Consumers Energy

A CMS Energy Company

Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043

November 9, 1998

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

**DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT - CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS - RESPONSE TO AUGUST 24, 1998 REQUEST FOR ADDITIONAL INFORMATION**

On January 26, 1998 Consumers Energy Company submitted a Technical Specifications Change Request (TSCR) to revise the Palisades Technical Specifications to closely emulate the Standard Technical Specifications for Combustion Engineering Plants, NUREG-1432. On August 24 1998, the NRC requested additional information regarding Section 3.4, Primary Coolant System, and Section 3.9, Refueling Operations, of that TSCR. This letter provides both responses to the NRC questions and any associated revisions to the pages of our January 26, 1998 submittal.

The NRC RAI of August 24, 1998, requested that Consumers Energy provide a response within 60 days of our receipt of that RAI. Subsequently, in telephone conversations with both the NRC Technical Specifications Branch lead reviewer and the NRR Project Manager for Palisades, Consumers Energy received permission to delay the response for an additional 14 days to allow for additional internal review.

The following Enclosures to this letter have been provided:

Enclosure 1 contains: a) answers to the Request for Additional Information (RAI) and, b) markups of the previously submitted pages to show where revisions have been made.

Enclosure 2 contains marked-up ITS submittal pages to support a recent change to the proposed Bases of ITS 3.9.3, "Containment Penetrations."

Enclosures 3 and 4 contain revised pages for Sections 3.4, and 3.9 respectively, along with lists of revised pages and instructions for page replacement. These revised pages reflect changes resulting from our response to the RAI questions and other changes identified below. Each revised page is dated for identification.

A001

In addition to the revisions made in response to the RAI, the Bases of ITS 3.9.3, "Containment Penetrations" has been revised to correct information previously provided in our January 28, 1998 submittal found to be inconsistent with current analyses. Specifically, the function of the Fuel Handling Area Ventilation System, as described in the Bases of ITS 3.9.3, was based on information extracted from an NRC SER dated January 27, 1978 supporting Amendment 34 to the Palisades Facility Operating License.

The SER for Amendment 34 references the original SER for the plant operating license as the basis for its assumption that Fuel Handling Area Ventilation charcoal filtration was needed to mitigate a fuel handling accident inside containment with the equipment hatch open. That SER was written in 1970 and is no longer applicable. If charcoal filtration were necessary, it would be important for air to flow into containment through the open personnel air lock so that all containment air flow would exit through the Fuel Handling Ventilation system charcoal filter, and would thus only be released after charcoal filtration. It was later concluded, however, that charcoal filtration was not necessary for this event. The direction of air flow through the personnel air lock, therefore, would have no effect on the consequences of the fuel handling accident analysis. This conclusion is supported by the fact that the information in the January 27, 1978 SER was superseded by a later fuel handling accident analysis accepted by an NRC SER dated June 21, 1979, and the final evaluation for SEP Topic IX-5 issued February 11, 1982.

The changes being submitted herein do not alter the conclusions of the No Significant Hazards Considerations contained in our January 29, 1998 submittal.

SUMMARY OF COMMITMENTS

This submittal contains no new commitments and no revisions to existing commitments.

Kurt M. Haas
Director, Engineering

CC Administrator, Region III, USNRC
Project Manager, NRR, USNRC
NRC Resident Inspector - Palisades

Enclosures

CONSUMERS ENERGY COMPANY

**RESPONSE TO AUGUST 24, 1998 RAI**

To the best of my knowledge, the content of this response to the NRC Request for Additional Information dated August 24, 1998 concerning Sections 3.4 and 3.9 of our January 26, 1998 License Amendment request for conversion to Improved Technical Specifications, is truthful and complete.

Kurt M. Haas
Director, Engineering

Sworn and subscribed to before me this 9th day of November 1998.

Mary Ann Engle

Mary Ann Engle, Notary Public
Berrien County, Michigan
(Acting in Van Buren County, Michigan)
My commission expires February 16, 2000

**ENCLOSURE 1**

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

**CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS**
**RESPONSE TO AUGUST 24, 1998 REQUEST FOR ADDITIONAL INFORMATION**

**RESPONSE TO NRC QUESTIONS**

***NRC REQUEST***:

3.4-1 ITS 3.4.1
CTS 1.1
CTS 3.1.1
CTS 4.15
DOC A.2

CTS 3.1.1.c does not specify an applicability. DOC A.2 concludes that the applicability was intended to be for Power Operations, based on wording in CTS 4.15. CTS 1.1 Definitions defines Power Operations as the reactor critical above 2% power. DOC A.2 acknowledges that this definition is more restrictive than the ITS definition of Mode 1 (above 5% power), but still calls it an administrative change.

***Comment***: The DOC A.2 results in a less restrictive change to the CTS because the requirement no longer exists between 2% and 5% power. Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response***:

A new justification (Specification 3.4.1, DOC L.3) has been provided to address the less restrictive aspect of the change made to CTS 3.1.1c which excludes the requirement for primary system coolant flow between 2% and 5% power. In support of this justification, a new determination of no significant hazards consideration (Specification 3.4.1, NSHC L.3) has been provided.

***Affected Submittal Pages***:

Att 3 CTS page 3-1b (ITS 3.4.1 page 1 of 3)
Att 3 ITS 3.4.1, page 1 of 5
Att 3 ITS 3.4.1, page 2 of 5
Att 3 ITS 3.4.1, page 5 of 5
Att 4 ITS 3.4.1, page 4 of 4

(A.1) 3.4.1 PCS Pressure Temperature and Flow DNBR Limits

<ADD APPLICABILITY> A.2 A.3 A.4 L.3

3.4.1

3.4 (3.1) **PRIMARY COOLANT SYSTEM** (PCS) → A.1 RAI X 3.4.1 3.4.3

**Applicability**

Applies to the operable status of the primary coolant system.

**Objective**

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

**Specifications**

3.1.1 **Operable Components**

(See 3.4.5 thru 3.4.8) a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running.

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

(See 3.4.4) Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

LCO "c" SR 3.4.1.3 c. The measured four primary coolant pumps operating reactor vessel flow shall be 140.7 x $10^6$ lb/hr or greater, when corrected to 532°F.

(See 3.4.4 3.4.5) d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F.

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

See 3.2

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

A.2 CTS 3.1.1c has been modified to include an "Applicability" statement consistent with proposed ITS 3.4.1. The ITS requires DNB parameters to be met in MODE 1. CTS 3.1.1c does not explicitly state a required mode or condition for primary system flow rates, however, CTS 4.15 does require that the primary system flow rate be verified within the first 31 days of rated power operation. As such, it is reasonably concluded that the applicable mode for CTS 3.1.1c is during power operations. In the CTS, Power Operations is defined as a condition with the reactor critical and neutron flux greater than 2% Rated Power. Although the ITS definition of MODE 1 is slightly less restrictive when compared to the definition of Power Operations in the CTS (see ~~the Discussion of Changes for Chapter 1.0, "Use and Application~~"), the intent of ~~the~~ CTS and ITS requirements are consistent in that they both provide limits relative to DNBR sensitive parameter during plant conditions when DNBR is most likely to occur. RAI 3.4-1 X

Doc L.3

Therefore, specifying the Applicability for primary system flow rate as MODE 1 is administrative in nature.



1-b

A.3 CTS 3.1.1g requires the indicated reactor inlet temperature to be within limit "at steady state power operation." Proposed ITS 3.4.1 requires the reactor inlet temperature to be Operable in MODE 1. In the CTS, Power Operations is defined as a condition with the reactor critical and neutron flux greater than 2% Rated Power. Although the ITS definition of MODE 1 is slightly less restrictive when compared to the definition of Power Operations in the CTS (see ~~the Discussion of Changes for Chapter 1.0, "Use and Application~~"), the intent of the CTS and ITS requirements are consistent in that they both provide a limit on reactor inlet temperature during plant conditions when DNBR is most likely to occur. Therefore, specifying an Applicable Mode for reactor inlet temperature as MODE 1 is considered administrative in nature.

A.4 CTS 3.1.1f requires the nominal primary system operation pressure to be within limit but does not specify an applicable mode or plant condition. Proposed ITS 3.4.1 requires the pressurizer pressure to be within limit in MODE 1. Specification 3.1.1.f was included in the CTS by Amendment No. 21 (dated April 29, 1976) to limit the maximum nominal primary system operating pressure due to fuel densification effects on unpressurized fuel. In support of Amendment No. 21, various transients and accidents in the FSAR were evaluated. The Loss of External Load event was identified to be limiting with respect to system pressure due to the challenge it presented to the acceptance criteria for both primary and secondary system pressurization and DNBR. As stated in the FSAR, the Loss of External Load event is credible only for rated power and power operation events because there is no load on the turbine at other reactor conditions. As such, the intent of CTS 3.1.1f is to establish a limit which is applicable during Power Operations. Although the ITS definition of MODE 1 is slightly less restrictive when compared to the definition of Power Operations in the CTS (see ~~the Discussion of Changes for Chapter 1.0, "Use and Application~~"), the intent of the CTS and ITS requirements are consistent in that they both provide a limit on primary system pressure during plant conditions when DNBR is most likely to occur. Therefore, specifying an Applicable Mode for pressurizer pressure as MODE 1 is considered administrative in nature.

A.5 The Bases of the current Technical Specifications for this section have been completely replaced by revised Bases that reflect the format and applicable content consistent with NUREG-1432. The revised Bases are shown in the proposed Technical Specification Bases.

LESS RESTRICTIVE CHANGES (L)

L.1 In the CTS, if reactor vessel flow (3.1.1c) or nominal primary system pressure (CTS 3.1.1f) are not within limit, the plant must enter CTS 3.0.3 since specific actions are not provided when these parameters are outside their limit. CTS 3.0.3 allows 1 hour to initiate actions to place the plant in a condition in which the specification does not apply, and 6 hours to be in at least Hot Standby. Proposed ITS 3.4.1 Required Action A.1 addresses this same plant condition but allows 2 hours to restore these parameters to within limit. If primary system pressure or PCS flow rate can not be restored in the allowed time, Required Action B.1 requires the plant to be placed in MODE 2 within 6 hours. ITS Required Action A.1 is less restrictive than the action of the CTS since the ITS allows 2 hours to restore the out of limit parameter verse the 1 hour allowed by the CTS. The 2 hour Completion Time in the ITS provides sufficient time to determine the cause of the off normal condition and adjust plant parameters to restore the out of limit variable. The 6 hours to be in MODE 2 (ITS), and the 6 hours to be in Hot Standby (CTS), are essentially equivalent (see the Discussion of Changes for Chapter 1.0, "Use and Application") since both actions place the plant in a mode in which the specification no longer applies. This change is consistent with NUREG-1432.

L.2 CTS 3.1.1g. (1) requires the reactor inlet temperature be restored within 30 minutes if it exceeds its limit. Proposed ITS 3.4.1 Action A allows 2 hours to restore the reactor inlet temperature if it exceeds its limit. The proposed Required Action of the ITS is less restrictive than the action of the CTS since the ITS allows an additional 1.5 hours to restore the out of limit parameter. The 2 hour Completion Time stipulated in the ITS provides sufficient time to determine the cause of the off normal condition and adjust plant parameters to restore the out of limit temperature without initiating a premature plant shutdown. This change is consistent with NUREG-1432.

