS loop(s) for decay heat removal below 140 °F is acceptable. Therefore, this change does not involve an increase in the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, nor does it alter parameters governing normal plant operation. The proposed change does not introduce a new mode of operation or alter the method of normal plant operation. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created. 3. Does this change involve a significant reduction in a margin of safety? There are no margins of safety related to safety analyses that are dependent upon the proposed change. The requirements will continue to assure that limiting conditions for the RCS are properly maintained. Therefore, this change does not involve a reduction in a margin of safety.

NSHC Number	NSHC Text
LA	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change relocates requirements from the Technical Specifications to the Bases, FSAR, or other plant controlled documents. The Bases and FSAR will be maintained using the provisions of 10 CFR 50.59. In addition to 10 CFR 50.59 provisions, the Technical Specifications Bases are subject to the change process in the Administrative Controls Chapter of the ITS. Plant procedures and other plant controlled documents are subject to controls imposed by plant administrative procedures, which endorse applicable regulations and standards. Changes to the Bases, FSAR, or other plant controlled documents will be evaluated in accordance with the requirements of the Bases Control Program in Chapter 5.0 of the ITS, 10 CFR 50.59, or plant administrative processes. Therefore, no increase in the probability or consequences of an accident previously evaluated will be allowed. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will not impose any different requirements and adequate control of the information will be maintained. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The proposed change will not reduce a margin of safety because it has no impact on any safety analysis assumptions. In addition, the requirements to be moved from the Technical Specifications to the Bases, FSAR, or other plant controlled documents are as they currently exist. Future changes to the requirements in the Bases, FSAR, or other plant controlled documents will be evaluated in accordance with the requirements of 10 CFR 50.59, the Bases Control Program in Chapter 5.0 of the ITS, or the applicable plant process and no reduction in a margin of safety will be allowed.

NSHC Number	NSHC Text
M	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change provides more restrictive requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter the assumptions relative to the 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. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change does impose different requirements. However, these changes are consistent with assumptions made in the safety analysis. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The imposition of more restrictive requirements either has no affect on or increases the margin of safety. Each change is providing additional restrictions to enhance plant safety. These changes are consistent with the safety analysis. Therefore, this change does not involve a reduction in a margin of safety.

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 shal l 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 one steam generator (SG) shall be ≥ 30% narrow range.

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

1. The RHR pump of the loop in operation may be not in operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

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

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

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR unless the secondary side water temperature of each SG is ≤ 50°F above each of the RCS cold leg temperatures.

4. All RHR loops may be removed from operation during planned heatup to MODE 4 or during the performance of SR 3.4.14.1 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR loop inoperable. AND Required SG secondary side water level not within limits.	A.1	Initiate action to restore a second RHR loop to OPERABLE status.	Immediately
	OR		
	A.2	Initiate action to restore required SG secondary side water level to within limit.	Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1	Suspend all operations involving a reduction of RCS boron concentration.	Immediately
	AND		
	B.2	Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	12 hours
SR 3.4.7.2	Verify SG secondary side water level is ≥ 30% narrow range in required SG.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.7 RCS Loops – MODE 5, Loops Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops filled, the primary function of the reactor coolant is the removal of decay heat and transfer this heat either to the steam generator (SG) secondary side coolant via natural circulation (Ref. 1) or the component cooling water via the residual heat removal (RHR) heat exchangers. While the principal means for decay heat removal is via the RHR System, the SGs via natural circulation (Ref. 1) are specified as a backup means for redundancy. Even though the SGs cannot produce steam in this MODE, they are capable of being a heat sink due to their large contained volume of secondary water. As long as the SG secondary side water is at a lower temperature than the reactor coolant, heat transfer will occur. The rate of heat transfer is directly proportional to the temperature difference. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

In MODE 5 with RCS loops filled, the reactor coolant is circulated by means of two RHR loops connected to the RCS, each loop containing an RHR heat exchanger, an RHR pump, and appropriate flow and temperature instrumentation for control, protection, and indication. One RHR pump circulates the water through the RCS at a sufficient rate to prevent boric acid stratification.

The number of loops in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR loop for decay heat removal and transport. The flow provided by one RHR loop is adequate for decay heat removal. The other intent of this 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 one SG with secondary side water levels above 30% narrow range to provide an alternate method for decay heat removal.

BASES

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation.

RCS Loops – MODE 5 (Loops Filled) have been identified in the NRC Policy Statement as important contributors to risk reduction.

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 one SG with secondary side water level ≥ 30% narrow range. 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 meet single failure considerations. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is one SG with its secondary side water level ≥ 30% narrow range. Should the operating RHR loop fail, the SG could be used to remove the decay heat via natural circulation (Ref. 1).

Note 1 permits all RHR pumps to be not in operation ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests designed to validate various accident analyses values. The Note permits stopping 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.

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

a. No operations are permitted that would dilute the RCS boron concentration, therefore maintaining the margin to criticality. Boron reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; and

BASES

LCO (continued)

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 4 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 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 ≤ Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR. This restriction is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

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. Note 4 also allows both RHR loops to be removed from operation when at least one RCS loop is in operation to allow for the performance of SR 3.4.14.1, RCS PIV leakage testing. This allowance is necessary based on the design of the Point Beach RHR System configuration, which requires the system to be removed from service to perform the required PIV testing.

RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required. An OPERABLE SG can perform as a heat sink via natural circulation (Ref. 1) when it has an adequate water level and is OPERABLE in accordance with the Steam Generator Tube Surveillance Program.

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.

BASES

APPLICABILITY (continued)

However, one additional RHR loop is required to be OPERABLE, or the secondary side water level of at least one SGs is required to be ≥ 30% narrow range.

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 3.9.4, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A.1 and A.2

If one RHR loop is inoperable and the required SG has secondary side water level < 30% narrow range, redundancy for heat removal is lost. Action must be initiated immediately to restore a second RHR loop to OPERABLE status or to restore the required SG secondary side water level. 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.

B.1 and B.2

If no RHR loop is in operation, except during conditions permitted by Note 1, or if no loop is OPERABLE, all operations involving a reduction of RCS boron concentration 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. The immediate Completion Times reflect the importance of maintaining operation for heat removal.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification every 12 hours that the required loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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 3.4.7.2

Verifying that at least one SG is OPERABLE by ensuring its secondary side narrow range water level is ≥ 30% narrow range ensures an alternate decay heat removal method via natural circulation (Ref. 1) 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 the loss of SG level.

SR 3.4.7.3

Verification that 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 RHR pump. If secondary side water level is ≥ 30% narrow range in at least two SGs, this Surveillance is not needed. 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.

REFERENCES

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

Cross-Reference Report - NUREG-1431 Section 3.04.08

ITS to CTS

13-Nov-99

ITS	CTS	DOC
LCO 3.04.08	15.03.01.A.03.B	M.01
	15.03.01.A.03.B.01	A.04
LCO 3.04.08 COND A	NEW	M.03
LCO 3.04.08 COND A RA A.1	NEW	M.03
LCO 3.04.08 COND B	15.03.01.A.03.B.02	A.05
LCO 3.04.08 COND B RA B.1	15.03.01.A.03.B.02	A.01
LCO 3.04.08 COND B RA B.2	15.03.01.A.03.B.02	A.01
LCO 3.04.08 NOTE 1	NEW	L.01
LCO 3.04.08 NOTE 1.A	NEW	L.01
LCO 3.04.08 NOTE 1.B	NEW	L.01
LCO 3.04.08 NOTE 1.C	NEW	L.01
LCO 3.04.08 NOTE 2	15.03.01.A.03.B.04	M.02
SR 3.04.08.01	NEW	M.04
SR 3.04.08.02	NEW	M.04

Cross-Reference Report - NUREG-1431 Section 3.04.08

CTS to ITS

13-Nov-99

CTS	ITS	DOC
15.03.01.A.01 *	N/A	A.02
15.03.01.A.01.C	N/A	A.03
15.03.01.A.03.B	LCO 3.04.08	M.01
15.03.01.A.03.B.01	LCO 3.04.08	A.04
15.03.01.A.03.B.02	LCO 3.04.08 COND B	A.05
	LCO 3.04.08 COND B RA B.1	A.01
	LCO 3.04.08 COND B RA B.2	A.01
15.03.01.A.03.B.04	LCO 3.04.08 NOTE 2	M.02

Description of Changes - NUREG-1431 Section 3.04.08

13-Nov-99

DOC Number	DOC Text
A.01	In the conversion of Point Beach current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the Standard Technical Specifications, Westinghouse Plants, NUREG-1431, Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)). **CTS:** 15.03.01.A.03.B.02 **ITS:** LCO 3.04.08 COND B RA B.1 LCO 3.04.08 COND B RA B.2
A.02	CTS 15.3.1.A.1 is modified by Note *. This Note states, "Applicable only when one or more fuel assemblies are in the reactor vessel." Proposed ITS LCO 3.4.8 is applicable in MODE 5 with RCS loops not filled. ITS section 1.1, Definitions, states "A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel." As specified in CTS 15.3.1.A.1 Note *, ITS 3.4.8 applies with fuel in the reactor vessel. Therefore, this change is administrative. **CTS:** 15.03.01.A.01 * **ITS:** N/A
A.03	CTS 15.3.1.A.1.c requires at least one reactor coolant pump or residual heat removal system be in operation when a reduction is made in the boron concentration of the reactor coolant. This requirement is retained in ITS 3.4.8, Note 1, which specifies all RHR pumps may not be in operation for less than or equal to 15 minutes when switching from one loop to another, provided no operations are permitted that would cause a reduction of the RCS boron concentration. Additionally, ITS LCO 3.4.8, Condition B requires the immediate suspension all operations involving a reduction of RCS boron concentration, if the required RHR loops are inoperable or no RHR loop is in operation. Therefore, this CTS requirement is retained in ITS and this change is administrative. **CTS:** 15.03.01.A.01.C **ITS:** N/A

Description of Changes - NUREG-1431 Section 3.04.08

13-Nov-99

DOC Number	DOC Text	
A.04	CTS 15.3.1.A.3.b(1) requires both RHR loops be operable with reactor coolant temperature less than 140 F. Proposed ITS 3.4.8 requires, in addition to two operable RHR loops, one RHR loop in operation. The CTS does not specifically require a RHR loop to be in operation. However, in the event no RHR loops are in operation, CTS 15.3.1.A.3.b(2) requires action be taken to return a decay heat removal method to operation. This implies that at least one RHR loop must be in operation with reactor coolant temperature < 140F. Therefore, specifically stating one RHR loop is required to be in operation is an administrative change.	
	CTS:	**ITS:**
	15.03.01.A.03.B.01	LCO 3.04.08
A.05	CTS 15.3.1.A.3.b(1) requires both RHR loops be operable. CTS 15.3.1.A.3.b(2) provides actions in the event no RHR loop is in operation. ITS LCO 3.4.8 provides required actions in the event no RHR loop is in operation or if no RHR loop is operable. Implicit in the actions required by CTS 15.3.1.A.3.b(2) is the assumption that when no RHR loop can be placed in operation, both RHR loops are inoperable. Therefore, modifying the specification to specifically address the condition whereby no RHR loop is operable, is an administrative change.	
	CTS:	**ITS:**
	15.03.01.A.03.B.02	LCO 3.04.08 COND B
L.01	The CTS is revised by adopting ITS LCO 3.4.8, Note 1. This Note permits all RHR pumps to not be in operation for up to 15 minutes when switching from one loop to another, to permit tests that are designed to validate various accident analyses values. The allowance for no RHR pump to be in operation is a relaxation of requirements, and is less restrictive. This change is acceptable, however, because such an operation would be performed as part of a special test, and be controlled under close scrutiny by shift operating personnel. In addition, the allowances of the Note may only be used if no operations which could cause a reduction of RCS boron concentration are being performed, core outlet temperature is maintained at least 10 F below saturation temperature, and no draining operations to further reduce the RCS water volume are permitted. Industry operating experience has also shown that boron stratification is not a problem during this short period with no forced flow. Natural circulation provides adequate heat removal in this condition during the limited time period in the Note.	
	CTS:	**ITS:**
	NEW	LCO 3.04.08 NOTE 1 LCO 3.04.08 NOTE 1.A LCO 3.04.08 NOTE 1.B LCO 3.04.08 NOTE 1.C

Description of Changes - NUREG-1431 Section 3.04.08

13-Nov-99

DOC Number	DOC Text
M.01	CTS 15.3.1.A.3.b provides decay heat removal requirements for conditions where reactor coolant temperature is < 140 F. The requirements of this specification with the reactor vessel head less than fully tensioned, are addressed in ITS LCO 3.9.4 and 3.9.5. Proposed ITS LCO 3.4.7 and 3.4.8 address the decay heat removal requirements in MODE 5, with LCO 3.4.7 addressing the condition with the RCS loops filled and LCO 3.4.8 addressing the condition with RCS loops not filled. The ITS definition of MODE 5 includes the conditions whereby Tavg is less than or equal to 200 F. Therefore the proposed revision changes the applicability of the RHR requirements from less than 140 F to less than or equal to 200 F. The 140 F limit is based on the CTS definition of refueling shutdown and is an artificial limit not related to any physical system limitation or condition. While the lower temperature provided some additional subcooling margin in the event of a temporary loss of shutdown cooling, the Technical Specifications ensure appropriate redundancy of shutdown cooling such that the potential for a loss of cooling is minimized. Raising the temperature limit to 200 F does not increase the probability of a loss of cooling. The RHR System is designed, operated and maintained to ensure operability under these temperature conditions. **CTS:** 15.03.01.A.03.B **ITS:** LCO 3.04.08
M.02	The CTS 15.3.1.A.3.b(4) allows one of the two RHR loops to be temporarily out of service to meet surveillance requirements. Proposed ITS LCO 3.4.8, Note 2, allows one required RHR pump to be inoperable for a period of up to 2 hours for surveillance testing, provided that the other RHR loop is operable and in operation. Changing "temporarily" out of service to inoperable for "up to 2 hours", places additional requirements on plant operation and is more restrictive. Two hours is a reasonable time to conduct surveillances including those required by ASME Section XI and the Technical Specifications, without unnecessarily challenging decay heat removal. Note 2 also ensures that a residual heat removal loop is in operation as required by the existing Specifications and ITS LCO 3.4.8. **CTS:** 15.03.01.A.03.B.04 **ITS:** LCO 3.04.08 NOTE 2
M.03	CTS 15.3.1.A.3.b is revised to adopt the actions associated with ITS LCO 3.4.8 Condition A. If one RHR train is inoperable, redundancy for heat removal is lost. Action A.1 requires actions be initiated immediately to restore an RHR loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal. This change imposes additional requirements on plant operation and, therefore, is more restrictive. **CTS:** NEW **ITS:** LCO 3.04.08 COND A LCO 3.04.08 COND A RA A.1

DOC Number	DOC Text
M.04	The CTS is revised to adopt ITS SR 3.4.8.1 and SR 3.4.8.2, to require that decay heat removal capability be available in MODE 5. SR 3.4.8.1 requires verification every 12 hours that the required RHR loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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 requires verification that 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 RHR pump. 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. Since this change imposes new requirements, it is more restrictive and has no adverse impact on safety.

CTS:	ITS:
NEW	SR 3.04.08.01
	SR 3.04.08.02

15.3 LIMITING CONDITIONS FOR OPERATION

15.3.1 REACTOR COOLANT SYSTEM

Applicability

Applies to the operating status of the Reactor Coolant System.

Objective

To specify those limiting conditions for operation of the Reactor Coolant System which must be met to ensure safe reactor operation.

Specification

A. OPERATIONAL COMPONENTS

1. Coolant Pumps* A.2 < See LCO 3.4.4 >
   a. When the reactor is critical, both reactor coolant pumps shall be in operation.
      (1) If one or both reactor coolant pump(s) cease operating, the reactor shall be placed in hot shutdown within 6 hours.
   b. When the reactor is subcritical and the average reactor coolant temperature is greater than 350°F, except for tests, at least one reactor coolant pump shall be in operation.
      (1) Both reactor coolant pumps may be deenergized provided:
         a. No operations are permitted that would cause dilution of the reactor coolant system boron concentration,
         b. Core outlet temperature is maintained at least 10°F below saturation temperature, and < See LCO 3.4.5 >
         c. The reactor trip breakers are open.
   c. At least one reactor coolant pump or residual heat removal system shall be in operation when a reduction is made in the boron concentration of the reactor coolant. A.3

2. Steam Generator*
   a. One steam generator shall be operable whenever the average reactor coolant temperature is above 350°F. < See LCO 3.4.5 >

3. Components Required for Redundant Decay Heat Removal Capability*
   a. Reactor coolant temperature less than 350°F and greater than 140°F.
      (1) At least two of the decay heat removal methods listed shall be operable.
         (a) Reactor Coolant Loop A, its associated steam generator and either reactor coolant pump
         (b) Reactor Coolant Loop B, its associated steam generator and either reactor coolant pump < See LCO 3.4.6 >

~~* Applicable only when one or more fuel assemblies are in the reactor vessel.~~ A.2

A.1

< See LCO 3.4.6 >

(c) Residual Heat Removal Loop (A)*
(d) Residual Heat Removal Loop (B)*

(2) If the conditions of specification (1) above cannot be met, corrective action to return a second decay heat removal method to operable status as soon as possible shall be initiated immediately.

(3) If no decay heat removal method is in operation, except as permitted by (4) below, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately .

(4) At least one of the above decay heat removal methods shall be in operation.

(a) All reactor coolant pumps and residual heat removal pumps may be deenergized for up to 1 hour in any 8 hour period provided:

(1) No operations are permitted that would cause dilution of reactor coolant system boron concentration, and

(2) Core outlet temperature is maintained at least 10°F below saturation temperature.

M.1 L.1 A.4

Replace with LCO 3.4.8. See Insert 3.4.8-1.

b. Reactor Coolant Temperature Less Than 140°F

(1) Both residual heat removal loops shall be operable except as permitted in items (3) or (4) below.

< See LCO 3.9.5 >

(2) If no residual heat removal loop is in operation, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately.

< See LCO 3.9.5 >

Replace with Condition B. See Insert 3.4.8-2.

A.5

(3) One residual heat removal loop may be out of service when the reactor vessel head is removed and the refueling cavity flooded.

< See LCO 3.9.5 >

(4) One of the two residual heat removal loops may be temporarily out of service to meet surveillance requirements.

Replace with LCO 3.4.8 Note 2. See Insert 3.4.8-1.

M.2

4. Pressurizer Safety Valves

a. At least one pressurizer safety valve shall be operable whenever the reactor head is on the vessel.

b. Both pressurizer safety valves shall be operable whenever the reactor is critical.

< See LCO 3.4.10 >

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* Mechanical design provisions of the residual heat removal system afford the necessary flexibility to allow an operable residual heat removal loop to consist of the RHR pump from one loop coupled with the RHR heat exchanger from the other loop. Electrical design provisions of the residual heat removal system afford the necessary flexibility to allow the normal or emergency power source to be inoperable or tied together when the reactor coolant temperature is less than 200°F.

< See LCO 3.4.6 >

Add NOTE 1. See Insert 3.4.8-1. L.1

Add Condition A. See Insert 3.4.8-2. M.3

Add SR 3.4.8.1 & SR 3.4.8.2. See Insert 3.4.8-3. M.4

Section 3.4.8 CTS Markup Inserts

Insert 3.4.8-1:

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation. (A.4)

NOTES

(L.1)

1. All RHR pumps may be not in operation for ≤ 15 minutes when switching from one loop to another provided:

   a. The core outlet temperature is maintained > 10 °F below saturation temperature.

   b. No operations are permitted that would cause a reduction of the RCS boron concentration; and

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

(M.2)

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. (M.1)

Insert 3.4.8-2:

CONDITION	REQUIRED ACTION	COMPLETION TIME
(M.3) A. One RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately
(A.5) B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

Insert 3.4.8-3:

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	12 hours
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

M-4

Justification For Deviations - NUREG-1431 Section 3.04.08

13-Nov-99

JFD Number	JFD Text	
01	The wording of LCO 3.4.8, Note 1, and associated Bases was changed from "...may be de-energized..." to "...may not be in operation...", per approved TSTF 153. However, "...may not be in operation..." could easily be interpreted to imply a condition that forbids RCP operation. To prevent this misunderstanding, the wording has been changed to, "...may be not in operation..."	
	ITS:	**NUREG:**
	B 3.04.08	B 3.04.08
	LCO 3.04.08 NOTE 1	LCO 3.04.08 NOTE 1
02	The brackets have been removed and the proper plant specific information has been provided.	
	ITS:	**NUREG:**
	B 3.04.08	B 3.04.08
	LCO 3.04.08 NOTE 1.A	LCO 3.04.08 NOTE 1.A
03	LCO 3.9.2 "Unborated Water Source Isolation Valves" was not adopted, based on the Point Beach design. Accordingly, the references to LCO 3.9.5 and 6 within the Bases for LCO 3.4.8 have been revised to reflect the renumbering that has occurred in Section 3.9 of the ITS.	
	ITS:	**NUREG:**
	B 3.04.08	B 3.04.08

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.

1 be not in operation → not be in operation ← Approved TSTF 153

---NOTES---

1. All RHR pumps may be de-energized for ≤ 15 minutes when switching from one loop to another provided:

   2 → a. The core outlet temperature is maintained > 10°F below saturation temperature. ← 2

   b. No operations are permitted that would cause a reduction of the RCS boron concentration; 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 RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	12 hours
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.8 RCS Loops – MODE 5, Loops Not Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops not filled, the primary function of the reactor coolant is the removal of decay heat generated in the fuel, and the transfer of this heat to the component cooling water via the residual heat removal (RHR) heat exchangers. The steam generators (SGs) are not available as a heat sink when the loops are not filled. The secondary function of the reactor coolant is to act as a carrier for the soluble neutron poison, boric acid.

In MODE 5 with loops not filled, only RHR pumps can be used for coolant circulation. The number of pumps in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR pump for decay heat removal and transport and to require that two paths be available to provide redundancy for heat removal.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation. The flow provided by one RHR loop is adequate for heat removal and for boron mixing.

RCS loops in MODE 5 (loops not filled) have been identified in the NRC Policy Statement as important contributors to risk reduction.

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. 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 running RHR pump meets the LCO requirement for one loop in operation. An additional RHR loop is required to be OPERABLE to meet single failure considerations.

Approved TSTF 153

BASES

LCO (continued)

1 be not in operation not be in operation

Note 1 permits all RHR pumps to be de -energized for ≤ 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 or draining operations when RHR forced flow is stopped.

2 2

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.

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).

3 4 5

ACTIONS

A.1

If only one RHR loop is 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.

BASES

ACTIONS (continued)

B.1 and B.2

If no required RHR loops are OPERABLE or in operation, except during conditions permitted by Note 1, all operations involving a reduction of RCS boron concentration 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 the margin to criticality must not be reduced in this type of operation. 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.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification every 12 hours that one loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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 the required number of pumps are OPERABLE ensures that additional pumps 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 required pumps. 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.