L.3 New (See INSERT) X

RAI 3.4.1
3.4.3



1-d

3.4-1 (ITS 3.4.1) L.3

The Mode of Applicability proposed in ITS 3.4.1, "DNB Parameters" represents a slight relaxation from the requirements of CTS 3.1.1c, CTS 3.1.1f and CTS 3.1.1g. As discussed in DOCs A.2, A.3, and A.4 for specification 3.4.1, CTS 3.1.1 does not contain an explicit mode of applicability for primary system flow rate, primary system pressure (pressurizer pressure), or reactor inlet temperature. However, it was reasonably concluded that the mode of applicability for these requirements is during "Power Operations". The CTS defines Power Operations as a condition with the reactor critical and neutron flux greater than 2% of Rated Power." In ITS 3.4.1, the Mode of Applicability is stated as Mode 1. The ITS defines Mode 1 as a plant condition with keff ≥ 0.99 and Rated Thermal Power (RTP) > 5%. Thus, ITS 3.4.1 is less restrictive when compared to CTS 3.1.1 since the ITS excludes plant operations between 2% and 5% RTP. This proposed change is acceptable since the parameters associated with ITS 3.4.1 are required to be maintained within limits to ensure that DNBR criteria will be met in the event of an unplanned transient. For the DNB limited events described in the Palisade's plant safety analysis, the conclusion of these analyses remain unchanged for events initiated between 2% and 5% RTP. This is due, in part, to the excess margin that is available to accommodate transients initiated at 100% RTP. In addition, for DNB sensitive events initiated at Hot Zero Power (HZP), violation of Standard Review Plan acceptance criteria is prevented by the Reactor Protection System (RPS). Inputs to the RPS instrumentation include the same parameters (i.e., primary system flow rate, primary system pressure, and reactor inlet temperature) monitored in ITS 3.4.1. Thus, adequate protection is provided to ensure that DNBR criteria will continue to be met between 2% and 5% RTP. Therefore, this change can be made without a significant impact on public health and safety. This change is consistent with NUREG-1432.

3. **Does this change involve a significant reduction in a margin of safety?**

The margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change extends the time to restore reactor inlet temperature to within limits from 30 minutes to 2 hours when this parameter is outside its specified limit. The proposed change does not effect established safety limits, operating restrictions, or design assumptions. There are no changes to any accident or transient analysis. The additional 1.5 hours proposed to restore an out of limit reactor inlet temperature provides sufficient time to determine the cause of the off normal condition and institute corrective measures to return the variable to within limit. Any decrease in margin as a result of the additional 1.5 hours to restore an out of limit parameter would most likely be offset by the benefit gained by avoiding a premature shut down of the plant. Therefore, this change does not involve a significant reduction in a margin of safety.

L.3 New (See insert) RAIs X 3.4-1 3.4-3

3.4-1 (ITS 3.4.1) NSHC L.3

The Mode of Applicability proposed in ITS 3.4.1, "DNB Parameters" represents a slight relaxation from the requirements of CTS 3.1.1c, CTS 3.1.1f and CTS 3.1.1g. As discussed in DOCs A.2, A.3, and A.4 for specification 3.4.1, CTS 3.1.1 does not contain an explicit mode of applicability for primary system flow rate, primary system pressure (pressurizer pressure), or reactor inlet temperature. However, it was reasonably concluded that the mode of applicability for these requirements is during "Power Operations". The CTS defines Power Operations as a condition with the reactor critical and neutron flux greater than 2% of Rated Power." In ITS 3.4.1, the Mode of Applicability is stated as Mode 1. The ITS defines Mode 1 as a plant condition with keff ≥ 0.99 and Rated Thermal Power (RTP) > 5%. Thus, ITS 3.4.1 is less restrictive when compared to CTS 3.1.1 since the ITS excludes plant operations between 2% and 5% RTP. This proposed change is acceptable since the parameters associated with ITS 3.4.1 are required to be maintained within limits to ensure that DNBR criteria will be met in the event of an unplanned transient. For the DNB limited events described in the Palisade's plant safety analysis, the conclusion of these analyses remain unchanged for events initiated between 2% and 5% RTP. This is due, in part, to the excess margin that is available to accommodate transients initiated at 100% RTP. In addition, for DNB sensitive events initiated at Hot Zero Power (HZP), violation of Standard Review Plan acceptance criteria is prevented by the Reactor Protection System (RPS). Inputs to the RPS instrumentation include the same parameters (i.e., primary system flow rate, primary system pressure, and reactor inlet temperature) monitored in ITS 3.4.1. Thus, adequate protection is provided to ensure that DNBR criteria will continue to be met between 2% and 5% RTP. Therefore, this change can be made without a significant impact on public health and safety. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the plant condition in which various plant parameters must be controlled to prevent exceeding DNB limits in the event of an accident. Thus, this change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. Although this change would allow the initial conditions for DNB sensitive transients to be relaxed between 2% RTP and 5% RTP, the consequences for these events remains unchanged. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only relaxes the requirement for DNB parameters between 2% RTP and 5% RTP. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the plant condition in which various plant parameters must be controlled to prevent exceeding DNB limits in the event of an accident. The margin of safety for DNB sensitive transients is established by the events described in the FSAR which considers the most limiting case for DNB. This includes plant operation between 2% RTP and 5% RTP. Thus, the margin of safety previously established for DNB sensitive events described in the FSAR remain unchanged. Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST***:

3.4-2 ITS 3.4.1.c
CTS 3.1.1.c
STS 3.4.1.c

ITS 3.4.1.c includes the words "when corrected to 532 deg F" for the total RCS flowrate. Although consistent with CTS 3.1.1.c, this is a deviation from STS 3.4.1.c.

***Comment***: No justification for this STS deviation is provided. Provide additional discussion and justification for the STS deviation based on current licensing basis.

***Consumers Energy Response***:

Subsequent to the January 1998 submittal to convert to the improved Technical Specifications, Consumers Energy requested an amendment to the Palisades plant Technical Specifications to revise the reactor vessel flow rate requirement of Specification 3.1.1c. The limit for PCS flow rate originally proposed in ITS 3.4.1 was "$\geq$ 140.7 x $10^6$ lb/hr when corrected to 532°F." The revised requirement for PCS flow rate is "$\geq$ 352,000 gpm." Justification for this change is presented in Consumer Energy's request for amendment to the Palisades plant Technical Specifications, dated June 17, 1998. To maintain consistency with the ITS conversion submittal which includes changes to the CTS pending NRC approval, the following pages have been revised to reflect the proposed change to Specification 3.1.1c:

CTS page 3-1b (ITS 3.4.1 page 1 of 3)
Att 1 ITS 3.4.1 page 3.4.1-1
Att 1 ITS 3.4.1 page 3.4.1-2
Att 2 ITS 3.4.1 page B 3.4.1-2
Att 5 ISTS 3.4.1 page 3.4.1
Att 5 ISTS 3.4.1 page 3.4.3
Att 5 ISTS 3.4.1 page B 3.4-2
Att 6 ITS 3.4.1 page 4 of 4

***Affected Submittal Pages***:

See above

(A.1)

3.4.1 PCS Pressure Temperature and Flow DNBR Limits

3.4.1

<ADD Applicability> (A.2) – (A.3) – (A.4)

(L.3)

3.1 PRIMARY COOLANT SYSTEM (A.1)

Applicability

Applies to the operable status of the primary coolant system.

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

(See 3.4.5 thru 3.4.8)

a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running.

(See 3.4.4)

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

LCO "C"

c. The measured four primary coolant pumps operating reactor vessel flow shall be ≥ 352,000 gpm.

(See 3.4.4 3.4.5)

d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F.

(See 3.2)

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

1 of 3



2-a

## 3.4 PRIMARY COOLANT SYSTEM (PCS)

### 3.4.1 PCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 PCS DNB parameters for pressurizer pressure, cold leg temperature, and PCS total flow rate shall be within the limits specified below:

a. Pressurizer pressure ≥ 2010 psia and ≤ 2100 psia;

b. The PCS cold leg temperature ($T_c$) shall not exceed the value given by the following equation:

$$T_c \leq 542.99 + 0.0580(P-2060) + 0.00001(P-2060)^2 + 1.125(W-138) - 0.0205(W-138)^2$$

Where:
- $T_c$ = PCS cold leg temperature in °F
- P = nominal operation pressure in psia
- W = total recirculating mass flow in 1E6 lb/hr corrected to the operating temperature conditions.

----------------------------NOTE---------------------------
If the measured primary coolant system flow is greater than 150.0 E6 lbm/hr, the maximum $T_c$ shall be less than or equal to the $T_c$ derived at 150.0 E6 lbm/hr.
-----------------------------------------------------------

c. PCS total flow rate ≥ ~~140.7 E6 lbm/hr when corrected to 532°F.~~ 352,000 gpm. Pending TS Change (RAI 3.4-2)

APPLICABILITY: MODE 1.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Pressurizer pressure, PCS cold leg temperature, or PCS total flow rate not within limits. | A.1 Restore parameter(s) to within limit. | 2 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 2. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.1.1 | Verify pressurizer pressure ≥ 2010 psia and ≤ 2100 psia. | 12 hours |
| SR 3.4.1.2 | Verify PCS cold leg temperature $\leq 542.99 + 0.0580(P-2060) + 0.00001(P-2060)^2 + 1.125(W-138) - 0.0205(W-138)^2$. | 12 hours |
| SR 3.4.1.3 | -------------------NOTE------------------- Not required to be performed until 24 hours after ≥ 90% RTP. ------------------------------------------ <br>Verify PCS total flow rate is ≥ ~~140.7 E6 lbm/hr when corrected to 532°F~~. 352,000 gpm | 18 months Pending TS Change (RAI 3.4-2) <br>AND <br>After each plugging of 10 or more steam generator tubes |

BASES

**APPLICABLE SAFETY ANALYSES**

The requirements of LCO 3.4.1 represent the initial conditions for DNB limited transients analyzed in the safety analyses (Ref. 1). The safety analyses have shown that transients initiated from the limits of this LCO will meet the DNBR Safety Limit (SL 2.1.1). This is the acceptance limit for the PCS DNB parameters. Changes to the facility that could impact these parameters must be assessed for their impact on the DNBR criterion. The transients analyzed for include loss of coolant flow events and dropped or struck control rod events. A key assumption for the analysis of these events is that the core power distribution is within the limits of LCO 3.1.6, "Regulating Rod Group Position Limits"; LCO 3.2.3, "Quadrant Power Tilt"; and LCO 3.2.4, "AXIAL SHAPE INDEX." The safety analyses are performed over the following range of initial values: PCS pressure 1700 - 2300 psia, core inlet temperature 500-580°F, and a measured reactor vessel inlet coolant flow rate ≥ ~~140.7 E6 lbm/hr~~ 352,000 gpm.

The PCS DNB limits satisfy Criterion 2 of 10 CFR 50.36(c)(2).

**LCO**

This LCO specifies limits on the monitored process of variables PCS pressurizer pressure and PCS cold leg temperature, and the calculated value of PCS total flow rate to ensure that the core operates within the limits assumed for the plant safety analyses. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient.

The LCO numerical values for pressure and temperature are given for the measurement location but have not been adjusted for instrument error. Plant specific limits of instrument error are established by the plant staff to meet the operational requirements of this LCO. Instrument errors and the PCS flow rate measurement error are applied to the LCO numerical values in the safety analysis.

④ RCS = PCS

Reactor Coolant = Primary Coolant

④ 3.4 [REACTOR] Primary COOLANT SYSTEM (PCS)

① 3.4.1 PCS Pressure, Temperature, and Flow [Departure from Nucleate Boiling (DNB)] Limits

LCO 3.4.1 PCS DNB parameters for pressurizer pressure, cold leg temperature, and PCS total flow rate shall be within the limits specified below:

CTS 3.1.1.f ① a. Pressurizer pressure ≥ [2025] 2010 psia and ≤ [2275] 2100 psia;

3.1.1.g ⑥ INSERT → b. RCS cold leg temperature ($T_c$) ≥ [535]°F and ≤ [558]°F for < [70]% RTP, or ≥ [544]°F and ≤ [558]°F for ≥ [70]% RTP; and

3.1.1.c ① ⑤ TSTF-129 c. PCS total flow rate ≥ [148 E6] 140.7 lb/hour m [and ≤ [177.6 E6] lb/hour] when corrected to 532°F.

≈ 352,000 gpm.

New APPLICABILITY: MODE 1.