REFERENCES

None.

No Significant Hazards Considerations - NUREG-1431 Section 3.04.08

13-Nov-99

NSHC Number	NSHC Text
A	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change involves reformatting and rewording of the current Technical Specifications. The reformatting and rewording process involves no technical changes to existing requirements. As such, this change is administrative in nature and does not impact initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The proposed change will not significantly reduce the margin of safety because it has no impact on any safety analysis assumptions. This change is administrative. As such, there is no technical change to the requirements and, therefore, there is no reduction in the margin of safety.

NSHC Number	NSHC Text
L.01	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. This change results in adopting ITS LCO 3.4.8, Note 1. This Note permits all RHR pumps to not be in operation for up to 15 minutes when switching from loop to another, to permit tests that are designed to validate various accident analyses values. This change is acceptable, because such an operation would be performed as part of a special test, and be controlled under close scrutiny by shift operating personnel. In addition, the allowances of the Note may only be used if no operations which could cause a reduction of RCS boron concentration are being performed, core outlet temperature is maintained at least 10 F below saturation temperature, and no draining operations to further reduce the RCS water volume are permitted. Industry operating experience has also shown that boron stratification is not a problem during this short period with no forced flow. Natural circulation provides adequate heat removal in this condition during the limited time period in the Note. Therefore, this change does not involve an increase in the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, nor does it alter parameters governing normal plant operation. The proposed change does not introduce a new mode of operation or alter the method of normal plant operation. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created. 3. Does this change involve a significant reduction in a margin of safety? There are no margins of safety related to safety analyses that are dependent upon the proposed change. The requirements will continue to assure that limiting conditions for the RCS are properly maintained. Therefore, this change does not involve a reduction in a margin of safety.

No Significant Hazards Considerations - NUREG-1431 Section 3.04.08

13-Nov-99

NSHC Number	NSHC Text
M	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change provides more restrictive requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter the assumptions relative to the 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. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change does impose different requirements. However, these changes are consistent with assumptions made in the safety analysis. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The imposition of more restrictive requirements either has no affect on or increases the margin of safety. Each change is providing additional restrictions to enhance plant safety. These changes are consistent with the safety analysis. Therefore, this change does not involve a reduction in a margin of safety.

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 not in operation for ≤ 15 minutes when switching from one loop to another provided:

   a. The core outlet temperature is maintained > 10 °F below saturation temperature.

   b. No operations are permitted that would cause a reduction of the RCS boron concentration: 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 RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	12 hours
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.8 RCS Loops – MODE 5, Loops Not Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops not filled, the primary function of the reactor coolant is the removal of decay heat generated in the fuel, and the transfer of this heat to the component cooling water via the residual heat removal (RHR) heat exchangers. The steam generators (SGs) are not available as a heat sink when the loops are not filled. The secondary function of the reactor coolant is to act as a carrier for the soluble neutron poison, boric acid.

In MODE 5 with loops not filled, only RHR pumps can b e used for coolant circulation. The number of pumps in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR pump for decay heat removal and transport and to require that two paths be available to provide redundancy for heat removal.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation. The flow provided by one RHR loop is adequate for heat removal and for boron mixing.

RCS loops in MODE 5 (loops not filled) have been identified in the NRC Policy Statement as important contributors to risk reduction.

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. 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 running RHR pump meets the LCO requirement for one loop in operation. An additional RHR loop is required to be OPERABLE to meet single failure considerations.

BASES

LCO (continued)

Note 1 permits all RHR pumps to be not in operation for ≤ 15 minutes when switching from one loop to anot her. 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 or draining operations when RHR forced flow is stopped.

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.

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 3.9.4, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A.1

If only one RHR loop is 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.

BASES

ACTIONS (continued)

B.1 and B.2

If no required RHR loops are OPERABLE or in operation, except during conditions permitted by Note 1, all operations involving a reduction of RCS boron concentration 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 the margin to criticality must not be reduced in this type of operation. 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.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification every 12 hours that one loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help 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 the required number of pumps are OPERABLE ensures that additional pumps 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 required pumps. 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.

REFERENCES

None.

Cross-Reference Report - NUREG-1431 Section 3.04.09

ITS to CTS

13-Nov-99

ITS	CTS	DOC
B 3.04.09	BASES	A.04
LCO 3.04.09	15.03.01.A.06	M.02
	15.03.01.A.06	M.01
	15.03.01.A.06	L.01
	15.03.01.A.06	A.01
	15.03.01.F.05	M.02
LCO 3.04.09 COND A	NEW	M.03
LCO 3.04.09 COND A RA A.1	NEW	M.03
LCO 3.04.09 COND B	NEW	A.02
LCO 3.04.09 COND B RA B.1	NEW	A.02
LCO 3.04.09 COND C	NEW	A.02
LCO 3.04.09 COND C RA C.1	NEW	A.02
LCO 3.04.09 COND C RA C.2	NEW	A.02
SR 3.04.09.01	NEW	M.04
SR 3.04.09.02	15.04.01 T 15.04.01-02 30	A.03

Cross-Reference Report - NUREG-1431 Section 3.04.09

CTS to ITS

13-Nov-99

CTS	ITS	DOC
15.03.01.A.06	LCO 3.04.09	M.02
	LCO 3.04.09	M.01
	LCO 3.04.09	L.01
	LCO 3.04.09	A.01
15.03.01.F.05	LCO 3.04.09	M.02
15.04.01 T 15.04.01-02 30	SR 3.04.09.02	A.03
BASES	B 3.04.09	A.04

Description of Changes - NUREG-1431 Section 3.04.09

13-Nov-99

DOC Number	DOC Text

A.01

In the conversion of Point Beach current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the Standard Technical Specifications, Westinghouse Plants, NUREG-1431, Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

CTS:	ITS:
15.03.01.A.06	LCO 3.04.09

A.02

CTS 15.3.1.A.6 is revised to adopt proposed ITS 3.4.9, Actions B and C. The CTS does not provide explicit actions for non-compliance with the LCO. As a result, CTS 15.3.0.B applies, which requires the plant be placed in Hot Shutdown in 7 hours and Cold Shutdown in 37 hours. Per CTS 15.3.0.C, once the plant exits the applicability of TS 15.3.1.A.6 (critical operation), the required actions do not need to be completed. Therefore, the plant is required to be in Hot Shutdown within 7 hours. Proposed ITS 3.4.9, Action B, requires the restoration of the required pressurizer heaters to an operable status in 1 hour. If the pressurizer heaters cannot be restored to an operable status in one hour, Condition C requires the plant to be in MODE 3 in 6 hours and MODE 4 in 12 hours. This takes the unit out of the applicable MODES and restores the unit to operation within the bounds of the safety analyses.

Although these required actions appear more restrictive, they are the same as the CTS 15.3.0 required actions. Requiring the operability of the pressurizer in MODE 3 is a new requirement to Point Beach's technical specifications and is discussed in LCO 3.4.9 DOC M.2. Therefore, this change is administrative.

CTS:	ITS:
NEW	LCO 3.04.09 COND B
	LCO 3.04.09 COND B RA B.1
	LCO 3.04.09 COND C
	LCO 3.04.09 COND C RA C.1
	LCO 3.04.09 COND C RA C.2

A.03

CTS 15.4.1, Table 15.4.1-2, Item 30, requires a quarterly verification that 100 KW of pressurizer heaters are available. ITS SR 3.4.9.2 requires verification every 92 days that the capacity of the required pressurizer heaters is greater than or equal to 100 KW. Both surveillance requirements accomplish the same objective at virtually the same frequency. Therefore, this change is administrative.

CTS:	ITS:
15.04.01 T 15.04.01-02 30	SR 3.04.09.02

Description of Changes - NUREG-1431 Section 3.04.09

13-Nov-99

DOC Number	DOC Text
A.04	The Bases of the current Technical Specifications for this section have been completely replaced by revised Bases that reflect the format and applicable content of PBNP ITS Chapter 3.4, consistent with the Standard Technical Specifications for Westinghouse Plants, NUREG-1431. The revised Bases are as shown in the PBNP ITS Bases. **CTS:** BASES **ITS:** B 3.04.09
L.01	CTS 15.3.1.A.6 requires the pressurizer to be operable with a water level of greater than 10%. Specifying a minimum pressurizer water level is not being retained in ITS. Minimum water level is not required to preserve accident analysis assumptions. Proposed ITS 3.4.9 requires the pressurizer to be operable. The surveillance requirements associated with LCO 3.4.9 define the operability requirements of the pressurizer. More specifically, SR 3.4.9.1 requires verifying the pressurizer water level is less than or equal to 50.8% in MODE 1 and less than or equal to 95% in MODES 2 and 3. SR 3.4.9.2 requires verifying the capacity of the pressurizer heaters is greater than or equal to 100 KW. In order for the capacity of the required pressurizer heaters to be greater than or equal to 100 KW, the pressurizer water level must be above the pressurizer heater cutout setpoint. Therefore, pressurizer heater operability is dependent on adequate pressurizer water level. The actions of LCO 3.4.9, Condition B, would be required if the heaters become uncovered. Although this change is less restrictive, it is acceptable. The proposed actions of ITS LCO 3.4.9 are the same as the CTS 15.3.0.B actions, when the pressurizer heaters become uncovered. **CTS:** 15.03.01.A.06 **ITS:** LCO 3.04.09
M.01	CTS 15.3.1.A.6 requires the pressurizer to be operable with at least 100 KW of pressurizer heaters available. Additionally, at least one bank of pressurizer heaters is required to be supplied by an emergency bus power supply. Proposed ITS 3.4.9 requires the pressurizer heaters to be operable with a capacity of greater than or equal to 100 KW. As stated in the Bases of proposed ITS 3.4.9, the required heaters are those that are powered from a safeguards bus. CTS 15.3.1.A.6 does not place a requirement on the capacity of the pressurizer heaters powered from an emergency bus; therefore, the capacity of the pressurizer heaters supplied from the emergency bus could be less than 100 KW. Requiring the pressurizer heaters to be capable of being powered from an emergency power supply ensures the availability of the heaters to maintain reactor coolant system pressure. The capability to maintain and control system pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove decay core heat by either forced or natural circulation of reactor coolant. Since this change imposes additional requirements on plant operation, it is more restrictive. **CTS:** 15.03.01.A.06 **ITS:** LCO 3.04.09

Description of Changes - NUREG-1431 Section 3.04.09

13-Nov-99

DOC Number	DOC Text
M.02	CTS 15.3.1.A.6 requires the pressurizer water level be maintained less than 95% during steady-state power operation. CTS 15.3.1.F.5 requires the reactor be maintained subcritical by at least 1% dk/k until normal water level is established in the pressurizer. Proposed ITS 3.4.9 requires the pressurizer be operable in MODES 1, 2 and 3. The associated surveillance requirements of LCO 3.4.9 define the operability requirements of the pressurizer. SR 3.4.9.1 requires a verification that the pressurizer water level is less than or equal to 50.8% in MODE 1 and less than or equal to 95% in MODES 2 and 3. The more restrictive requirement in MODE 1 is necessary to be consistent with the initial condition assumptions used in the accident analysis for a loss of normal feedwater. The results of the accident analysis show that there is a high probability that the pressurizer would become water solid, in the event that the accident assumed an initial pressurizer water level of 95%. The addition of MODE 3 to the applicability is made to prevent solid water RCS operation during heatup and cooldown, to avoid rapid pressure rises caused by normal operational perturbation, such as RCP startup. **CTS:** 15.03.01.A.06, 15.03.01.F.05 **ITS:** LCO 3.04.09, LCO 3.04.09
M.03	CTS 15.3.1.A.6 is revised to adopt proposed ITS 3.4.9, Action A. ITS 3.4.9, Action A, requires the restoration of the pressurizer water level within 6 hours, when pressurizer water level is not within the MODE 1 limit. Due to the availability of pressurizer water level indications in the control room, and alarms in the control room when pressurizer water level is above the programmed band, it is unlikely that exceeding MODE 1 pressurizer water level limit would result in an immediate threat of taking the pressurizer water solid. Therefore, allowing 6 hours to restore the pressurizer water level to within the initial condition assumptions of the loss of normal feedwater accident analyses is reasonable based on the probability of this accident occurring during this period of time. Since this change imposes additional requirements on plant operation, it is more restrictive. **CTS:** NEW **ITS:** LCO 3.04.09 COND A, LCO 3.04.09 COND A RA A.1
M.04	CTS 15.3.1.A.6 is revised to adopt SR 3.4.9.1. SR 3.4.9.1 requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The Frequency of 12 hours has been shown by operating practice to be sufficient to regularly assess level for any deviation and verify that operation is within safety analyses assumptions. Alarms are also available for early detection of abnormal level indications. Since this change imposes new requirements on plant operation, it is more restrictive. **CTS:** NEW **ITS:** SR 3.04.09.01

A.1

(5) If both block valves are inoperable, restore the block valves to OPERABLE status within one hour or place the associated PORVs in manual control. Restore at least one block valve to OPERABLE status within the next hour. If these conditions cannot be met, then place the unit in a HOT SHUTDOWN condition within the next six hours. < See LCO 3.4.11 >

M.1 L.1 M.2

6. The pressurizer shall be operable with at least 100 KW of pressurizer heaters available and a water level greater than 10% and less than 95% during steady-state power operation. At least one bank of pressurizer heaters shall be supplied by an emergency bus power supply.

M.1

M.3 Add Action A. See Insert 3.4.9-1. Add Actions B and C. See Insert 3.4.9-1 A.2

7. Reactor Coolant Gas Vent System < See LCO 3.4.4 >

These Specifications are not applicable during cold or refueling shut-down conditions:

a. At least one Reactor Coolant Gas Vent System vent path to the pressurizer relief tank (PRT) or containment atmosphere shall be operable from each of the following locations:
   (1) Reactor vessel head
   (2) Pressurizer

   Each vent path from these locations to the common header includes two closed valves in parallel powered from emergency buses. The common header vents to the PRT and the containment atmosphere each contain a closed valve powered from an emergency bus which provides series isolation.

b. When unable to vent from the common header to the PRT or the containment atmosphere, reactor startup and/or power operations may continue provided that the series isolation valve in the inoperable vent path is maintained closed with power removed from the valve actuator.

c. If a vent path from the reactor vessel head or the pressurizer to the common header becomes inoperable, reactor startup and/or power operations may continue provided that the paralleled isolation valves in the inoperable vent path from that location to the common header are maintained closed with power removed from the valve actuator. This does not necessitate removing power from the PRT or

F. MINIMUM CONDITIONS FOR CRITICALITY

<See LCO 3.1.4 >

Specification :

1. Except during low-power physics tests, the reactor shall not be made critical when the moderator temperature coefficient is more positive than 5 pcm/°F.

2. Reactor power shall not exceed 70 percent of Rated Power if the moderator temperature coefficient is positive.

3. During an approach to criticality, at least one (1) count per second, attributable to neutrons, shall register on a narrow range source range nuclear instrument. <See LCO 3.3.1 >

< See LCO 3.4.2 >

4. In no case shall the reactor be made critical (other than for the purpose of low level physics tests) to the left of the reactor core criticality curve presented in Figure 15.3.1-1.

5. The reactor shall be maintained subcritical by at least 1% $\frac{\Delta k}{k}$ until normal water level is established in the pressurizer.

M.2

Basis:

During the early part of the fuel cycle, the moderator temperature coefficient is calculated to be slightly positive at coolant temperatures below 70 percent of rated thermal power.[1][2] The moderator coefficient at low temperatures will be most positive at the beginning of life of the fuel cycle, when the boron concentration in the coolant is the greatest. Later in the life of the fuel cycle, the boron concentrations in the coolant will be lower and the moderator coefficients will be either less positive or will be negative. At all times, the moderator coefficient is negative when ≥ 70 percent of rated thermal power. Suitable physics measurements of moderator coefficient of reactivity will be made as part of the startup program to verify analytic predictions. < See LCO 3.4.2 >

< See LCO 3.1.4 >

The limitations of the moderator temperature coefficient are provided to ensure that the assumptions used in the accident and transient analyses remain valid through each fuel cycle. This requirement is waived during low power physics tests to permit measurement of reactor moderator coefficient and other physics design parameters of interest. During physics tests, special operating precautions will be taken. In addition, the strong negative Doppler coefficient[3] and the small integrated Dk/k would limit the magnitude of a power excursion resulting from a reduction of moderator density.

Requiring that the source range instrumentation is registering a count rate attributable to neutrons of at least one (1) count per second insures that the source range instrumentation is functioning properly. A functional source range instrument permits the operator to monitor neutron flux levels and to observe the subcritical neutron multiplication during the positive reactivity addition of the reactor startup. < See LCO 3.3.1 >

The requirement that the reactor is not to be made critical below the Reactor Core Criticality Curve provides assurance that a proper relationship between reactor coolant pressure and temperature will be maintained during system heatup and pressurization. Heatup to this temperature will be accomplished by operating the reactor coolant pumps. However, as provided in 10 CFR Part 50, Appendix G, Section IV.A.3, the reactor core may be taken critical below this curve for the purpose of low-level physics tests. < See LCO 3.4.3 >

If the specified shutdown margin is maintained (Section 15.3.10), there is no possibility of an accidental criticality as a result of an increase of moderator temperature or a decrease of coolant pressure.[1] < See LCO 3.1.4 >

The requirement for bubble formation in the pressurizer when the reactor has passed the threshold of 1 percent subcriticality will assure that the reactor coolant system will not be solid when criticality is achieved.

A.4

References:

(1) FSAR Table 3.2.1-1
(2) FSAR Table 3.2.1-9
(3) FSAR Figure 3.2.1-10

< See LCO 3.1.4 >

TABLE 15.4.1-2 (Continued)

30.	Pressurizer Heaters	Verify that 100 KW of heaters are availabl e.	Quarterly
31.	CVCS Charging Pumps	Verify operability pumps.(17)	Quarterly
32.	Potential Dilution in Progress Alarm	Verify operability of alarm.	Prior to placing plant in cold shutdown.
33.	Core Power Distribution	Perform power distribution maps using movable incore detector system to confirm hot channel factors.	Monthly (20)
34.	Shutdown Margin	Perform shutdown margin calculation	Daily (21)

A.3

Add SR 3.4.9.1. See Insert 3.4.9-2.

M.4

< See LCO 3.5.2 >

< See LCO 3.3.9 >

< See LCOs 3.2.1 and 3.2.2 >

Associated Specification removed with Amendment 176/180.

< See Section 3.1 >

(1) Required only during periods of power operation. < See LCO 3.4.16 >

(2) Q determination will be started when the gross activity analysis of a filtered sample indicates ≥10μCi/cc and will be redetermined if the primary coolant gross radioactivity of a filtered sample increases by more than 10μCi/cc.

(3) Drop test shall be conducted at rated reactor coolant flow. Rods shall be dropped under both cold and hot condition, but cold drop tests need not be timed. < See LCO 3.1.5 >

(4) Drop tests will be conducted in the hot condition for rods on which maintenance was performed.

(5) As accessible without disassembly of rotor.

(6) Not required during periods of refueling shutdown. < See LCOs: 3.4.16, 3.5.4, 3.7.18, and 3.4.13 >

(7) At least once per week during periods of refueling shutdown.

(8) At least three times per week (with maximum time of 72 hours between samples) during periods of refueling shutdown. < See LCO 3.4.16 >

(9) Not required during periods of cold or refueling shutdown, but must be performed prior to exceeding 200°F if it has not been performed during the previous surveillance period. < See LCOs 3.3.1, 3.6.3 >

(10) Sample to be taken after a minimum of 2 EFPD and 20 days power operation since the reactor was last subcritical for 48 hours or longer. < See LCO 3.4.16 >

(11) An approximately equal number of valves shall be tested each refueling outage such that all valves will be tested within a five year period. If any valve fails its tests, an additional number of valves equal to the number originally tested shall be tested. If any of the additional tested valves fail, all remaining valves shall be tested.

(12) The specified buses shall be determined energized in the required manner at least once per shift by verifying correct static transfer switch alignment and indicated voltage on the buses. < See Section 3.8 >

(13) Not required if the block valve is shut to isolate a PORV that is inoperable for reasons other than excessive seat leakage. < See LCO 3.4.11 >

(14) Only applicable when the overpressure mitigation system is in service.

(15) Required to be performed only if conditions will be established, as defined in Specification 15.3.15, where the PORVs are used for low temperature overpressure protection. The test must be performed prior to establishing these conditions. < See LCO 3.4.12 >

< See LCOs 3.7.1, 3.4.10 >

Insert 3.4.9-1:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer water level not within limit in MODE 1.	A.1 Restore presurizer water level to within limit.	6 hours
B. Required pressurizer heaters inoperable.	B.1 Restore required pressurizer heaters to OPERABLE status.	1 hour
C. Required Action and associated Completion Time not met. OR Pressurizer water level not within limit in MODES 2 and 3.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours 12 hours

M.3

A.2

Insert 3.4.9-2:

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ 50.8% in MODE 1 OR ≤ 95% in MODES 2 and 3.	12 hours

M.4

Justification For Deviations - NUREG-1431 Section 3.04.09

13-Nov-99

JFD Number	JFD Text
01	The parameters associated with the operability of the pressurizer have been moved from the LCO to the surveillance requirements of ITS LCO 3.4.9. In accordance with SR 3.0.1, failure to meet a surveillance, whether such failure is experienced during the performance of the surveillance or between performances of the surveillance, shall be failure to meet the LCO. Therefore duplicating this information within the LCO is unnecessary. As a result of moving the parameters associated with the operability of the pressurizer to the surveillance requirements, TSTF-94 has not been incorporated.

ITS:	NUREG:
LCO 3.04.09	LCO 3.04.09
N/A	LCO 3.04.09 A
	LCO 3.04.09 B

JFD Number	JFD Text
02	LCO 3.4.9 Conditions A and C are revised to accommodate the changes made to the pressurizer water level operability requirements. The pressurizer water level requirement in MODE 1 is revised to be consistent with the initial condition assumptions used in the accident analysis for a loss of normal feedwater. The MODE 1 pressurizer water level requirement is based on the nominal pressurizer water level consistent with steady-state operation (45.8%) plus a 5% allowance for steady-state fluctuations and instrumentation error. Due to the availability of indicators in the control room and alarms when pressurizer water level is above the programmed band, it is unlikely that exceeding the pressurizer water level requirement would result in an immediate threat of taking the pressurizer solid. Therefore, a period of time is allowed to restore the pressurizer water level to within limit. If the pressurizer water level cannot be restored within this time frame, then Condition C requires placing the plant in a condition where the LCO no longer applies. This is accomplished by requiring the plant to be in MODE 3 in 6 hours and MODE 4 in 12 hours. The actions required when the pressurizer water level requirements of MODE 2 and MODE 3 are not met, are revised to no longer require opening the reactor trip breakers in MODE 3. Exceeding the pressurizer water level requirement in MODE 2 or 3 would not result in an ATWS condition and, therefore, does not require this accident mitigating action. Requiring the plant to be in MODE 3 in 6 hours and in MODE 4 in 12 hours restores the plant to operation within the bounds of the safety analyses by taking the unit out of the applicable MODES in an orderly manner without challenging plant systems. Based on the above, the changes included in TSTF-87, Rev. 2 and TSTF-162, Rev. 0 for LCO 3.4.9 and associated Bases were not adopted.