Pending TS Change (RAI-3.4-2)

New ⑫

-----------------------------NOTE-----------------------------
Pressurizer pressure limit does not apply during:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step > 10% RTP.
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ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Pressurizer pressure, PCS cold leg temperature, or PCS total flow rate not within limits. | A.1 Restore parameter(s) to within limit. | 2 hours |
| B. Required Action and associated Completion Time [of Condition A] not met. | B.1 Be in MODE 2. | 6 hours |

CTS 3.1.1.g(1) ⑦ New PZR PCS Flow CTS 3.0.3

New CTS 3.0.3 ②

(continued)



2-e

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| CTS 4.15 ① ⑨ TSTF-105 | SR 3.4.1.3 --------NOTE-------- Not required to be performed until [24] hours after ≥ [90]% RTP. ------------------------------ Verify by precision heat balance that PRCS total flow rate within limits specified in the COLR. is ≥ 140.7 E6 lbm/hr when corrected to 5??°F ⑩ 352,000 gpm. | [18] months AND After each plugging of 10 or more steam generator tubes |

Pending TS change (RAI 3.4-2)



2-f

TSTF-136 (15)

BASES

APPLICABLE SAFETY ANALYSES (continued) (3)

distribution is within the limits of [LCO 3.1.7, "Regulating CEA Insertion Limits"; LCO 3.1.8, "Part Length CEA Insertion Limits"; LCO 3.2.3, "AZIMUTHAL POWER TILT ($T_q$)"; and LCO 3.2.5, "AXIAL SHAPE INDEX (ASI) (Digital)]"; [LCO 3.1.6, "Regulating Rod Insertion Limits"; LCO 3.2.3 "AZIMUTHAL POWER TILT ($T_q$)"; and LCO 3.2.8 "AXIAL SHAPE INDEX (Analog)"]. The safety analyses are performed over the following range of initial values: RCS pressure [1785-2400] psig, core inlet temperature [500-580]°F and reactor vessel inlet coolant flow rate [95-116]%.

(1) 1700- 2300 psia
(5) TSTF-127
"Group Position" "Quadrant Power Tilt" ≥ 140.7 E6 lbm/hr 352,000 gpm PENDING TS CHANGE (RAI 3.4-2)

(2) The RCS DNB limits satisfy Criterion 2 of the NRC Policy Statement. 10 CFR 50.36 (c)(2).

LCO

(11) This LCO specifies limits on the monitored process variables—RCS pressurizer pressure, RCS cold leg temperature, and RCS total flow rate—to ensure that the core operates within the limits assumed for the plant safety analyses. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient.

(the calculated value of)

The LCO numerical values for pressure, temperature, and flow rate are given for the measurement location but have not been adjusted for instrument error. Plant specific limits of instrument error are established by the plant staff to meet the operational requirements of this LCO. (4) Instrument errors and the RCS flow rate measurement error are applied to the LCO numerical values in the safety analysis.

(6) INSERT

APPLICABILITY

In MODE 1, the limits on RCS pressurizer pressure, RCS cold leg temperature, and RCS flow rate must be maintained during steady state operation in order to ensure that DNBR criteria will be met in the event of an unplanned loss of forced coolant flow or other DNB limited transient. In all other MODES, the power level is low enough so that DNBR is not a concern.

(12) A Note has been added to indicate the limit on pressurizer pressure may be exceeded during short term operational transients such as a THERMAL POWER ramp increase of > 5% RTP per minute or a THERMAL POWER step increase of > 10% RTP. These conditions represent short term perturbations where actions to control pressure variations might be

(continued)



2-9

| Change | Discussion |
|---|---|

15. To reflect the incorporation of TSTF-136 which consolidates ISTS 3.1.1 and ISTS 3.1.2, the specification number for ISTS 3.1.7, "Regulating Rod Insertion Limits" has been changed to ITS 3.1.6. This changes is consistent with NUREG-1432 as modified by TSTF-136.

RAI 3.4.2 X

16. New Insert

3.4-2 (ITS 3.4.1) JFD 16

This change reflects the current licensing basis/technical specifications. The Palisades plant design does not include installed PCS flow rate instrumentation. Initially for the first several fuel cycles, PCP differential pressure was used to derive the PCS (reactor vessel) flow rate using PCP flow curves which were generated at hot zero power (532°F) conditions. In recent years, the reactor vessel flow rate has been determined using a calorimetric heat balance solving the equation $Q = \dot{m}_{cp} \Delta T$ for $\dot{m}$. The change from a requirement expressed in mass flow rate (i.e, lb/hr) to one expressed in volumetric flow rate (i.e., gpm) eliminates the need to correct for specific PCS operating conditions.

***NRC REQUEST***:

3.4-3 ITS 3.4.1.b
ITS 1.1
CTS 3.1.1.g
CTS 1.1
DOC A.3

CTS 3.1.1.g specifies an applicability for reactor inlet temperature as "during steady state power operation." ITS 3.4.1.b is applicable in Mode 1. CTS Definitions defines Power Operations as the reactor critical above 2% power. DOC A.3 acknowledges that this definition is more restrictive than the ITS definition of Mode 1 (above 5% power), but still calls it an administrative change. This results in a less restrictive change to the CTS because the requirement no longer exists between 2% and 5% power. It is also a more restrictive change because the CTS requirement only applied to steady state conditions. The ITS requirement exists during power changes since no allowance is specified.

***Comment***: Provide additional discussion and justification for the less restrictive change. Provide additional discussion and justification for the more restrictive change.

***Consumers Energy Response***:

Justification for the less restrictive aspect of the change made to CTS 3.1.1g, which excludes the requirement for reactor inlet temperature between 2% and 5% power, has been provided in (new) DOC L.3 (See response to RAI Comment 3.4-1). In addition, DOC A.3 was revised to clarify that the proposed change to ITS 3.4.1 does not result in an additional restriction on plant operations since the CTS requirement for reactor inlet temperature applies throughout power operations when DNB is a concern.

***Affected Submittal Pages***:

Att 3 CTS page 3-1b (ITS 3.4.1 page 1 of 3)*
Att 3 ITS 3.4.1 page 2 of 5
Att 3 ITS 3.4.1 page 5 of 5*
Att 4 ITS 3.4.1 page 4 of 4*

* See response to RAI 3.4-1.

A.3 CTS 3.1.1g requires the indicated reactor inlet temperature to be within limit "at steady state power operation." Proposed ITS 3.4.1 requires the reactor inlet temperature to be Operable in MODE 1. In the CTS, Power Operations is defined as a condition with the reactor critical and neutron flux greater than 2% Rated Power. Although the ITS definition of MODE 1 is slightly less restrictive when compared to the definition of Power Operations in the CTS (see ~~the Discussion of Changes for Chapter 1.0, "Use and Application~~"), the intent of the CTS and ITS requirements are consistent in that they both provide a limit on reactor inlet temperature during plant conditions when DNBR is most likely to occur. Therefore, specifying an Applicable Mode for reactor inlet temperature as MODE 1 is considered administrative in nature. RAI 3.4.1 DOC L.3 X Insert X RAI 3.4.3

A.4 CTS 3.1.1f requires the nominal primary system operation pressure to be within limit but does not specify an applicable mode or plant condition. Proposed ITS 3.4.1 requires the pressurizer pressure to be within limit in MODE 1. Specification 3.1.1.f was included in the CTS by Amendment No. 21 (dated April 29, 1976) to limit the maximum nominal primary system operating pressure due to fuel densification effects on unpressurized fuel. In support of Amendment No. 21, various transients and accidents in the FSAR were evaluated. The Loss of External Load event was identified to be limiting with respect to system pressure due to the challenge it presented to the acceptance criteria for both primary and secondary system pressurization and DNBR. As stated in the FSAR, the Loss of External Load event is credible only for rated power and power operation events because there is no load on the turbine at other reactor conditions. As such, the intent of CTS 3.1.1f is to establish a limit which is applicable during Power Operations. Although the ITS definition of MODE 1 is slightly less restrictive when compared to the definition of Power Operations in the CTS (see ~~the Discussion of Changes for Chapter 1.0, "Use and Application~~"), the intent of the CTS and ITS requirements are consistent in that they both provide a limit on primary system pressure during plant conditions when DNBR is most likely to occur. Therefore, specifying an Applicable Mode for pressurizer pressure as MODE 1 is considered administrative in nature. DOC L.3 RAI 3.4.1 X

A.5 The Bases of the current Technical Specifications for this section have been completely replaced by revised Bases that reflect the format and applicable content consistent with NUREG-1432. The revised Bases are shown in the proposed Technical Specification Bases.

3.4-3 (ITS 3.4.1) A.3

...The portion of CTS 3.1.1g which reads "at steady state" is intended to apply to the plant condition at which the reactor inlet temperature is verified to be within limits. This statement is not intended to be exclusive to the applicability such that it would allow the reactor inlet temperature to exceed its limit during short-term operational transients such as power increases and power decreases. The intent of this phrase is consistent with the Bases for the Applicability of ISTS 3.4.1 which states "In MODE 1, the limits on RCS pressurizer pressure, RCS cold leg temperature, and RCS flow rate must be maintained during steady state operation in order to ensure that DNBR criteria will be met...."

***NRC REQUEST*:**

3.4-4 ITS 3.4.1
STS 3.4.1
JFD 12

STS 3.4.1 Applicability includes an allowance for pressurizer pressure during power changes. ITS 3.4.1 Applicability deletes this allowance. JFD 12 states that the system design accommodates power changes within the limits of the Applicability allowance without causing a reactor trip. The JFD further states that power changes greater than these limits are not typically performed, and that Condition A would be entered in the event that changes greater than the limits occur.

***Comment*:** This does not explain why the allowance is not needed. Elimination of the allowance would cause excessive and unnecessary entries into Condition A. Provide additional discussion and justification for deleting the allowance.

***Consumers Energy Response*:**

ITS 3.4.1, JFD 12 has been revised to explain why the allowance of the Applicability Note in ISTS 3.4.1 is not needed.

***Affected Submittal Pages*:**

Att 6 ITS 3.4.1 page 3 of 4

**Change** ← INSERT **Discussion** RAI 3.4-4

12. The Applicability Note in the ISTS which states that the pressurizer pressure limit does not apply during Thermal Power ramps > 5% RTP per minute, or Thermal Power steps >10% RTP, has not been incorporated in the ITS. The PCS and its associated controls are designed to accommodate plant step load changes of ± 10% of full power and ramp changes of ± 5% of full power per minute without a reactor trip. Plant maneuvering beyond these limits is not typically performed. If short term PCS perturbations result in pressurizer pressure being outside its limit, entry into Condition A will be made and pressurizer pressure will be restored to within 2 hours. X

13. The information related to the Safety Limits discussed in the Applicability has been moved to the Background section of the Bases to provide a more concise discussion of the relationship of the DNB parameters required by Specification 3.4.1 and the Safety Limits provided in Section 2.1. Placement of this information in the Background section is more appropriate than having it in the Applicability since this information does not pertain to the Applicability of Specification 3.4.1 and is better suited for the discussion presented in the Background section. Additions information was extracted from the Section 2.1 and included in the Background section of Specification 3.4.1 to enhance the overall discussion.

14. The Bases for ISTS SR 3.4.1.1 and SR 3.4.1.2 have been revised to be consistent with other types of Bases discussion for surveillance requirements. The ISTS implies the SR Frequencies are based, in part, on the Completion Time of Required Action A.1. Specifically, the ISTS states that since Required Action A.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency is sufficient to ensure that the out of limit parameter (pressurizer pressure, or cold leg temperature) can be restored following load changes and other expected transient operations. Throughout the ISTS, SR Frequencies are mutually exclusive to Completion Times for Required Actions and are determined on other factors such as operating practice, instrument drift, diverse indication and alarms, plant conditions, etc. Therefore in the ITS, the Bases for SR 3.4.1.1 and SR 3.4.1.2 have been consolidated and the discussion on Completion Times for Required Actions replaced by a discussion which clarifies that the Surveillance is performed using installed instrumentation which has been shown by operating practice to be sufficient to regularly assess for potential degradation and verify operation is within safety analysis assumptions.

3.4-4 (ITS 3.4.1) JFD 12

The Applicability Note in the ISTS which states that the pressurizer pressure limit does not apply during Thermal Power ramps > 5% RTP per minute, or Thermal Power steps >10% RTP, has not been incorporated in the ITS due to the limited application of the Note. For fuel performance considerations, plant procedures establish the maximum recommended power escalation rate. Between 50% and 92% RTP the rate is currently limited to 6%/hr (0.1%/min). Between 92% and 100% RTP the rate is currently limited to 4.5%/hr (0.5%/min). Below 50% RTP fuel performance is not a limiting factor in the power escalation rate. However, power escalation is influenced by various plant evolutions commonly associated with a plant startup (e.g., turbine startup, system alignments, instrument calibrations, chemistry holds etc.) which limit plant maneuvering in this operating region. Down power maneuvers are procedurally limited to 30%/hr (0.5%/min) for normal shutdowns, and 300%/hr (5%/min) for emergency shutdowns.