ITS:	NUREG:
B 3.04.09	B 3.04.09
LCO 3.04.09 COND A	LCO 3.04.09 COND A
LCO 3.04.09 COND A RA A.1	LCO 3.04.09 COND A RA A.1
LCO 3.04.09 COND C	LCO 3.04.09 COND C
N/A	LCO 3.04.09 COND A RA A.2

Justification For Deviations - NUREG-1431 Section 3.04.09

13-Nov-99

JFD Number	JFD Text
03	LCO 3.4.9 Condition B and SR 3.4.9.2 are modified to reflect the Point Beach licensing basis, which only requires a minimum capacity of pressurizer heaters, and no minimum number of groups. Required Action B.1 Completion Time is changed to 1 hour to reflect the importance of restoring the required pressurizer heaters to an operable status. Without redundant sources of pressurizer heaters available, the hot, high pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single phase natural circulation and decreased capability to remove core decay heat.

ITS:	NUREG:
B 3.04.09	B 3.04.09
LCO 3.04.09 COND B	LCO 3.04.09 COND B
LCO 3.04.09 COND B RA B.1	LCO 3.04.09 COND B RA B.1
SR 3.04.09.02	SR 3.04.09.02

04	SR 3.4.9.1 is modified to require that a pressurizer water level of less than or equal to 50.8% be verified every 12 hours in MODE 1. This level requirement is consistent with initial condition assumptions used in the accident analysis for the loss of normal feedwater as described in FSAR Section 14. The results of the accident analysis show that there is a high probability that the pressurizer would become water solid in the event that the accident assumed an initial pressurizer water level of 92%, as included in the ISTS. The requirement is also modified to require that a pressurizer water level of less than or equal to 95% be verified every 12 hours in MODE 2 or MODE 3. A higher water level is necessary in the pressurizer during cooldown to maintain pressurizer cooldown limits.

ITS:	NUREG:
B 3.04.09	B 3.04.09
SR 3.04.09.01	SR 3.04.09.01

05	The brackets have been removed and the proper plant specific information has been provided. In some instances, even though the information was designated as being site specific information in the LCO (bracketed), the corresponding Bases information was not bracketed. These cases are self evident, corresponding to the bracketed information in the LCO, and have had the appropriate site specific information provided.

ITS:	NUREG:
B 3.04.09	B 3.04.09
N/A	SR 3.04.09.03
SR 3.04.09.02	SR 3.04.09.02

Justification For Deviations - NUREG-1431 Section 3.04.09

13-Nov-99

JFD Number	JFD Text
06	A sentence was added to the LCO and surveillance requirements discussion of the LCO 3.4.9 Bases to state that the required pressurizer heaters are heaters that are powered from a safeguards bus. This sentence was added to identify an attribute for the required pressure heaters at Point Beach because the NUREG-1431 Bases did not specify any criteria. The Point Beach design contains 5 banks of pressurizer heaters (banks A, B, C , D and E). Bank E is considered the control bank and the other banks are considered backup banks. Bank C, D, and E are powered from safeguards buses. Therefore, specifying this attribute in the Bases is appropriate to avoid any confusion with respect to identifying the required pressurizer heaters. In addition, "design rating" was changed to "have a combined capacity of >= 100kW" in the SR 3.4.9.2 Bases discussion. The important parameter to verify via this SR is to ensure that the combined capacity of the heaters is >= 100 kW (the design bases of the system), not to ensure that they can meet their respective design ratings. Therefore, the SR 3.4.9.2 Bases was changed accordingly.

ITS:	NUREG:
B 3.04.09	B 3.04.09

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE ~~with~~:

1

~~a. Pressurizer water level ≤ [92]%; and~~

~~b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ [125] kW [and capable of being powered from an emergency power supply].~~

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer water level not within limit.	A.1 Be in MODE 3 with reactor trip breakers open.	6 hours
2 in MODE 1	AND Restore presurizer water level to within limit.	2
	~~A.2 Be in MODE 4.~~	~~12 hours~~
3		
B. ~~One~~ required ~~group of~~ pressurizer heaters inoperable.	B.1 Restore required ~~group of~~ pressurizer heaters to OPERABLE status. 3	72 hours 1 hour
C. Required Action and associated Completion Time ~~of Condition B~~ not met. 2	C.1 Be in MODE 3.	6 hours
	AND	
	C.2 Be in MODE 4.	12 hours

OR

Pressurizer water level not within limit in MODES 2 and 3.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ [92]% 50.8% in MODE 1 OR ≤ 95% in MODES 2 and 3.	12 hours
SR 3.4.9.2	Verify capacity of ~~each~~ required ~~group of~~ pressurizer heaters is ≥ [125] kW. 100	92 days
~~SR 3.4.9.3~~	~~Verify required pressurizer heaters are capable of being powered from an emergency power supply.~~	[18] months

4 5 3 5 5 92 days [18] months Approved TSTF-93 R.3

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.9 Pressurizer

BASES

BACKGROUND

The pressurizer provides a point in the RCS where liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes to prevent bulk boiling in the remainder of the RCS. Key functions include maintaining required primary system pressure during steady state operation, and limiting the pressure changes caused by reactor coolant thermal expansion and contraction during normal load transients.

The pressure control components addressed by this LCO include the pressurizer water level, the required heaters, and their controls ~~and emergency power supplies~~ 5 Pressurizer safety valves and pressurizer power operated relief valves are addressed by LCO 3.4.10, "Pressurizer Safety Valves," and LCO 3.4.11, "Pressurizer Power Operated Relief Valves (PORVs)," respectively.

The intent of the LCO is to ensure that a steam bubble exists in the pressurizer prior to power operation to minimize the consequences of potential overpressure transients. The presence of a steam bubble is consistent with analytical assumptions. Relatively small amounts of noncondensible gases can inhibit the condensation heat transfer between the pressurizer spray and the steam, and diminish the spray effectiveness for pressure control.

Electrical immersion heaters, located in the low er section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. A minimum required available capacity of pressurizer heaters ensures that the RCS pressure can be maintained. The capability to maintain and control system pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove core decay heat by either forced or natural circulation of reactor coolant. Unless adequate heater capacity is available, the hot, high pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to

BACKGROUND (continued)

a loss of single phase natural circulation and decreased capability to remove core decay heat.

APPLICABLE SAFETY ANALYSES

In MODES 1, 2, and 3, the LCO requirement for a steam bubble is reflected implicitly in the accident analyses. Safety analyses performed for lower MODES are not limiting. All analyses performed from a critical reactor condition assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensible gases normally present.

Safety analyses presented in the FSAR (Ref. 1) do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

The maximum pressurizer water level limit satisfies Criterion 2 of the NRC Policy Statement. Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG -0737 (Ref. 2), is the reason for providing an LCO.

LCO

6

4

Replace with Insert B3.4.9-1

~~The LCO requirement for the pressurizer to be OPERABLE with a water volume ≤ [1240] cubic feet, which is equivalent to [92]%, ensures that a steam bubble exists. Limiting the LCO maximum operating water level preserves the steam space for pressure control. The LCO has been established to ensure the capability to establish and maintain pressure control for steady state operation and to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.~~

~~The LCO requires two groups of OPERABLE pressurizer heaters, each with a capacity ≥ [125] kW, capable of being powered from either the offsite power source or the emergency power supply. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating~~

4

LCO (continued) ~~conditions, a wide margin to subcooling can be obtained in the loops. The exact design value of [125 kW is derived from the use of seven heaters rated at 17.9 kW each]. The amount needed to maintain pressure is dependent on the heat losses.~~

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature, resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, applicability has been designated for MODES 1 and 2. The applicability is also provided for MODE 3. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational perturbation, such as reactor coolant pump startup.

In MODES 1, 2, and 3, there is need to maintain the availability of pressurizer heaters ~~, capable of being powered from an emergency power supply~~. In the event of a loss of offsite power, the initial conditions of these MODES give the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODE 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Residual Heat Removal (RHR) System is in service and, therefore, the LCO is not applicable.

5

ACTIONS

A.1 and A.2

Pressurizer water level control malfunctions or other plant evolutions may result in a pressurizer water level above the nominal upper limit, even with the plant at steady state conditions. ~~Normally the plant will trip in this event since the upper limit of this LCO is the same as the Pressurizer Water Level - High Trip.~~

2

in MODE 1,

If the pressurizer water level is not within the limit, action must be taken to restore the plant to operation within the bounds of the safety analyses. ~~To achieve this status, the unit must be brought to MODE 3, with the reactor trip breakers open, within 6 hours and to MODE 4 within 12 hours. This takes the unit out of the applicable MODES.~~

2

Replace with Insert B3.4.9-2

ACTIONS (continued)

~~and restores the unit to operation within the bounds of the safety analyses~~.

2 ~~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~~.

B.1

3 the 3 1 hour 3 are

3 If one required ~~group of~~ pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering the anticipation that a demand caused by loss of offsite power would be unlikely in this period. Pressure control may be maintained during this time using normal station powered heaters.

Replace with Insert B3.4.9-3

2 C.1 and C.2

Replace with Insert B3.4.9-4

If one group of pressurizer heaters are inoperable and cannot be restored in the allowed Completion Time of Required Action B.1, 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 MODE 3 within 6 hours and to MODE 4 within 12 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 3.4.9.1

This SR requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The Frequency of 12 hours corresponds to verifying the parameter each shift. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess level for any deviation and verify that operation is within

SURVEILLANCE REQUIREMENTS (continued)

safety analyses assumptions. Alarms are also available for early detection of abnormal level indications.

5

92 days

Approved TSTF-93 R.3

[18] months

The required pressurizer heaters are heaters that are powered from a safeguards bus.

6

have a combined capacity of ≥ 100kW

SR 3.4.9.2

The SR is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to ~~be at their design rating~~. This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance. The Frequency of 92 days is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable.

5

~~SR 3.4.9.3~~

~~This SR is not applicable if the heaters are permanently powered by Class 1E power supplies.~~

~~This Surveillance demonstrates that the heaters can be manually transferred from the normal to the emergency power supply and energized. The Frequency of 18 months is based on a typical fuel cycle and is consistent with similar verifications of emergency power supplies.~~

REFERENCES

1. FSAR, Section [ ] 14 5

2. NUREG-0737, November 1980.

Insert B3.4.9-1

The LCO requirement for the pressurizer to be OPERABLE with a water level of ≤ 50.8% in MODE 1, and ≤ 95% in MODE 2 and MODE 3, ensures that a steam bubble exists. The pressurizer water level of ≤ 50.8% in MODE 1 is consistent with the assumptions used in the accident analyses. The water level of ≤ 95% in MODE 2 and MODE 3 is adequate protection for the pressurizer when a loss of normal feedwater is not a concern. A higher water level is necessary in the pressurizer during cooldown to maintain pressurizer cooldown limits. Limiting the LCO maximum operating water level preserves the steam space for pressure control. The LCO has been established to ensure the capability to establish and maintain pressure control for steady state operation and to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires a capacity of ≥ 100 kW of OPERABLE pressurizer heaters. The required pressurizer heaters are heaters that are powered from a safeguards bus. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide margin to subcooling can be obtained in the loops. The amount needed to maintain pressure is dependent on the heat losses.

Insert B3.4.9-2

To achieve this status, the pressurizer water level must be restored to within limit within 6 hours. The Completion Time is reasonable based on the availability of indicators in the control room and alarms when pressurizer water level is above the programmed band. It is unlikely that exceeding the pressurizer water level requirement would result in an immediate threat of taking the pressurizer solid. Therefore, 6 hours are allowed to restore the pressurizer water level to within limit.

Insert B3.4.9-3

Without redundant sources of pressurizer heaters available, the hot, high pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single phase natural circulation and decreased capability to remove core decay heat.

Insert B3.4.9-4

If the pressurizer cannot be restored to OPERABLE status within the associated Completion Time of Required Action A.1 or B.1, or the pressurizer water level is not within the limit of MODE 2 and MODE 3, the plant must be brought to a MODE in which the LCO does not apply.

No Significant Hazards Considerations - NUREG-1431 Section 3.04.09

13-Nov-99

NSHC Number	NSHC Text
A	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change involves reformatting and rewording of the current Technical Specifications. The reformatting and rewording process involves no technical changes to existing requirements. As such, this change is administrative in nature and does not impact initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The proposed change will not significantly reduce the margin of safety because it has no impact on any safety analysis assumptions. This change is administrative. As such, there is no technical change to the requirements and, therefore, there is no reduction in the margin of safety.

NSHC Number	NSHC Text
L.01	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. This change removes the minimum pressurizer water level requirement. Specifying a minimum pressurizer water level to ensure the pressurizer heaters are covered is not necessary, since the pressurizer heaters are required to be operable per ITS 3.4.9. In order for the pressurizer heaters to be operable and maintain pressure control of the reactor coolant system, they must be adequately covered. Also, specifying the minimum water level, at which the pressurizer is required to be operable is not assumed to be an initiator or precursor of any accident previously evaluated. Therefore, this change does not involve an increase in the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not involve any physical alteration of plant systems, structures or components, nor does it alter parameters governing normal plant operation. The proposed change does not introduce a new mode of operation or alter the method of normal plant operation. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created. 3. Does this change involve a significant reduction in a margin of safety? There are no margins of safety related to safety analyses that are dependent upon the proposed change. The requirements will continue to assure that limiting conditions for the pressurizer are properly maintained. Therefore, this change does not involve a reduction in a margin of safety.

NSHC Number	NSHC Text
M	In accordance with the criteria set forth in 10 CFR 50.92, PBNP has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion. 1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated? The proposed change provides more restrictive requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter the assumptions relative to the 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. Therefore, this change does not increase the probability or consequences of an accident previously evaluated. 2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated? The proposed change does not require a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change does impose different requirements. However, these changes are consistent with assumptions made in the safety analysis. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated. 3. Does this change involve a significant reduction in a margin of safety? The imposition of more restrictive requirements either has no affect on or increases the margin of safety. Each change is providing additional restrictions to enhance plant safety. These changes are consistent with the safety analysis. Therefore, this change does not involve a reduction in a margin of safety.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressurizer water level not within limit in MODE 1.	A.1	Restore presurizer water level to within limit.	6 hours
B. Required pressurizer heaters inoperable.	B.1	Restore required pressurizer heaters to OPERABLE status.	1 hour
C. Required Action and associated Completion Time not met. OR Pressurizer water level not within limit in MODES 2 and 3.	C.1 AND C.2	Be in MODE 3. Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ 50.8% in MODE 1 OR ≤ 95% in MODES 2 and 3.	12 hours
SR 3.4.9.2	Verify capacity of required pressurizer heaters is ≥ 100 kW.	92 days

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.9 Pressurizer

BASES

BACKGROUND

The pressurizer provides a point in the RCS where liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes to prevent bulk boiling in the remainder of the RCS. Key functions include maintaining required primary system pressure during steady state operation, and limiting the pressure changes caused by reactor coolant thermal expansion and contraction during normal load transients.

The pressure control components addressed by this LCO include the pressurizer water level, the required heaters, and their controls. Pressurizer safety valves and pressurizer power operated relief valves are addressed by LCO 3.4.10, "Pressurizer Safety Va lves," and LCO 3.4.11, "Pressurizer Power Operated Relief Valves (PORVs)," respectively.

The intent of the LCO is to ensure that a steam bubble exists in the pressurizer prior to power operation to minimize the consequences of potential overpressure transients. The presence of a steam bubble is consistent with analytical assumptions. Relatively small amounts of noncondensible gases can inhibit the condensation heat transfer between the pressurizer spray and the steam, and diminish the spray effectiveness for pressure control.

Electrical immersion heaters, located in the lower section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. A minimum required available capacity of pressurizer heaters ensures that the RCS pressure can be maintained. The capability to maintain and control system pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove core decay heat by either forced or natural circulation of reactor coolant. Unless adequate heater capacity is available, the hot, high pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single phase natural circulation and decreased capability to remove core decay heat.

BASES

APPLICABLE SAFETY ANALYSES

In MODES 1, 2, and 3, the LCO requirement for a steam bubble is reflected implicitly in the accident analyses. Safety analyses performed for lower MODES are not limiting. All analyses performed from a critical reactor condition assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensible gases normally present.

Safety analyses presented in the FSAR (Ref. 1) do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

The maximum pressurizer water level limit satisfies Criterion 2 of the NRC Policy Statement. Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG -0737 (Ref. 2), is the reason for providing an LCO.

LCO

The LCO requirement for the pressurizer to be OPERABLE with a water level of ≤ 50.8% in MODE 1, and ≤ 95% in MODE 2 and MODE 3, ensures that a steam bubble exists. The pressurizer water level of ≤ 50.8% in MODE 1 is consistent with the assumptions used in the accident analyses. The water level of ≤ 95% in MODE 2 and MODE 3 is adequate protection for the pressurizer when a loss of normal feedwater is not a concern. A higher water level is necessary in the pressurizer during cooldown to maintain pressurizer cooldown limits. Limiting the LCO maximum operating water level preserves the steam space for pressure control. The LCO has been established to ensure the capability to establish and maintain pressure control for steady state operation and to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires a capacity of ≥ 100 kW of OPERABLE pressurizer heaters. The required pressurizer heaters are heaters that are powered from a safeguards bus. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide margin to

BASES

LCO (continued)

subcooling can be obtained in the loops. The amount needed to maintain pressure is dependent on the heat losses.

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature, resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, applicability has been designated for MODES 1 and 2. The applicability is also provided for MODE 3. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational perturbation, such as reactor coolant pump startup.

In MODES 1, 2, and 3, there is need to maintain the availability of pressurizer heaters. In the event of a loss of offsite power, the initial conditions of these MODES give the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODE 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Residual Heat Removal (RHR) System is in service and, therefore, the LCO is not applicable.

ACTIONS

A.1 and A.2

Pressurizer water level control malfunctions or other plant evolutions may result in a pressurizer water level above the nominal upper limit, even with the plant at steady state conditions.

If the pressurizer water level is not within the limit in MODE 1, action must be taken to restore the plant to operation within the bounds of the safety analyses. To achieve this status, the pressurizer water level must be restored to within limit within 6 hours. The Completion Time is reasonable based on the availability of indicators in the control room and alarms when pressurizer water level is above the programmed band. It is therefore unlikely that exceeding the pressurizer water level requirement would result in an immediate threat of taking the pressurizer solid. Therefore, 6 hours are allowed to restore the pressurizer water level to within limit.

BASES

ACTIONS (continued)

B.1

If the required pressurizer heaters are inoperable, restoration is required within 1 hour. Without redundant sources of pressurizer heaters available, the hot, high pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single phase natural circulation and decreased capability to remove core decay heat.

C.1 and C.2

If the pressurizer cannot be restored to OPERABLE status within the associated Completion Time of Required Action A.1 or B.1, or the pressurizer water level is not within the limit of MODE 2 and MODE 3, 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 MODE 3 within 6 hours and to MODE 4 within 12 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 3.4.9.1

This SR requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The Frequency of 12 hours corresponds to verifying the parameter each shift. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess level for any deviation and verify that operation is within safety analyses assumptions. Alarms are also available for early detection of abnormal level indications.

SR 3.4.9.2

The required pressurizer heaters are heaters that are powered from a safeguards bus. The SR is satisfied when the power supplies are demonstrated to be capable of producing

BASES

SURVEILLANCE REQUIREMENTS (continued)

the minimum power and the associated pressurizer heaters are verified to have a combined capacity of $\geq$ 100kW. This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance. The Frequency of 92 days is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable.

REFERENCES

1. FSAR, Section 14.

2. NUREG-0737, November 1980.

Cross-Reference Report - NUREG-1431 Section 3.04.10

ITS to CTS

13-Nov-99

ITS	CTS	DOC
LCO 3.04.10	15.03.01.A.04.B	M.02
	15.03.01.A.04.B	M.01
	15.03.01.A.04.B	A.01
LCO 3.04.10 COND A	NEW	L.01
LCO 3.04.10 COND A RA A.1	NEW	L.01
LCO 3.04.10 COND B	NEW	L.01
LCO 3.04.10 COND B RA B.1	NEW	L.01
LCO 3.04.10 COND B RA B.2	NEW	L.01
LCO 3.04.10 NOTE	NEW	L.02
SR 3.04.10.01	15.04.01 T 15.04.01-02 11	R.01
	15.04.01 T 15.04.01-02 11	LA.01
	15.04.01 T 15.04.01-02 11	A.01

Cross-Reference Report - NUREG-1431 Section 3.04.10

CTS to ITS

13-Nov-99

CTS	ITS	DOC
15.03.01.A.04.A	FSAR	R.01
15.03.01.A.04.B	LCO 3.04.10	M.02
	LCO 3.04.10	M.01
	LCO 3.04.10	A.01
15.04.01 T 15.04.01-02 11	SR 3.04.10.01	R.01
	SR 3.04.10.01	LA.01
	SR 3.04.10.01	A.01
15.04.01 T 15.04.01-02 11 (11)	N/A	LA.01

Description of Changes - NUREG-1431 Section 3.04.10

13-Nov-99

DOC Number	DOC Text
A.01	In the conversion of Point Beach current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the Standard Technical Specifications, Westinghouse Plants, NUREG-1431, Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

CTS:	ITS:
15.03.01.A.04.B	LCO 3.04.10
15.04.01 T 15.04.01-02 11	SR 3.04.10.01

DOC Number	DOC Text
L.01	CTS 15.3.1.A.4.b requires both pressurizer safety valves to be operable whenever the reactor is critical, but does not provide any actions if this LCO is not satisfied. Therefore, in accordance with CTS 15.3.0.b, the plant is placed in a non-applicable mode in 7 hours. Proposed ITS 3.4.10, Condition A, is entered whenever a pressurizer safety valve is inoperable. Condition A Actions require the restoration of the valve to an operable status within 15 minutes. The Completion Time of 15 minutes reflects the importance of maintaining the RCS overpressure protection system. An inoperable pressurizer safety valve coincident with an RCS overpressure event could challenge the integrity of the pressure boundary. In the event the pressurizer safety valve cannot be restored within 15 minutes, or both pressurizer safety valves are inoperable, Condition B is entered. Condition B Actions require the plant to be placed in MODE 3 in 6 hours and MODE 4 in 12 hours. These actions result in placing the plant in a non-applicable mode in 12 hours. The Completion Time of 12 hours is based on operating experience to reach the required plant condition from a full power condition in an orderly manner and without challenging plant systems. Extending the time allowed to place the plant in a non-applicable mode from 7 hours to 12 hours is less restrictive. This is acceptable, based on the broader LCO Applicability adopted as part of ITS 3.4.10, and the increased time required to place the plant in a non-applicable mode from full power conditions.