For transient induced power changes, the PCS and its associated controls are designed to accommodate plant step load changes of ± 10% RTP per minute and ramp changes of ± 5%RTP per minute without a reactor trip. However, transients which result in step load changes >10% RTP per minute, or ramp changes > 5% RTP per minute, are considered moderate frequency events (i.e., less than once per year). In such an event, a two hour Completion Time for the restoration of pressurizer pressure is deemed appropriate. Therefore, due to the unusual circumstances in which the Applicability Note of ISTS 3.4.1 could be applied, the Note can be excluded from the ITS without causing excessive or unnecessary entries into the Required Action for pressurizer pressure.

***NRC REQUEST***:

3.4-5 ITS SR 3.4.3.1
STS SR 3.4.3.1
JFD 8

STS SR 3.4.3.1 contains a note which requires performance only during heatup/cooldown operations, or during inservice leak or hydrostatic testing. ITS SR 3.4.3.1 deletes the requirement for performance during the inservice leak or hydrostatic testing. JFD 8 states that the requirements are the same for inservice leak or hydrostatic pressure as during normal operation, so the note is not necessary.

***Comment***: This assumes that the licensee would consider the plant to be in a heatup/cooldown operation during such testing. This would not necessarily be the case, in which event the surveillence requirement does not apply. Provide additional discussion and justification for deleting the allowance.

***Consumers Energy Response***:

ITS 3.4.3, JFD 8 has been revised to include additional justification for deleting a portion of the Note associated with ISTS SR 3.4.3.1.

***Affected Submittal Pages***:

Att 6 ITS 3.4.3, page 2 of 2

| Change | Discussion |
|---|---|
| 7. | A new sentence has been added to the Bases of SR 3.4.3.1 to clarify that calculation of the average hourly cooldown rate must consider evolutions which affect the reactor vessel inlet temperature. These evolutions include the initiation of shutdown cooling, starting a primary coolant pump with a temperature difference between the steam generator and PCS, or by stopping a primary coolant pump with shutdown cooling in service. The addition of this information does not alter the intent of the SR, but simply informs the operator of evolutions which may impact the hourly calculation. |
| 8. | INSERT ISTS SR 3.4.3.1 contains a Note which states that the SR is "only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing." In the ITS, the portion of this same Note which states "and RCS inservice leak and hydrostatic testing" has been deleted. The heatup and cooldown curves for the Palisades plant do not contain a unique curve for inservice leak and hydrostatic testing. Performance of inservice leak and hydrostatic testing is restricted to the normal heatup and cooldown limits associated with the primary coolant system. Therefore, to eliminate the potential for confusion related to the heatup and cooldown limits for inservice leak and hydrostatic testing, the ITS Note for SR 3.4.3.1 has been modified. Conforming changes have also been made to the Bases. RAI 3.4-5 |
| 9. | In the ISTS Bases Background discussion, the sentence which states "The criticality limit includes the Reference 2 requirement that the limit be no less than 40°F....." has been revised to read, "The minimum temperature at which the reactor can be made critical, as required by Reference 2, shall be at least 40°F....." This change was made because the Palisades plant heatup and cooldown curves do not contain a specific "criticality limit" and to clarify that the minimum temperature at which the reactor could be made critical is consistent with the requirements of 10 CFR 50, Appendix G. In addition, a reference was included to LCO 3.1.7, "Special Test Exceptions," since this LCO also establishes a limit on the minimum temperature at which the reactor can be made critical. |

3.4-5 (ITS 3.4.3) JFD 8

ISTS SR 3.4.3.1 contains a Note which states that the SR is "only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing." The portion of this same Note which states "and RCS inservice leak and hydrostatic testing" has not been adopted in the ITS and, a similar requirement does not exist in the CTS. Inservice leak and hydrostatic testing of the PCS is conducted at the normal operating pressure and normal operating temperature of the system. During testing, process control instrumentation is used to maintain pressure and temperature within a specified band. At a constant PCS temperature (i.e., no heatup or cooldown in progress) the upper bound for PCS pressure is established by the lift settings of the pressurizer safety valves. As such, the requirement of proposed ITS SR 3.4.3.1 to verify PCS pressure and PCS temperature are within the (P/T) limits of the heatup and cooldown curves during inservice leak and hydrostatic testing of the PCS is not necessary since, using currently approved (NRC) testing methodology, PCS pressure can not exceed the limits of the pressurizer safety valves.

***NRC REQUEST***:

3.4-6 ITS 3.4.4
STS 3.4.4
DOC A.2
JFD 7

STS 3.4.4 requires two RCS loops "OPERABLE" and in operation. ITS 3.4.4 deletes the "OPERABLE" reference. JFD 7 provided a reasonable justification which the reviewer accepted. However, DOC A.2 (which relates to a different change) placed reliance on ITS 3.4.4 requiring two PCS loops "OPERABLE" and in operation.

***Comment***: This is in conflict with JFD 7. Provide additional discussion and justification to resolve the inconsistency.

***Consumers Energy Response***:

ITS 3.4.4, DOC A.2 has been revised to reflect the requirement of proposed LCO 3.4.4 and to resolve the inconsistency with JFD 7.

***Affected Submittal Pages***:

Att 3 ITS 3.4.4 page 1 of 3

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

INSERT RAI 3.4-6

A.2 CTS 3.1.1b requires four primary coolant pumps to be in operation and CTS 3.1.1d requires both steam generators be capable of performing their heat transfer function. Proposed ITS 3.4.4 requires two PCS loops to be Operable and in operation. The Bases of ITS 3.4.4 define an Operable PCS loop as two PCPs providing forced flow for heat transport to a steam generator that is Operable (i.e., capable of performing its intended function) in accordance with the Steam Generator Tube Surveillance Program. As such, the requirements of CTS 3.1.1b and CTS 3.1.1d are the same as the requirements of ITS 3.4.4 since both the CTS and the ITS require four PCPs to be in operation, and two Operable steam generators. Thus, the difference between the CTS and the ITS can be characterized as administrative since there is no change in the requirements between the CTS and ITS. This change is consistent with NUREG-1432.

A.3 CTS 3.1.1b requires four PCPs to be in operation "whenever the reactor is operated above hot shutdown." Proposed ITS 3.4.4 requires four PCPs to be in operation in MODES 1 and 2. The CTS plant condition of "hot shutdown" translates to "MODE 3" in the ITS. As such, the CTS requirement to have four PCPs in operation above "hot shutdown" is the same as the ITS requirement to have four PCPs in operation in MODES 1 and 2. Thus, the difference between the CTS and the ITS can be characterized as administrative since there is no change in requirements between the CTS and ITS. This change is consistent with NUREG-1432.

3.4-6 (ITS 3.4.4) DOC A.2

CTS 3.1.1b requires four primary coolant pumps to be in operation. CTS 3.1.1d requires both steam generators be capable of performing their heat transfer function. Proposed ITS 3.4.4 requires two PCS loops to be in operation. The Bases of ITS 3.4.4 clarifies that the Operability requirements related to steam generators in Modes 1 and 2 are addressed by LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation," and LCO 3.4.13, PCS Operational Leakage." As such, a steam generator is considered Operable when it has adequate water level (LCO 3.3.1), and tube integrity is demonstrated acceptable in accordance with the Steam Generator Tube Surveillance Program (LCO 3.4.13). Therefore, it is not necessary to stipulate the requirement for Operable steam generators in ITS 3.4.4 since this requirement is adequately addressed by other specifications. Thus, the difference between the CTS and the ITS for PCS loops and steam generators can be characterized as administrative since there is no change in the requirements. This change is consistent with NUREG-1430, "Standard Technical Specifications, Babcock and Wilcox Plants" which previously corrected the disjoint between the LCO and Surveillance Requirements that presently exists in NUREG-1431 ("Standard Technical Specifications, Westinghouse Plants") and NUREG-1432.

***NRC REQUEST*:**

3.4-7 ITS 3.4.5
CTS 3.1.1.a
DOC A.3

CTS 3.1.1.a applies when the reactor is in cold shutdown or above. ITS 3.4.5 Applicability is Mode 3 (Hot Standby). DOC A.3 states that the ITS Mode 3 is included in the CTS requirement.

***Comment*:** DOC A.3 does not explain the ITS relaxation of the requirement in Modes 4 and 5, which was included in the CTS. The relaxation of the Modes 4 and 5 requirement in the ITS is a less restrictive change. Provide additional discussion and justification for the relaxation in the ITS.

***Consumers Energy Response*:**

ITS 3.4.5, DOC A.3 addresses the CTS requirement for primary coolant pumps as it applies to proposed LCO 3.4.5. The discussion in DOC A.3 is limited only to Mode 3 (i.e., an average primary coolant temperature ≥ 300°F) since LCO 3.4.5 only applies in Mode 3. Discussions addressing the CTS requirement for primary coolant pumps below Mode 3 are provided in the corresponding DOCs for proposed LCO 3.4.6, LCO 3.4.7, and LCO 3.4.8.

***Affected Submittal Pages*:**

None

***NRC REQUEST***:

3.4-8 ITS 3.4.5
CTS 3.1.1.a

CTS 3.1.1.a applies when a change is being made in the boron concentration. This could be either an increase or decrease in the concentration. An exception is provided for boron concentration increases during an emergency loss of flow condition only. ITS 3.4.5 provides an allowance for any reason up to an hour, and further allows increases in the boron concentration during a non-emergency suspension of RCS flow.

***Comment***: This results in a less restrictive change. Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response***:

A new DOC (ITS 3.4.5, DOC L.2) has been provided to justify the relaxation made to the requirement of CTS 3.1.1a which precludes an increase in PCS boron concentration when no primary coolant pumps are running "except during an emergency loss of coolant flow situation." DOC L.2 provides a justification which would allow the boron concentration of the PCS to be increased when no PCS pumps are in operation for plant conditions other than "an emergency loss of coolant flow situation." Previously, the exception to borate during emergency conditions was characterized as a "Less Restrictive Administrative" change (LA.1) on the basis that the intent of this exception was to clarify that the technical specification did not preclude emergency boration in the event of an emergency loss of flow, and that appropriate guidance was provided in plant procedures. However, since ITS 3.4.5 does not prevent an increase in PCS boron concentration under any situation in Mode 3, DOC LA.2 has been deleted and replaced by DOC L.2. In support of this justification, a new determination of no significant hazards consideration (Specification 3.4.5, NSHC L.2) has been provided.

***Affected Submittal Pages***:

Att 3 CTS page 3-1b (ITS 3.4.5 page 1 of 2)
Att 3 ITS 3.4.5 page 3 of 4
Att 3 ITS 3.4.5 page 4 of 4
Att 4 ITS 3.4.5 page 2 of 2

3.4.5 PCS Loops - MODE 3 (A.1)

3.4
3.1 PRIMARY COOLANT SYSTEM (PCS) → (A.1)

Applicability

Applies to the operable status of the primary coolant system.

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

<ADD NOTE 1>

LCO & Applic — a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation (M.1) whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, (See 3.4.6 thru 3.4.8) (A.3) except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running. (LA.1) (L.2)

(See 3.4.4) b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception: RAI 34-8

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

(See 3.4.1) c. The measured four primary coolant pumps operating reactor vessel flow shall be 140.7 x 10⁶ lb/hr or greater, when corrected to 532°F.

LCO & Applic (A.2) d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F. (A.3)

(See 3.2) e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

(L.1) <ADD RA A.1 & RA B.1>

(M.2) <ADD RA C.1 & RA C.2 No Loops Operable>

(M.1) <ADD RA C.1 & RA C.2 No Loops in Operation>

<ADD SR 3.4.5.1 SR 3.4.5.2 SR 3.4.5.3> (M.3)

M.3 Three new Surveillance Requirements have been included as part of ITS 3.4.5. SR 3.4.5.1 requires a verification that the required PCS loop is in operation every 12 hours, SR 3.4.5.2 requires a verification that the secondary side water level in each SG is ≥ -84% every 12 hours, and SR 3.4.5.3 requires a verification that correct breaker alignment and indicated power are available to the required pump that is not in operation. Although the ability to ascertain the status of PCS loops and SGs is provided elsewhere in the CTS (e.g., Channel Checks for accident monitoring instruments) the inclusions of these SRs provides a concise requirement directly related to the LCO for PCS loops. As such, the addition of these SRs has been characterized as more restrictive. This change is consistent with NUREG-1432.