CTS:	ITS:
NEW	LCO 3.04.10 COND A
	LCO 3.04.10 COND A RA A.1
	LCO 3.04.10 COND B
	LCO 3.04.10 COND B RA B.1
	LCO 3.04.10 COND B RA B.2

Description of Changes - NUREG-1431 Section 3.04.10

13-Nov-99

DOC Number	DOC Text
L.02	CTS Specification 15.3.1.A.4.b, which requires that both pressurizer safety valves be operable when the reactor is critical, is revised to add ITS LCO 3.4.10 NOTE, which allows the safety valve lift settings to be outside the LCO limits for the purpose of setting the safety valves under ambient (hot) conditions. Because this note allows the pressurizer safety valves to be potentially inoperable in MODE 3 until the safety valves can be tested and set, this change is less restrictive. This change is acceptable because the limitations included in the note (i.e., a maximum of 36 hours allowed following entry into MODE 3) assure that reactor decay heat is significantly reduced below the assumptions in the applicable safety analyses for LCO 3.4.10. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The 36 hour exception is reasonable based on 18 hour outage time for each of the valves. The 18 hour period is derived from operating experience that hot testing can be performed in this time frame. **CTS:** NEW **ITS:** LCO 3.04.10 NOTE
LA.01	CTS 15.4.1, Table 15.4.1-2, item 11, requires that pressurizer safety valve setpoints be checked at a frequency of "every five years." The frequency is modified by Note (11), which specifies "An approximately equal number of valves shall be tested each refueling outage such that all valves will be tested within a five year period. If any valve fails its tests, an additional number of valves equal to the number originally tested shall be tested. If any of the additional tested valves fail, all remaining valves shall be tested." These details have been moved from the Technical Specification to licensee control as these details are not necessary to describe the actual regulatory requirement. Therefore, proposed ITS SR 3.4.10.1 requires verifying "each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program", at a frequency of "In accordance with the Inservice Testing Program." The testing details located in CTS 15.4.1, Table 15.4.1-2, item 11, are not required to be in the ITS to provide adequate protection of public health and safety, as the regulatory requirement (IST Program) is being maintained in the Technical Specifications. Changes to plant procedures and other plant controlled documents are subject to controls imposed by plant administrative procedures, which endorse applicable regulations and standards. Inservice Testing of pressurizer safety valves will continue to be performed in accordance with the IST Program. **CTS:** 15.04.01 T 15.04.01-02 11 **ITS:** SR 3.04.10.01 **CTS:** 15.04.01 T 15.04.01-02 11 (11) **ITS:** N/A

Description of Changes - NUREG-1431 Section 3.04.10

13-Nov-99

DOC Number	DOC Text
M.01	CTS 15.3.1.A.4.b requires both pressurizer safety valves to be operable. Proposed ITS 3.4.10 requires two pressurizer safety valves to be operable with lift settings greater than or equal to 2410 psig and less than or equal to 2560 psig. The pressurizer safety valve settings are not stated in the CTS, but are maintained in the ITS Program. Stating the safety valve settings in ITS LCO 3.4.10 is more restrictive and is consistent with NUREG 1431. **CTS:** 15.03.01.A.04.B **ITS:** LCO 3.04.10
M.02	CTS 15.3.1.A.4.b requires both pressurizer safety valves to be operable whenever the reactor is critical. Proposed ITS 3.4.10 requires two pressurizer safety valves to be operable in MODES 1, 2, and 3. In MODES 4 and 5, and MODE 6, with the reactor vessel head on, overpressure protection is provided by operating procedures and by meeting the requirements of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System." In MODES 1, 2 and 3 operability of the pressurizer safety valves is required because the combined capacity keeps reactor coolant pressure below 110% of its design value during certain accidents. Expanding the applicability of the LCO to include MODE 3 places additional requirements on plant operation and is, therefore, more restrictive. This change is necessary to assure the RCS is provided with adequate overpressure protection in all required modes of operation. **CTS:** 15.03.01.A.04.B **ITS:** LCO 3.04.10

DOC Number	DOC Text
R.01	Wisconsin Electric Power Company has utilized the selection criteria provided in the 10 CFR 50.36.ii, and has concluded that the Pressurizer Safety Valve LCO and Surveillances for conditions below the LTOP enabling Temperature can be relocated to licensee control. The basis for this conclusion is as follows: The pressurizer safety valves protect the RCS from being pressurized above the RCS pressure Safety Limit. The pressurizer safety valves provide over-pressurization protection during Modes 1, 2 and 3 above the low temperature overpressure protection (LTOP) enabling temperature. The pressurizer safety valves are not assumed to function to mitigate a DBA or transient below the LTOP enabling temperature. Overpressure protection is provided under these conditions by the LTOP requirements. Comparison to Deterministic Screening Criteria: 1. Pressurizer safety valves are not used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a DBA. 2. Pressurizer safety valves are not a process variable, design feature, or operating restriction that is an initial condition of a DBA or transient. 3. Pressurizer safety valves are not part of a primary success path in the mitigation of a DBA or transient in Mode 4 below the LTOP enabling temperature and Mode 5 or 6. 4. The loss of pressurizer safety valves (< 200°F) was found to be a non-significant risk contributor to core damage frequency and offsite releases. Wisconsin Electric Power Company has reviewed this evaluation and considers it applicable to Point Beach Station. The Point Beach IPE does not cover plant conditions with RCS temperatures less than 200 °F, and so it presents no conflict with the generic analysis. Conclusion: Since the screening criteria have not been satisfied, the Pressurizer Safety Valve LCO and Surveillances for conditions below the LTOP enabling Temperature may be relocated to other plant controlled documents outside the Technical Specifications. **CTS:** 15.03.01.A.04.A; 15.04.01 T 15.04.01-02 11 **ITS:** FSAR; SR 3.04.10.01

(c) Residual Heat Removal Loop (A)*
(d) Residual Heat Removal Loop (B)*

(2) If the conditions of specification (1) above cannot be met, corrective action to return a second decay heat removal method to operable status as soon as possible shall be initiated immediately.

(3) If no decay heat removal method is in operation, except as permitted by (4) below, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately.

(4) At least one of the above decay heat removal methods shall be in operation.

(a) All reactor coolant pumps and residual heat removal pumps may be deenergized for up to 1 hour in any 8 hour period provided:

< See LCO 3.4.6 >

(1) No operations are permitted that would cause dilution of reactor coolant system boron concentration, and

(2) Core outlet temperature is maintained at least 10°F below saturation temperature.

b. Reactor Coolant Temperature Less Than 140°F

< See LCOs 3.4.7, 3.4.8, 3.9.5 & 3.9.6 >

(1) Both residual heat removal loops shall be operable except as permitted in items (3) or (4) below.

(2) If no residual heat removal loop is in operation, all operations causing an increase in the reactor decay heat load or a reduction in reactor coolant system boron concentration shall be suspended. Corrective actions to return a decay heat removal method to operation shall be initiated immediately.

(3) One residual heat removal loop may be out of service when the reactor vessel head is removed and the refueling cavity flooded.

(4) One of the two residual heat removal loops may be temporarily out of service to meet surveillance requirements.

4. Pressurizer Safety Valves

R.1

a. At least one pressurizer safety valve shall be operable whenever the reactor head is on the vessel.

Replace with LCO 3.4.10. See Insert 3.4.10-1.

M.1

b. Both pressurizer safety valves shall be operable whenever the reactor is critical.

M.2

L.1 Add Actions A & B. See Insert 3.4.10-2.

L.2

*Mechanical design provisions of the residual heat removal system afford the necessary flexibility to allow an operable residual heat removal loop to consist of the RHR pump from one loop coupled with the RHR heat exchanger from the other loop. Electrical design provisions of the residual heat removal system afford the necessary flexibility to allow the normal or emergency power source to be inoperable or tied together when the reactor coolant temperature is less than 200°F.

< See LCO 3.4.6 >

A.1

TABLE 15.4.1-2 (Continued)

		Test	Frequency
7.	Spent Fuel Pit	a) Boron Concentration < See LCOs 3.7.15 and 3.7.16 >	Monthly
		b) Water Level Verification	Weekly
8.	Secondary Coolant	Gross Beta-gamma Activity or gamma isotopic analysis < See LCO 3.7.18 >	Weekly[6]
		Iodine concentration	Weekly when gross Beta-gamma activity equals or exceeds 1.0 μCi/g [6]
9.	Control Rods	a) Rod drop times of all full length rods [3]	Each refueling or after maintenance that could affect proper functioning [4]
	< See LCO 3.1.5 >	b) Rodworth measurement	Following each refueling shutdown prior to commencing power operation
10.	Control Rod	Partial movement of all rods	Every 2 weeks [18]
		Replace with SR 3.4.10.1. See Insert 3.4.10-3.	R.1 LA.1
11.	Pressurizer Safety Valves	Set point	Every five years [11]
12.	Main Steam Safety Valves	Set Point	Every five years [11] < See LCO 3.7.1 >
13.	Containment Isolation Trip	Functioning	Each refueling shutdown < See LCO 3.6.3 and 3.7.2 >
14.	Refueling System Interlocks	Functioning	Each refueling shutdown < See LCO 3.9.1 >
15.	Service Water System	Functioning	Each refueling shutdown < See LCO 3.7.8 >
16.	Primary System Leakage	Evaluate	Monthly [6] < See LCO 3.4.13 >
17.	Diesel Fuel Supply	Fuel inventory	Daily < See LCO 3.8.3 >
18.	Deleted		
19.	Deleted		
20.	Boric Acid System	Storage Tank and piping temperatures ≥ temperature required by Table 15.3.2-1 < See LCO 3.5.2 >	Daily[19]

TABLE 15.4.1-2 (Continued)

30.	Pressurizer Heaters	Verify that 100 KW of heaters are available.	Quarterly
31.	CVCS Charging Pumps	Verify operability pumps.(17)	Quarterly
32.	Potential Dilution in Progress Alarm	Verify operability of alarm.	Prior to placing plant in cold shutdown.
33.	Core Power Distribution	Perform power distribution maps using movable incore detector system to confirm hot channel factors.	Monthly (20)
34.	Shutdown Margin	Perform shutdown margin calculation	Daily (21)

< See LCO 3.4.9 >

< See LCO 3.5.2 >

< See LCO 3.3.9

< See LCOs 3.2.1 and 3.2.2 >

Associated Specification removed with Amendment 176/180.

< See Section 3.1 >

(1) Required only during periods of power operation. < See LCO 3.4.16 >

(2) Q determination will be started when the gross activity analysis of a filtered sample indicates ≥10μCi/cc and will be redetermined if the primary coolant gross radioactivity of a filtered sample increases by more than 10μCi/cc.

(3) Drop test shall be conducted at rated reactor coolant flow. Rods shall be dropped under both cold and hot condition, but cold drop tests need not be timed. < See LCO 3.1.5 >

(4) Drop tests will be conducted in the hot condition for rods on which maintenance was performed.

(5) As accessible without disassembly of rotor.

(6) Not required during periods of refueling shutdown. < See LCOs: 3.4.16, 3.5.4, 3.7.18, and 3.4.13 >

(7) At least once per week during periods of refueling shutdown.