**LESS RESTRICTIVE CHANGES - REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)**

RAI 3.4-8

LA.1 CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." This exception has not been included in the ITS since this information is adequately addressed by plant emergency procedures. In the event of an emergency loss of forced flow situation, plant procedures direct the operators in the steps necessary to place the plant in a safe condition. These steps may include the addition of borated water to the PCS (either by manual initiation, or automatic safety injection initiation) to provide core cooling or to maintain Shutdown Margin. Placing this allowance in plant procedures is acceptable since this information it is not required to adequately describe the actual regulatory requirement associated with PCS loop operation in Mode 3, and maintaining this information in plant procedures will not result in a significant impact on safety. Changes to plant procedures are controlled in accordance with administrative processes for procedure revisions. This change is consistent with NUREG-1432.

There were no "Removal of Detail" changes associated with this specification

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.1d specifies that both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F. However, the CTS does not provide specific actions if one of the steam generators becomes inoperable. Therefore, the plant must apply the actions of CTS LCO 3.0.3. When the plant is in hot shutdown, CTS 3.0.3 allows one hour to initiate actions to place the plant in a condition in which the specification does not apply, and an additional 24 hours to place the plant in cold shutdown. Once the average temperature of the PCS is below 300°F, further actions are not required. In proposed ITS 3.4.5, Condition A addresses the situation when one required PCS loop is inoperable, and Condition B addresses the situation when the Required Actions and associated Completion Time of Condition A are not met. Condition A allows 72 hours to restore the required PCS loop to an Operable status, and Condition B allows 24 hours to be in MODE 4. The Required Actions of the ITS are less restrictive than the CTS because the ITS allows 72 hours to restore an inoperable loop to Operable status plus an additional 24 hours to place the plant in MODE 4. The CTS only allows 25 hours to place the plant in cold shutdown. (Note: the CTS does not define a plant condition between 210°F and 525°F. Additional clarification related to Applicability is provided in Discussion of Change A.2) Specifying 72 hours in the ITS is acceptable since the loss of one required PCS loop only represents a loss in redundancy. With one PCS loop inoperable, one Operable PCS loop and one running PCP are available to provide the necessary heat removal function and soluble boron mixing function in the PCS. The ITS Completion Time of 24 hours to place the plant in MODE 4 when an inoperable PCS loop can not be restored in 72 hours is acceptable since it is compatible with the required operation to achieve cooldown and depressurization from the existing plant conditions in a orderly manner without challenging plant systems. This change is consistent with NUREG-1432.

L.2 New (see INSERT) RAI 3.4-8

3.4-8 (ITS 3.4.5) L.2

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.5 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 3. LCO 3.4.5 contains a Note which allows all primary coolant pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.5 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 3, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increase in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

1. (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change extends the time to restore an inoperable PCS loop from 1 hour to 72 hours and limits the plant shutdown to MODE 4. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. As such, the consequences of an accident occurring in the proposed 96 hours (72 hours plus 24 hours) is the same as the consequences occurring in the existing 25 hours (1 hour plus 24 hours). Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only extends the allowed outage time associated with an inoperable PCS loop in MODE 3. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change extends the time to restore an inoperable PCS loop from 1 hour to 72 hours and limits the plant shutdown to MODE 4 when the Required Actions can not be met. The proposed change does not affect established safety limits, operating restrictions, or design assumptions. There are no changes to any accident or transient analysis. The inoperability of one PCS loop only results in a loss of redundancy. The additional 71 hours to restore an inoperable steam generator provides sufficient time to determine the cause of the inoperability and to institute corrective measures. Any decrease in margin as a result of the additional 71 hours to restore an inoperable component would most likely be offset by the benefit gained by avoiding a premature shut down to MODE 4. Therefore, this change does not involve a significant reduction in a margin of safety.



L.2 New (see insert) 8-e RAI 3.4-8

3.4-8 (ITS 3.4.5) NSHC L.2

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.5 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 3. LCO 3.4.5 contains a Note which allows all primary coolant pumps to be stopped for ≤1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.5 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 3, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increase in the amount of actual or available Shutdown Margin. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 3 during the time that no PCS pumps are in operation. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 3 during the time that no PCS pumps are in operation. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 3 during the time that no PCS pumps are in operation. The addition of soluble boron to the PCS while the plant is in Mode 3 (with or without the operation of the PCS pumps) offsets the presence of core reactivity and thereby increases the amount of actual or available Shutdown Margin. As such, for accidents or transients involving the addition of positive reactivity in Mode 3 (e.g., main steam line break, boron dilution event, etc.) the proposed change provides an increase in the margin of safety. For other types of accidents or transients, the proposed change does not alter the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST*:**

3.4-9 ITS 3.4.5
CTS 3.1.1.a
DOC LA.1

CTS 3.1.1.a provides an exception to the RCS flow requirement, which was removed in ITS 3.4.5. An exception to a requirement is essentially an allowance. Removal of an allowance constitutes a more restrictive change. This deletion was considered a less restrictive change as described in DOC LA.1. Furthermore, such an allowance is already provided in ITS 3.4.5, as was described in Comment 3.4-8 above.

***Comment*:** The reason for the classification of this change as less restrictive is not clear. Provide additional discussion and justification for this change.

***Consumers Energy Response*:**

As discussed in the response to Comment 3.4-8, proposed ITS 3.4.5 does not prevent an increase in PCS boron concentration under any situation while the plant is in Mode 3. As such, the exception contained in CTS 3.1.1a to allow the PCS boron concentration to be increased "during an emergency loss of flow situations" is no longer needed. The deletion of this exception has been characterized as Less Restrictive (DOC L.2) since the cumulative affect of this change provides a relaxation to the requirements for PCS loops previously specified in CTS 3.1.1a.

***Affected Submittal Pages*:**

None

***NRC REQUEST***:

3.4-10 ITS 3.4.5 Action C
CTS 3.0.3
CTS 3.1.1.a and 3.1.1.d
DOCs M.1 and M.2

ITS 3.4.5 Action C requires immediate action when no RCS loop is Operable or in operation. CTS 3.1.1.a and 3.1.1.d provided no Action statement, thereby requiring entry in CTS 3.0.3. Once ITS 3.4.5 Action C is entered, no further action is required. This is less restrictive than the provisions of CTS 3.0.3, which requires placing the plant in a lower Mode. DOC M.1 and M.2 do not address this less restrictive change.

***Comment***: Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response***:

The addition of ITS 3.4.5 Required Action "C" has been characterized as a "More Restrictive" change (DOCs M.1 and M.2) relative to the requirements of CTS 3.0.3 since it provides the actions necessary to restore compliance with the LCO in a time commensurate with the importance of the event.

CTS 3.1.1a requires a primary coolant pump to be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above. Since no explicit action is provided for failure to meet the requirement of CTS 3.1.1a. the provisions of CTS 3.0.3 are taken which require the plant to be placed in "cold shutdown" within 25 hours. Since CTS 3.1.1a is required to be met in "cold shutdown," placing the plant in cold shutdown in compliance with CTS 3.0.3 would not remove the plant from the condition in which the non-compliance applies. As such, the requirement of CTS 3.1.1a would continue to be not met after complying with the actions of CTS 3.0.3. Therefore, the Required Actions of ITS 3.4.5 Condition C are more appropriate (and more restrictive) since they require that actions be initiated "Immediately" upon failure to meet the LCO (versus the one hour allowed by CTS 3.0.3), and continued until compliance with the LCO is restored (which 3.0.3 does not necessary require).

(continued)

3.4-10

***Consumers Energy Response***: (continued)

CTS 3.1.1d requires both steam generators to be capable of performing their heat transfer function whenever the average PCS temperature is above 300°F. Since no explicit action is provided for failure to meet the requirement of CTS 3.1.1d. the provisions of CTS 3.0.3 are taken which require the plant be placed in a condition in which the specification no longer applies (i.e., ≤ 300°F). However, with both steam generators incapable of performing their heat transfer function, a loss of decay heat removal capability exists and the plant can not be cooled down below 300°F. As such, the requirements of CTS 3.0.3 might not be able to be met. Therefore, the Required Actions of ITS 3.4.5 Condition C are more appropriate (and more restrictive) since they require that actions be initiated "Immediately" upon failure to meet the LCO (versus the one hour allowed by CTS 3.0.3), and continued until compliance with the LCO is restored (which 3.0.3 does not necessary require).

***Affected Submittal Pages***:

None

***NRC REQUEST*:**

3.4-11 ITS 3.4.6
CTS 3.1.1.a
CTS 3.1.9.1
DOC A.2

The provisions of CTS 3.1.1.a when in Mode 4 are being deleted. ITS 3.4.6, which is intended to provide essentially the same requirements, was patterned after the provisions of CTS 3.1.9.1 as described in DOC A.2. While some provisions of CTS 3.1.9.1 are broader and more encompassing than those in CTS 3.1.1.a, two less restrictive changes result. CTS 3.1.9.1 does not preclude changes in boron concentration under no RCS flow conditions, and the overall Actions required under no RCS flow conditions in CTS 3.1.9.1 are less restrictive than those invoked by CTS 3.1.1.a (entry into CT 3.0.3).

***Comment*:** These less restrictive changes require appropriate discussion and justification. Provide additional discussion and justification for the less restrictive changes.

***Consumers Energy Response*:**

A new DOC (ITS 3.4.6, DOC L.2) has been provided to justify the relaxation made to the requirement of CTS 3.1.1a which precludes an increase in PCS boron concentration when no Primary Coolant Pumps (PCS) or Shutdown Cooling (SDC) pumps are running "except during an emergency loss of coolant flow situation." DOC L.2 provides a justification which would allow the boron concentration of the PCS to be increased when no PCS or SDC pumps are in operations for plant conditions other than "an emergency loss of coolant flow situation." Previously, the requirements of CTS 3.1.1a were evaluated as being bounded by the more restrictive requirements of CTS 3.1.9.1 as discussed in ITS 3.4.6 DOC A.2. However, since ITS 3.4.6 does not prevent an increase in PCS boron concentration under any situation in Mode 4, this conditions has been re-characterized as less restrictive.

(continued)

3.4-11

***Consumers Energy Response***: (continued)

CTS 3.1.1a only requires a PCS pump or SDC pump to be in operation whenever a change is being made in the boron concentration of the primary coolant. As such, under no PCS flow conditions, the requirements of CTS 3.1.1a are met as long as no changes to the PCS boron concentration are being made. CTS 3.1.9.1 requires a PCS pump or SDC pump to be in operation whenever the plant is in Mode 4. Under no flow conditions, the Actions of CTS 3.1.9.1 require that corrective action to return a loop or train to operation be initiated immediately. The overall actions of CTS 3.1.9.1 are more restrictive than the actions of CTS 3.1.1a since they reflect the corrective actions necessary to address a loss of decay heat capability. The requirements of CTS 3.1.9.1 and its associated Actions were previously approved by the NRC in Amendment 161 to the Palisades Plant operating license on August 12, 1994 and were based, in part, on NUREG-1432, and Generic Letter 88-17, "Loss of Decay Heat Removal."

***Affected Submittal Pages***:

Att 3 CTS page 3-1b (ITS 3.4.6 page 1 of 6)
Att 3 ITS 3.4.6 page 4 of 4
Att 4 ITS 3.4.6 page 2 of 2

3.4.6 PCS Loops - Mode 4

3.1 PRIMARY COOLANT SYSTEM (PCS)

A.1

Applicability

Applies to the operable status of the primary coolant system.

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

A.2

a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running.

L.2

RAI 3.4-11

(See 3.4.4)

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

(See 3.4.1)

c. The measured four primary coolant pumps operating reactor vessel flow shall be 140.7 x $10^6$ lb/hr or greater, when corrected to 532°F.

(See 3.4.5, 3.4.4)

d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F.

(See 3.2)

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 CTS 3.1.9.1 contains details associated with PCS loop and SDC train Operability. In proposed ITS 3.4.6, the details associated with PCS loop and SDC train Operability are contained in the Bases. The CTS states that an Operable SDC train consists of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan" and that an Operable PCS loop consists of "an Operable Primary Coolant Pump and an Operable Steam Generator and secondary water level ≥ -84%. In the ITS, an Operable PCS loop consists of one Operable PCP and an SG that is Operable in accordance with the Steam Generator Tube Surveillance Program and that has a minimum water level of -84%. Similarly, for the SDC system, an Operable SDC train is composed of an Operable SDC pump capable of providing forced flow to the SDC heat exchanger. Support systems Operability (e.g., Component Cooling Water, Service Water, ultimate heat sink etc.) is addressed by the definition of Operability. As such, the proposed Bases description of Operability is equivalent to the details contained in CTS 3.1.9.1. Specifying the details of what constitutes an Operable PCS loop and SDC train in the Bases is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.9.1 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.6, this same action is not stipulated since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 300°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.6. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

RAI 3.4-11 L.2 INSERT



RAI 3.4-12 L.3 INSERT

RAI 3.4-13 L.4 INSERT

3.4-11 (ITS 3.4.6) L.2

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.6 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 4. LCO 3.4.6 contains a Note which allows all primary coolant pumps and shutdown cooling pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.6 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 4, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increases in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and because any one remaining loop or train is capable of performing the decay heat removal function. The proposed change does not affect any accident or transient analysis and will not permit an increase in PCS temperature such that a change in modes is allowed to occur. Adequate compensatory actions are established in the Technical Specifications to restore the inoperable decay heat removal means as soon as possible. Therefore, this change does not involve a significant reduction in a margin of safety.

RAI
3.4-11 L.2 INSERT
3.4-12 L.3 INSERT
3.4-13 L.4 INSERT

3.4-11 (ITS 3.4.6) NSHC L.2

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.6 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 4. LCO 3.4.6 contains a Note which allows all primary coolant pumps and shutdown cooling pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.6 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 4, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increases in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 4 during the time that no PCS or SDC pumps are in operation. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 4 during the time that no PCS or SDC pumps are in operation. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 4 during the time that no PCS or SDC pumps are in operation. The addition of soluble boron to the PCS while the plant is in Mode 4 (with or without the operation of the PCS or SDC pumps) offsets the presence of core reactivity and thereby increases the amount of actual or available Shutdown Margin. As such, for accidents or transients involving the addition of positive reactivity in Mode 4 (e.g., main steam line break, boron dilution event, etc.) the proposed change provides an increase in the margin of safety. For other types of accidents or transients, the proposed change does not alter the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST***:

3.4-12 ITS 3.4.6 Action A and Action B
CTS 3.1.9.1 Action 1.a

CTS 3.1.9.1 Action 1.a requires immediate action to restore a second PCS or SDC loop to operation when only one of the four (combined PCS and SDC) loops are operable. Two conditions could exist to result in this situation: (a) One PCS and both SDC loops inoperable; (b) Both PCS and one SDC loop inoperable. ITS 3.4.6 Action A requires the immediate restoration requirement for condition (a). However, ITS 3.4.6 Action B, which covers condition (b), does not include the immediate restoration requirement.

***Comment***: This is a less restrictive change. Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response***:

A new justification (Specification 3.4.6, DOC L.3) has been provided to address the less restrictive aspect of the change made to CTS 3.1.9.1 which requires corrective actions be initiated "Immediately" to return a second PCS loop or SDC train to an operable status in the event only one SDC train is operable in Mode 4. In support of this justification, a new determination of no significant hazards consideration (Specification 3.4.6, NSHC L.3) has been provided.

***Affected Submittal Pages***:

Att 3 CTS page 3-25h (ITS 3.4.6 page 3 of 6)
Att 3 ITS 3.4.6 page 4 of 4
Att 4 ITS 3.4.6 page 2 of 2

PRIMARY COOLANT SYSTEM
3.4.6 PCS LOOP - MODE 4 (A.1)

3.1.9 SHUTDOWN COOLING (SDC)

Specification

LCO 3.1.9.1 One PCS loop or SDC train shall be in operation providing ≥ 2810 gpm flow through the reactor core, and at least two of the means of decay heat removal listed below shall be OPERABLE:

1. SDC train A consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.

2. SDC train B consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.

3. PCS loop 1 consisting of an OPERABLE Primary Coolant Pump and an OPERABLE Steam Generator and secondary water level ≥ -84%.

4. PCS loop 2 consisting of an OPERABLE Primary Coolant Pump and an OPERABLE Steam Generator and secondary water level ≥ -84%.

(LA.1)

Applicability

Applic Specification 3.1.9.1 applies when there is fuel in the reactor, with PCS Temperature is > 200°F and ≤ 300°F. (< ) (A.3)

Exception

LCO Note 1
1. All flow through the reactor core may be intentionally stopped for up to 1 hour (Per 8 hour Period — M.1) provided:

a. No operations are permitted that would cause reduction of the PCS boron concentration, and

b. Core outlet temperature stays ≥ 10°F below saturation temperature.

RA.1 3.4-12

Action

COND A&B
1. With fewer OPERABLE means of decay heat removal than required:

RA. A.1 a. Immediately initiate corrective action to return a second loop or train to OPERABLE status, and (L.3)

b. Maintain PCS temperature as low as practical with available equipment. (L.1)

RA B.1 c. If a SDC train is available, be < 200°F within 24 hours.

COND C
2. With less flow through the core than required:

RA C.1 a. Immediately suspend all operations involving a reduction in PCS boron concentration, and

RA C.2.1
RA C.2.2 b. Immediately initiate corrective action to return a loop or train to operation providing flow through the core.

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 CTS 3.1.9.1 contains details associated with PCS loop and SDC train Operability. In proposed ITS 3.4.6, the details associated with PCS loop and SDC train Operability are contained in the Bases. The CTS states that an Operable SDC train consists of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan" and that an Operable PCS loop consists of "an Operable Primary Coolant Pump and an Operable Steam Generator and secondary water level ≥ -84%. In the ITS, an Operable PCS loop consists of one Operable PCP and an SG that is Operable in accordance with the Steam Generator Tube Surveillance Program and that has a minimum water level of -84%. Similarly, for the SDC system, an Operable SDC train is composed of an Operable SDC pump capable of providing forced flow to the SDC heat exchanger. Support systems Operability (e.g., Component Cooling Water, Service Water, ultimate heat sink etc.) is addressed by the definition of Operability. As such, the proposed Bases description of Operability is equivalent to the details contained in CTS 3.1.9.1. Specifying the details of what constitutes an Operable PCS loop and SDC train in the Bases is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.9.1 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.6, this same action is not stipulated since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 300°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.6. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

RAI 3.4-11

L.2 INSERT



RAI 3.4-12 L.3 INSERT

RAI 3.4-13 L.4 INSERT

14-b

3.4-12 (ITS 3.4.6) DOC L.3

In the event only one SDC train is available to perform the decay heat removal function in Mode 4, CTS 3.1.9.1 Action 1.a requires that corrective actions be initiated immediately to return a second loop or train to Operable status. In addition, CTS 3.1.9.1 Action 1.c requires the primary coolant temperature be <200°F within 24 hours. For this same case, proposed ITS 3.4.6 Condition B only requires the plant be placed in Mode 5 within 24 hours and does not require corrective actions be initiated immediately to return a second loop or train to Operable status. The Required Actions of ITS 3.4.6 represent a relaxation from the requirements of CTS 3.1.9.1. The acceptability of this change is based on the reliability of the remaining Operable SDC train in performing the decay heat removal function. Recognition of this capability eliminates the urgency to immediately initiate corrective actions and allows the plant to be placed in a lower mode in a timely fashion. This change is consistent with NUREG-1432.

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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and because any one remaining loop or train is capable of performing the decay heat removal function. The proposed change does not affect any accident or transient analysis and will not permit an increase in PCS temperature such that a change in modes is allowed to occur. Adequate compensatory actions are established in the Technical Specifications to restore the inoperable decay heat removal means as soon as possible. Therefore, this change does not involve a significant reduction in a margin of safety.

RAI
3.4-11 L.2 INSERT
3.4-12 L.3 INSERT
3.4-13 L.4 INSERT

3.4-12 (ITS 3.4.6) NSHC L.3

In the event only one SDC train is available to perform the decay heat removal function in Mode 4, CTS 3.1.9.1 Action 1.a requires that corrective actions be initiated immediately to return a second loop or train to Operable status. In addition, CTS 3.1.9.1 Action 1.c requires the primary coolant temperature be <200°F within 24 hours. For this same case, proposed ITS 3.4.6 Condition B only requires the plant be placed in Mode 5 within 24 hours and does not require corrective actions be initiated immediately to return a second loop or train to Operable status. The Required Actions of ITS 3.4.6 represent a relaxation from the requirements of CTS 3.1.9.1. The acceptability of this change is based on the reliability of the remaining Operable SDC train in performing the decay heat removal function. Recognition of this capability eliminates the urgency to immediately initiate corrective actions and allows the plant to be placed in a lower mode in a timely fashion. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes an administrative requirement associated with the CTS when fewer means of decay heat removal are operable than required. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates the requirement to immediately initiate corrective actions to return a second PCS loop or SDC train to an operable status in the event only one SDC train is operable in Mode 4. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change allows the plant to be placed in Mode 5 from Mode 4 within 24 hours when only one SDC train and no PCS loops are available for cooling without taking concurrent actions to restore a second SDC train or PCS loop to operable status. This change does not preclude restoration of a redundant SDC train or PCS loop, but simply eliminates the urgency to restore a second decay heat removal method based on the reliability of an Operable SDC train. This change relaxes an administrative requirement only and does not affect any accident analysis, operating limit, or design assumption. Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST***:

3.4-13 ITS 3.4.6 Actions
CTS 3.1.9.1
CTS 3.10.1.c
DOC A.5

The Actions required by CTS 3.10.1.c when RCS flowrate is less than the limit require specific actions associated with charging pumps and/or shutdown margin. These actions are deleted in ITS 3.4.6. DOC A.5 states that ITS 3.4.6 Actions (which are carried forward from CTS 3.1.9.1) are more restrictive because the time limit is shorter and they include suspension of all operations that can reduce boron concentration (vice just charging pumps). The specific shutdown margin requirements and the charging pump disabling/monitoring actions are not included in, or encompassed by, ITS 3.4.6 Actions.

***Comment***: This is a less restrictive change. Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response***:

A new justification (Specification 3.4.6, DOC L.4) has been provided to address the less restrictive aspect of the change made to CTS 3.10.1c. Previously, the change to CTS 3.10.1c was evaluated to the requirements of CTS 3.1.9.1 as discussed in DOC A.5. However, since this evaluation is no longer warranted, DOC A.5 has been deleted. A new determination of no significant hazards consideration (Specification 3.4.6, NSHC L.4) has also been provided for DOC L.4.

***Affected Submittal Pages***:

Att 3 CTS page 3-50 (ITS 3.4.6 page 4 of 6)
Att 3 CTS page 3-51 (ITS 3.4.6 page 5 of 6)
Att 3 ITS 3.4.6 page 2 of 4
Att 3 ITS 3.4.6 page 3 of 4
Att 3 ITS 3.4.6 page 4 of 4
Att 4 ITS 3.4.6 page 2 of 2

(see 3.1)

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS

Applicability

Applies to operation of CONTROL RODS and hot channel factors during operation.

Objective

To specify limits of CONTROL ROD movement to assure an acceptable power distribution during power operation, limit worth of individual rods to values analyzed for accident conditions, maintain adequate shutdown margin after a reactor trip and to specify acceptable power limits for power tilt conditions.

Specifications

3.10.1 Shutdown Margin Requirements

a. With four primary coolant pumps in operation at hot shutdown and above, the shutdown margin shall be 2%.

b. With less than four primary coolant pumps in operation at hot shutdown and above, boration shall be immediately initiated to increase and maintain the shutdown margin at ≥3.75%.

c. At less than the hot shutdown condition, with at least one primary coolant pump in operation or at least one shutdown cooling pump in operation, with a flow rate ≥2810 gpm, the boron concentration shall be greater than the cold shutdown boron concentration for normal cooldowns and heatups, ie, non-emergency conditions.

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate < 2810 gpm but ≥ 650 gpm, then within one hour either:

1. (a) Establish a shutdown margin of ≥ 3.5% and

   (b) Assure two of the three charging pumps are electrically disabled.