(8) At least three times per week (with maximum time of 72 hours between samples) during periods of refueling shutdown. < See LCO 3.4.16 >

(9) Not required during periods of cold or refueling shutdown, but must be performed prior to exceeding 200°F if it has not been performed during the previous surveillance period. < See LCOs 3.3.1, 3.6.3 >

(10) Sample to be taken after a minimum of 2 EFPD and 20 days power operation since the reactor was last subcritical for 48 hours or longer. < See LCO 3.4.16 >

(11) An approximately equal number of valves shall be tested each refueling outage such that all valves will be tested within a five year period. If any valve fails its tests, an additional number of valves equal to the number originally tested shall be tested. If any of the additional tested valves fail, all remaining valves shall be tested.

(12) The specified buses shall be determined energized in the required manner at least once per shift by verifying correct static transfer switch alignment and indicated voltage on the buses. < See Section 3.8 >

(13) Not required if the block valve is shut to isolate a PORV that is inoperable for reasons other than excessive seat leakage. < See LCO 3.4.11 >

(14) Only applicable when the overpressure mitigation system is in service.

(15) Required to be performed only if conditions will be established, as defined in Specification 15.3.15, where the PORVs are used for low temperature overpressure protection. The test must be performed prior to establishing these conditions. < See LCO 3.4.12 >

LA.1

Section 3.4.10 CTS Markup Inserts

Insert 3.4.10-1:

M.1

LCO 3.4.10 Two pressurizer safety valves shall be OPERABLE with lift settings ≥ 2410 psig and ≤ 2560 psig.

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

L.2

-----NOTE-----
The lift settings are not required to be within the LCO limits during MODE 3 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 36 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

Insert 3.4.10-2:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time not met. OR Two pressurizer safety valves inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

L.1

Insert 3.4.10-3:

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 ≥ 2440.71 psig and ≤ 2551.25 psig	In accordance with the Inservice Testing Program

R.1
LA.1

Justification For Deviations - NUREG-1431 Section 3.04.10

13-Nov-99

JFD Number	JFD Text
01	The brackets have been removed and the proper plant specific information has been provided. In some instances, even though the information was designated as being site specific information in the LCO (bracketed), the corresponding Bases information was not bracketed. These cases are self evident, corresponding to the bracketed information in the LCO, and the have had the appropriate site specific information provided.

ITS:	NUREG:
B 3.04.10	B 3.04.10
LCO 3.04.10	LCO 3.04.10
LCO 3.04.10 NOTE	LCO 3.04.10 NOTE

JFD Number	JFD Text
02	ITS Specification 3.4.10 is modified to reflect a safety valve operability setpoint tolerance of +/- 3% to allow for drift, in accordance with Section III of the ASME Boiler and Pressure Vessel Code.

ITS:	NUREG:
B 3.04.10	B 3.04.10
LCO 3.04.10	LCO 3.04.10

JFD Number	JFD Text
03	LCO 3.4.10 is modified to reflect Point Beach LTOP enabling temperature of 355 F. Therefore, the Applicability statement regarding MODE 4 is deleted. Additionally, in order to simplify implementation of this specification, the applicability of LCO 3.4.10 is expanded to include all of MODE 3, i.e., greater than or equal to 350 °F. This results in an overlap in the requirements for LCO 3.4.10 and LCO 3.4.12 (LTOP). This change is also reflected in LCO 3.4.10, Condition B, Required Action B.2, which will require placing the unit in MODE 4 to exit the applicability of the LCO.

ITS:	NUREG:
B 3.04.10	B 3.04.10
LCO 3.04.10	LCO 3.04.10
LCO 3.04.10 COND B RA B.2	LCO 3.04.10 COND B RA B.2
LCO 3.04.10 NOTE	LCO 3.04.10 NOTE

JFD Number	JFD Text
04	The actual numerical values for an LTOP enabling temperature are replaced with a reference to the temperature specified in the PTLR. The LTOP enabling temperature will then be calculated and controlled by the licensee in accordance with the topical reports identified in the PTLR.

ITS:	NUREG:
B 3.04.10	B 3.04.10

Justification For Deviations - NUREG-1431 Section 3.04.10

13-Nov-99

JFD Number	JFD Text
05	Consistent with the range specified in PBNP calculation 98-0096, as tested lift setting of the pressurizer safety valves (+2.67% / -1.78%), SR 3.4.10.1 is modified to specify a pressurizer safety valve lift setting of greater than or equal to 2440.71 psig and less than or equal to 2551.25 psig.

ITS:	NUREG:
B 3.04.10	B 3.04.10
SR 3.04.10.01	SR 3.04.10.01

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves.

LCO 3.4.10 [Three] pressurizer safety valves shall be OPERABLE with lift settings ≥ [2460] psig and ≤ [2510] psig.

APPLICABILITY: MODES 1, 2, and 3 ~~MODE 4 with all RCS cold leg temperatures > [275]°F~~

---NOTE---
The lift settings are not required to be within the LCO limits during MODES 3 ~~and 4~~ for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for [54] hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time not met. OR Two ~~or more~~ pressurizer safety valves inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4 ~~with any RCS cold leg temperatures ≤ [275]°F~~	6 hours 12 hours

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%	In accordance with the Inservice Testing Program

≥ 2440.71 psig and ≤ 2551.25 psig

5

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.10 Pressurizer Safety Valves

BASES

BACKGROUND

The pressurizer safety valves provide, in conjunction with the Reactor Protection System, overpressure protection for the RCS. The pressurizer safety valves are totally enclosed pop type, spring loaded, self actuated valves with backpressure compensation. The safety valves are designed to prevent the system pressure from exceeding the system Safety Limit (SL), [2735] psig, which is 110% of the design pressure.

2734 1

Because the safety valves are totally enclosed and self actuating, they are considered independent components. The relief capacity for each valve, [380,000] lb/hr, is based on postulated overpressure transient conditions resulting from a complete loss of steam flow to the turbine. This event results in the maximum surge rate into the pressurizer, which specifies the minimum relief capacity for the safety valves. The discharge flow from the pressurizer safety valves is directed to the pressurizer relief tank. This discharge flow is indicated by an increase in temperature downstream of the pressurizer safety valves or increase in the pressurizer relief tank temperature or level.

1 288,000

4

3 3 MODES 4 and

the LTOP enabling temperature specified in the PTLR

Overpressure protection is required in MODES 1, 2, 3, 4, and 5; however, in MODE 4 with one or more RCS cold leg temperatures ≤ [275]°F, and MODE 5 and MODE 6 with the reactor vessel head on, overpressure protection is provided by operating procedures and by meeting the requirements of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."

The pressurizer safety valve setpoint is ± 3% for OPERABILITY; however, the valves are reset to +2.67% / -1.78% during surveillance to allow for drift and account for the ambient conditions associated with MODES 1, 2 and 3.

2 5

The upper and lower pressure limits are based on the ± 1% tolerance requirement (Ref. 1) for lifting pressures above 1000 psig. The lift setting is for the ambient conditions associated with MODES 1, 2, and 3. This requires either that the valves be set hot or that a correlation between hot and cold settings be established.

The pressurizer safety valves are part of the primary success path and mitigate the effects of postulated accidents. OPERABILITY of the safety valves ensures that the RCS pressure will be limited to 110% of design pressure.

BASES

BACKGROUND (continued)

The consequences of exceeding the American Society of Mechanical Engineers (ASME) pressure limit (Ref. 1) could include damage to RCS components, increased leakage, or a requirement to perform additional stress analyses prior to resumption of reactor operation.

APPLICABLE SAFETY ANALYSES

All accident and safety analyses in the FSAR (Ref. 2) that require safety valve actuation assume operation of three pressurizer safety valves to limit increases in RCS pressure. The overpressure protection analysis (Ref. 3) is also based on operation of [three] safety valves. Accidents that could result in overpressurization if not properly terminated include:

two

1

a. Uncontrolled rod withdrawal from full power;

b. Loss of reactor coolant flow;

c. Loss of external electrical load;

d. Loss of normal feedwater;

e. Loss of all AC power to station auxiliaries; and

f. Locked rotor.

Detailed analyses of the above transients are contained in Reference 2. Safety valve actuation is required in events c, d, and e (above) to limit the pressure increase. Compliance with this LCO is consistent with the design bases and accident analyses assumptions.

Pressurizer safety valves satisfy Criterion 3 of the NRC Policy Statement.

LCO

two

1

The [three] pressurizer safety valves are set to open at the RCS design pressure (2500 psia), and within the ASME specified tolerance, to avoid exceeding the maximum design pressure SL, to maintain accident analyses assumptions, and to comply with ASME requirements. The upper and lower pressure tolerance limits are based on the ± 1% tolerance requirements (Ref. 1) for lifting pressures above 1000 psig

The pressurizer safety valve setpoint is ± 3% for OPERABILITY; however, the valves are reset to +2.67% / -1.78% during surveillance to allow for drift.

5

2

BASES

LCO (continued)

The limit protected by this Specification is the reactor coolant pressure boundary (RCPB) SL of 110% of design pressure. Inoperability of one or more valves could result in exceeding the SL if a transient were to occur. The consequences of exceeding the ASME pressure limit could include damage to one or more RCS components, increased leakage, or additional stress analysis being required prior to resumption of reactor operation.

APPLICABILITY

In MODES 1, 2, and 3, ~~and portions of MODE 4 above the LTOP arming temperature.~~ OPERABILITY of [three] valves is required because the combined capacity is required to keep reactor coolant pressure below 110% of its design value during certain accidents. MODE 3 and portions of MODE 4 are conservatively included, although the listed accidents may not require the safety valves for protection.

The LCO is not applicable in MODE 4 ~~when all RCS cold leg temperatures are ≤ [275]°F~~ or in MODE 5 because LTOP is provided. Overpressure protection is not required in MODE 6 with reactor vessel head detensioned.

The Note allows entry into MODE ~~5~~ 3 ~~and 4~~ with the lift settings outside the LCO limits. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The [54] hour exception is based on 18 hour outage time for each of the [three] valves. The 18 hour period is derived from operating experience that hot testing can be performed in this timeframe.

ACTIONS

A.1

With one pressurizer safety valve inoperable, restoration must take place within 15 minutes. The Completion Time of 15 minutes reflects the importance of maintaining the RCS Overpressure Protection System. An inoperable safety valve

BASES

ACTIONS

A.1 (continued)

coincident with an RCS overpressure event could challenge the integrity of the pressure boundary.

B.1 and B.2

If the Required Action of A.1 cannot be met within the required Completion Time or if two ~~or more~~ pressurizer safety valves are inoperable, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 ~~with any RCS cold leg temperatures ≤ [275] °F~~ within 12 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. With any RCS cold leg temperatures at or below [275] °F, overpressure protection is provided by the LTOP System. The change from MODE 1, 2, or 3 to MODE 4 reduces the RCS energy (core power and pressure), lowers the potential for large pressurizer insurges, and thereby removes the need for overpressure protection by [three] pressurizer safety valves.

1 3 3 the LTOP enabling temperature specified in the PTLR 4 two 1

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

SRs are specified in the Inservice Testing Program. Pressurizer safety valves are to be tested in accordance with the requirements of Section XI of the ASME Code (Ref. 4), which provides the activities and Frequencies necessary to satisfy the SRs. No additional requirements are specified.

The pressurizer safety valve setpoint is ± [3]% for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift.

1 3 5 +2.67% / -1.78%

REFERENCES

1. ASME, Boiler and Pressure Vessel Code, Section III.
2. FSAR, Chapter [15]

14 1