   OR

2. At least every 15 minutes verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, terminate charging pump operation and insure that the shutdown margin requirements are met and maintained.

~~A.5~~ L.4 RAI 3.4-13

Amendment No. ~~31, 43, 57, 68, 70, 118~~, 162
October 26, 1994

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS (Continued) → (A.1)

3.10.1 Shutdown Margin Requirements (Continued)

RAI 3.4-13

L.4

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate less than 650 gpm, within one hour: → (A.5)

(a) Initiate surveillance at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15-minute surveillance period, terminate charging pump operation an insure that the shutdown margin requirements are met and maintained.

d. If a CONTROL ROD cannot be tripped, shutdown margin shall be increased by boration as necessary to compensate for the worth of the withdrawn inoperable CONTROL ROD.

e. The drop time of each CONTROL ROD shall be no greater than 2.5 seconds from the beginning of rod motion to 90% insertion.

3.10.2 **(Deleted)**

3.10.3 Part-Length Control Rods

The part-length control rods will be completely withdrawn from the core (except for control rod exercises and physics tests).

(See 3.1)

A.3 The Applicability of CTS 3.1.9.1 has been revised to be consistent with the Applicability of proposed ITS 3.4.6. CTS 3.1.9.1 specifies a PCS temperature of > 200°F and ≤ 300°F, ITS 3.4.6 defines MODE 4, in part, by an average primary coolant temperature of > 200°F and < 300°F. This change has been characterized as administrative in nature since the actual difference between the CTS and ITS (less than 1°F) is insignificant and has no relative impact on the health and safety of the public or plant.

A.4 CTS 3.1.1i contains a restriction on the simultaneous operation of primary coolant pumps P-50A and P-50B. In ITS 3.4.6, this same restriction applies however, the phrase "when the PCS cold leg temperature is <300°F" has been deleted since it is redundant with the Applicability. Since this is no change in the actual requirements, this change is considered administrative in nature.

A.5 Not used. RAI 3.4-13

~~The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since they have been superseded by the requirements of CTS 3.1.9.1. For flow rates <2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates <650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pump are operating. Although the actions of CTS 3.10.1 are associated with shutdown margin, the initiating event for this condition is a degraded or complete loss of forced circulating in the PCS. When the PCS temperature is > 200°F and ≤ 300°F, loop flow requirements are dictated by CTS 3.1.9.1. CTS 3.1.9.1 requires one PCS loop or SDC train to be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, CTS 3.1.9.1 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations, and the immediate initiation of corrective actions to return a loop or train to operation providing flow through the core. The requirements of CTS 3.1.9.1 are more restrictive than the requirements of CTS 3.10.1 since CTS 3.1.9.1 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and the immediate restoration of the required flow. The suspension of all operations involving a reduction in PCS boron concentration includes potential dilution sources such as those flow paths associated with the charging pumps. CTS 3.10.1c allows up to one hour (when flow rates are <2810 gpm but ≥ 650 gpm), or up to 15 minutes (when flow rates are < 650 gpm) to verify charging pump status.~~

RAI 3.4-13

A.5 (continued)

Since the requirements of CTS 3.1.9.1 are more restrictive and supersede the actions of CTS 3.10.1c, a specific evaluation of changes from the CTS to proposed ITS 3.4.6 is made relative to CTS 3.1.9.1.

A.6 The PCP starting limitations specified in CTS 3.1.1h have been incorporated into proposed ITS 3.4.6 with the exception of limit (1) which states that "PCS cold leg temperature ($T_c$) is > 430°F." The inclusion of this starting restriction is not applicable in MODE 4 since the maximum allowable temperature in MODE 4 is 300°F.

A.7 CTS 4.2, Table 4.2.2 item 14.c has been revised to include the actual flow rate value required by the LCO. This revision is a change in format only to establish consistency with NUREG-1432 and does not alter the requirement of the CTS.

## MORE RESTRICTIVE CHANGES (M)

M.1 CTS 3.1.9.1 Exception 1 provides an allowance to suspend all flow through the reactor core for up to 1 hour provided certain restrictions are met. Proposed ITS 3.4.6 also contains this allowance (LCO Note 1) but restricts its use in any 8 hour period. The intent of this change is to prescribe a limit on the frequency this exception may be utilized and to avoid the potential misapplication of its use by repeatedly relying on the exception. Although the 8 hour period has no analytical basis, it has been included in the ITS to maintain consistency with NUREG-1432. As such, this is an additional restriction on plant operations.

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 CTS 3.1.9.1 contains details associated with PCS loop and SDC train Operability. In proposed ITS 3.4.6, the details associated with PCS loop and SDC train Operability are contained in the Bases. The CTS states that an Operable SDC train consists of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan" and that an Operable PCS loop consists of "an Operable Primary Coolant Pump and an Operable Steam Generator and secondary water level ≥ -84%. In the ITS, an Operable PCS loop consists of one Operable PCP and an SG that is Operable in accordance with the Steam Generator Tube Surveillance Program and that has a minimum water level of -84%. Similarly, for the SDC system, an Operable SDC train is composed of an Operable SDC pump capable of providing forced flow to the SDC heat exchanger. Support systems Operability (e.g., Component Cooling Water, Service Water, ultimate heat sink etc.) is addressed by the definition of Operability. As such, the proposed Bases description of Operability is equivalent to the details contained in CTS 3.1.9.1. Specifying the details of what constitutes an Operable PCS loop and SDC train in the Bases is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.9.1 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.6, this same action is not stipulated since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 300°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.6. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

RAI 3.4-11

L.2 INSERT



RAI 3.4-12 L.3 INSERT

RAI 3.4-13 L.4 INSERT

15-e

3.4-13 (ITS 3.4.6) DOC L.4

The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since ITS 3.4.6 provides the appropriate Required Actions when the required flow rate is not met. For flow rates <2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates <650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pumps are operating. Although the actions of CTS 3.10.1 are associated with maintaining shutdown margin (i.e., the ability to detect a boron dilution event within the time assumed in the analysis), the initiating event for this condition is a degraded or complete loss of forced circulation in the PCS. When the PCS temperature is > 200 °F and ≤ 300 °F, loop flow requirements are dictated by ITS 3.4.6. ITS 3.4.6 requires one PCS loop or SDC train be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, ITS 3.4.6 requires the immediate suspension of all operations involving a reduction in PCS boron concentration. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.6 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.6 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.6, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 4 without reliance on a separate action. Since the requirements of ITS 3.4.6 provide the appropriate actions in response to a low flow condition in the PCS, the requirements of CTS 3.10.1c are no longer necessary and have been deleted. This change is consistent with NUREG 1432.

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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and because any one remaining loop or train is capable of performing the decay heat removal function. The proposed change does not affect any accident or transient analysis and will not permit an increase in PCS temperature such that a change in modes is allowed to occur. Adequate compensatory actions are established in the Technical Specifications to restore the inoperable decay heat removal means as soon as possible. Therefore, this change does not involve a significant reduction in a margin of safety.

RAI
3.4-11 L.2 INSERT
3.4-12 L.3 INSERT
3.4-13 L.4 INSERT

3.4-13 (ITS 3.4.6) NSHC L.4

The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since ITS 3.4.6 provides the appropriate Required Actions when the required flow rate is not met. For flow rates <2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates <650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pumps are operating. Although the actions of CTS 3.10.1 are associated with maintaining shutdown margin (i.e., the ability to detect a boron dilution event within the time assumed in the analysis), the initiating event for this condition is a degraded or complete loss of forced circulation in the PCS. When the PCS temperature is > 200°F and ≤ 300°F, loop flow requirements are dictated by ITS 3.4.6. ITS 3.4.6 requires one PCS loop or SDC train be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, ITS 3.4.6 requires the immediate suspension of all operations involving a reduction in PCS boron concentration. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.6 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.6 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.6, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 4 without reliance on a separate action. Since the requirements of ITS 3.4.6 provide the appropriate actions in response to a low flow condition in the PCS, the requirements of CTS 3.10.1c are no longer necessary and have been deleted. This change is consistent with NUREG 1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes administrative requirement associated with the CTS when PCS flow is below the required limit This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. The restriction on charging pump operation is intended to maximize the rate at which unborated water could potentially enter the PCS when the PCS flow rate was less than required such that the conclusions in the boron dilution accident remained valid. Once the charging pumps were configured as required, plant operation would be allowed to continue at a reduced PCS flow rate. In the ITS, this restriction is no longer necessary since the Required Actions of the ITS require <u>all</u> operations involving a reduction in PCS boron concentration to be suspended immediately. Although the ITS is not as prescriptive as the CTS, an equivalent level of protection against an inadvertent boron dilution event is provided because the ITS precludes any operation involving a dilution of the PCS and is not limited to only charging pump operations Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST*:**

3.4-14 ITS 3.4.7
CTS 3.1.1.a
CTS 3.1.9.2
DOC A.2

The provisions of CTS 3.1.1.a when in Mode 5 are being deleted. ITS 3.4.7, which is intended to provide essentially the same requirements, was patterned after the provisions of CTS 3.1.9.2 as described in DOC A.2. While some provisions of CTS 3.1.9.2 are broader and more encompassing than those in CTS 3.1.1.a, one less restrictive change results. CTS 3.1.9.2 does not preclude changes in boron concentration under no RCS flow conditions.

***Comment*:** This less restrictive change requires appropriate discussion and justification. Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response*:**

A new DOC (ITS 3.4.7, DOC L.4) has been provided to justify the relaxation made to the requirement of CTS 3.1.1a which precludes an increase in PCS boron concentration when no Primary Coolant Pumps (PCS) or Shutdown Cooling (SDC) pumps are running "except during an emergency loss of coolant flow situation." DOC L.4 provides a justification which would allow the boron concentration of the PCS to be increased when no PCS or SDC pumps are in operations for plant conditions other than "an emergency loss of coolant flow situation." Previously, the requirements of CTS 3.1.1a were evaluated as being bounded by the more restrictive requirements of CTS 3.1.9.2 as discussed in ITS 3.4.7 DOC A.2. However, since ITS 3.4.7 does not prevent an increase in PCS boron concentration under any situation in Mode 5, this condition has been re-characterized as less restrictive.

***Affected Submittal Pages*:**

Att 3 CTS page 3-1b (ITS page 1 of 6)
Att 3 ITS 3.4.7 page 6 of 6
Att 4 ITS 3.4.7 page 6 of 6

3.4.7 PCS Loops - MODE 5, Loops Filled

A.1

3.1 PRIMARY COOLANT SYSTEM (PCS)

Applicability

Applies to the operable status of the primary coolant system.

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running. A.2 L.4

KAI 3.4-14

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted. (See 3.4.4)

c. The measured four primary coolant pumps operating reactor vessel flow shall be 140.7 x $10^6$ lb/hr or greater, when corrected to 532°F. (See 3.4.1)

d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F. (See 3.4.5, 3.4.4)

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR. (See 3.2)

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

L.2 CTS 3.1.9.2 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.7, this same action is not stipulated since a loss of one heat removal means (SGs or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 200°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.7. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

L.3 CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided certain restrictions are met. Restriction "a" of Exception 1 prohibits any operation that would cause a reduction in the PCS inventory. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not contain a prohibition on operations which result in a reduction in PCS inventory. This is because a reduction in PCS inventory within the bounds of the Applicable mode (i.e., PCS loops filled ) will not impact the ability of the PCS to perform the decay heat removal function. During the period when forced flow through the reactor core is stopped, the decay heat removal function is accomplished by the SGs which promote natural circulation in the PCS. By maintaining the PCS loops filled (no voids in the loop piping), the ability to establish natural circulation is preserved. Therefore, any reductions in the PCS inventory which do not result in void formations in the PCS loops are acceptable. This change is consistent with NUREG-1432.

RAI 3.4-14 L.4 INSERT

RAI 3.4-17 L.5 INSERT

3.4-14 (ITS 3.4.7) L.4

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.7 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 5. LCO 3.4.7 contains a Note which allows all primary coolant pumps and shutdown cooling pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.7 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 5, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increases in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

3. **Does this change involve a significant reduction in a margin of safety?**

The margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change does not affect any accident or transient analysis. In MODE 5 with the PCS loops filled, the primary function of the PCS is to remove decay heat from the reactor core. Allowing a reduction in PCS inventory while forced flow through the reactor core is stopped will not affect the heat removal capability of the PCS while in this plant condition. Therefore, this change does not involve a significant reduction in a margin of safety.

RAI 3.4-14 L.4 INSERT

RAI 3.4-17 L.5 INSERT

3.4-14 (ITS 3.4.7) NSHC L.4

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.7 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 5. LCO 3.4.7 contains a Note which allows all primary coolant pumps and shutdown cooling pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.7 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 5, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increases in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 5 during the time that no PCS or SDC pumps are in operation. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 5 during the time that no PCS or SDC pumps are in operation. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 5 during the time that no PCS or SDC pumps are in operation. The addition of soluble boron to the PCS while the plant is in Mode 5 (with or without the operation of the PCS or SDC pumps) offsets the presence of core reactivity and thereby increases the amount of actual or available Shutdown Margin. As such, for accidents or transients involving the addition of positive reactivity in Mode 5 (e.g., main steam line break, boron dilution event, etc.) the proposed change provides an increase in the margin of safety. For other types of accidents or transients, the proposed change does not alter the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST*:**

3.4-15 ITS 3.4.7
CTS 3.1.9.2 Exception 1.c
DOC L.1
DOC M.1

CTS 3.1.9.2 Exception 1.c requires both SDC loops operable for suspension of all core flow. ITS 3.4.7 deletes this requirement for a no flow condition. DOC L.1 states that this is acceptable because the steam generators would act as a heat sink due to their large quantity of secondary water. However, DOC M.1 (which relates to another change) states that the steam generators can not be considered a valid heat removal source because no steam is generated in Mode 5.

***Comment*:** While it is acknowledged that these two DOCs are referring to different situations, DOC L.1 does not adequately address and explain these differences. Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response*:**

DOC L.1 has been revised to clarify that a sufficient alternate method to provide redundant paths for decay heat removal is two steam generators with their secondary side water level within the limits of the LCO (≥ -84%). In this configuration, should the Operable SDC train fail, the steam generators could be used for decay heat removal via natural circulation.

***Affected Submittal Pages*:**

Att 3 ITS 3.4.7 page 5 of 6
Att 4 ITS 3.4.7 page 1 of 6

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 CTS 3.1.9.2 contains details associated with SDC train Operability. In proposed ITS 3.4.7, the details associated with SDC train Operability are contained in the Bases. The CTS states that an Operable SDC train consists of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan." In the ITS, an Operable SDC train is composed of an Operable SDC pump capable of providing forced flow to the SDC heat exchanger. Support systems Operability (e.g., Component Cooling Water, Service Water, ultimate heat sink etc.) is addressed by the definition of Operability. As such, the proposed Bases description of Operability is equivalent to the details contained in CTS 3.1.9.2. Specifying the details of what constitutes an Operable SDC train in the Bases is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

## LESS RESTRICTIVE CHANGES (L)

INSERT ↓

RAI 34-15

L.1 CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided, in part, two SDC trains are Operable. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not stipulate that both SDC trains have to be Operable since the redundant heat removal function is being provided by the required SGs. Even though the SGs cannot produce steam in MODE 5, they are capable of being a heat sink due to their large contained volume of secondary side water. As long as the SG secondary side water is at a lower temperature than the PCS, heat transfer will occur. Therefore, CTS 3.1.9.2 Exception 1 has been revised to delete the requirement to have two Operable SDC trains Operable when all flow through the reactor core is stopped since it is excessively restrictive considering the redundant heat removal function provided by the required SGs. This change is consistent with NUREG-1432.

3.4-15 (ITS 3.4.7) DOC L.1

CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided, in part, two SDC trains are Operable. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not stipulate that both SDC trains have to be Operable since the redundant heat removal function is being provided by the required SGs. Even though the SGs cannot produce steam in MODE 5 (i.e., the temperature is below 212°F), they are capable of being a heat sink due to their large contained volume of secondary side water. In the absence of forced flow in the PCS, as long as the SG secondary side water is at a lower temperature than the PCS, SG level is maintained equal to or greater than the limit specified in the LCO, and the primary coolant loops are filled, heat transfer will occur via natural circulation. Therefore, CTS 3.1.9.2 Exception 1 has been revised to delete the requirement to have two SDC trains Operable when all flow through the reactor core is stopped since it is excessively restrictive considering the redundant heat removal function provided by the required SGs. This change is consistent with NUREG-1432.

RAI 3.4-15

**LESS RESTRICTIVE CHANGE L.1**

INSERT

CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided, in part, two SDC trains are Operable. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not stipulate that both SDC trains have to be Operable since the redundant heat removal function is being provided by the required SGs. Even though the SGs cannot produce steam in MODE 5, they are capable of being a heat sink due to their large contained volume of secondary side water. As long as the SG secondary side water is at a lower temperature than the PCS, heat transfer will occur. Therefore, CTS 3.1.9.2 Exception 1 has been revised to delete the requirement to have two Operable SDC trains Operable when all flow through the reactor core is stopped since it is excessively restrictive considering the redundant heat removal function provided by the required SGs. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the requirement to maintain two SDC trains Operable when forced flow through the reactor core is intentionally stopped based on the availability of the required steam generators. Relaxing the requirements associated with an LCO is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change continues to ensure a redundant heat removal means is provided during the time when all forced flow through the reactor core is stopped. As such, the consequences of an accident have remained unchanged Therefore, the proposed change does not involve a significant increase in the consequences of an accident previously evaluated.

3.4-15 (ITS 3.4.7) NSHC L.1

CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided, in part, two SDC trains are Operable. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not stipulate that both SDC trains have to be Operable since the redundant heat removal function is being provided by the required SGs. Even though the SGs cannot produce steam in MODE 5 (i.e., the temperature is below 212°F), they are capable of being a heat sink due to their large contained volume of secondary side water. In the absents of forced flow in the PCS, as long as the SG secondary side water is at a lower temperature than the PCS, SG level is maintained equal to or greater than the limit specified in the LCO, and the primary coolant loops are filled, heat transfer will occur via natural circulation. Therefore, CTS 3.1.9.2 Exception 1 has been revised to delete the requirement to have two SDC trains Operable when all flow through the reactor core is stopped since it is excessively restrictive considering the redundant heat removal function provided by the required SGs. This change is consistent with NUREG-1432.

***NRC REQUEST*:**

3.4-16 3.4.7 Note 5

ITS 3.4.7 Note 5 provides an allowance for removing both SDC trains from operation during planned heatup to Mode 4. This allowance was not provided in the CTS. No discussion or justification is provided for this less restrictive change from the CTS.

***Comment*:** Provide discussion and justification for the less restrictive change.

***Consumers Energy Response*:**

CTS 3.1.9.2 requires one PCS loop to be in operation providing ≥ 2810 gpm flow through the reactor core or, one SDC train to be in operation providing ≥ 2810 gpm flow through the reactor core. As such, with one PCS loop in operation, CTS 3.1.9.2 would allow both SDC trains to be removed from operation. Proposed ITS 3.4.7 requires one SDC train to be in operation whenever the plant is in Mode 5. In order to transition to Mode 4, ITS 3.4.7 provides an allowance to remove both SDC trains from operation during planned heatups. As discussed in DOC M.1, the requirements of ITS 3.4.7 are more restrictive than the requirements of CTS 3.1.9.2 since they limit the time both SDC trains can be removed from operation to only "during planned heatups to Mode 4." As part of the justification provided in DOC M.1, it was noted that operation of a PCS loop without cooling from an Operable SDC train would eventually result in a temperature increase above the limits of Mode 5 due to the inability to produce steam in the steam generators (i.e., the temperature is < 212°F). Therefore, adopting the additional restriction of maintaining one SDC train operating whenever the plant is in Mode 5 (except during planned heatups to Mode 4) was considered appropriate.

***Affected Submittal Pages*:**

None

***NRC REQUEST*:**

3.4-17 ITS 3.4.7 Actions
CTS 3.1.9.2
CTS 3.10.1.c
DOC A.6

The Actions required by CTS 3.10.1.c when RCS flowrate is less than the limit require specific actions associated with charging pumps and/or shutdown margin. These actions are deleted in ITS 3.4.7. DOC A.6 states that ITS 3.4.7 Actions (which are carried forward from CTS 3.1.9.2) are more restrictive because the time limit is shorter and they include suspension of all operations that can reduce boron concentration (vice just charging pumps).

***Comment*:** The specific shutdown margin requirements and the charging pump disabling/monitoring actions are not included in, or encompassed by, ITS 3.4.7 Actions. This is a less restrictive change. Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response*:**

A new justification (Specification 3.4.7, DOC L.5) has been provided to address the less restrictive aspect of the change made to CTS 3.10.1c. Previously, the change to CTS 3.10.1c was evaluated to the requirements of CTS 3.1.9.2 as discussed in DOC A.6. However, since this evaluation is no longer warranted, DOC A.6 has been deleted. A new determination of no significant hazards consideration (Specification 3.4.7, NSHC L.5) has also been provided for DOC L.5.

***Affected Submittal Pages*:**

Att 3 CTS page 3-50 (ITS 3.4.7 page 4 of 6)
Att 3 CTS page 3-51 (ITS 3.4.7 page 5 of 6)
Att 3 ITS 3.4.7 page 3 of 6
Att 3 ITS 3.4.7 page 6 of 6
Att 4 ITS 3.4.7 page 6 of 6

→ (See 3.1)

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS

Applicability

Applies to operation of CONTROL RODS and hot channel factors during operation.

Objective

To specify limits of CONTROL ROD movement to assure an acceptable power distribution during power operation, limit worth of individual rods to values analyzed for accident conditions, maintain adequate shutdown margin after a reactor trip and to specify acceptable power limits for power tilt conditions.

Specifications

3.10.1 Shutdown Margin Requirements

a. With four primary coolant pumps in operation at hot shutdown and above, the shutdown margin shall be 2%.

b. With less than four primary coolant pumps in operation at hot shutdown and above, boration shall be immediately initiated to increase and maintain the shutdown margin at ≥3.75%.

c. At less than the hot shutdown condition, with at least one primary coolant pump in operation or at least one shutdown cooling pump in operation, with a flow rate ≥2810 gpm, the boron concentration shall be greater than the cold shutdown boron concentration for normal cooldowns and heatups, ie, non-emergency conditions.

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate < 2810 gpm but ≥ 650 gpm, then within one hour either:

1. (a) Establish a shutdown margin of ≥ 3.5% and

(b) Assure two of the three charging pumps are electrically disabled.

OR

2. At least every 15 minutes verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, terminate charging pump operation and insure that the shutdown margin requirements are met and maintained.

→ ~~A6~~ L.5

RAI 3.4-17

Amendment No. ~~31, 43, 57, 68, 70, 118~~, 162
October 26, 1994

RAI 3.4-17

L.5

A.6

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS (Continued) → A.1

3.10.1 Shutdown Margin Requirements (Continued)

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate less than 650 gpm, within one hour:

(a) Initiate surveillance at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15-minute surveillance period, terminate charging pump operation an insure that the shutdown margin requirements are met and maintained.

d. If a CONTROL ROD cannot be tripped, shutdown margin shall be increased by boration as necessary to compensate for the worth of the withdrawn inoperable CONTROL ROD.

e. The drop time of each CONTROL ROD shall be no greater than 2.5 seconds from the beginning of rod motion to 90% insertion.

3.10.2 (Deleted)

3.10.3 Part-Length Control Rods

The part-length control rods will be completely withdrawn from the core (except for control rod exercises and physics tests).

(See 3.1)

RAI 3.4-17 Not used



A.6 The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since they have been superseded by the requirements of CTS 3.1.9.2. For flow rates <2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates <650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pump are operating. Although the actions of CTS 3.10.1 are associated with shutdown margin, the initiating event for this condition is a degraded or complete loss of forced circulating in the PCS. When the PCS temperature is < 200 °F, loop flow requirements are dictated by CTS 3.1.9.2. CTS 3.1.9.2 requires one SDC train to be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, CTS 3.1.9.2 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations, and the immediate initiation of corrective actions to return a loop or train to operation providing flow through the core. The requirements of CTS 3.1.9.2 are more restrictive than the requirements of CTS 3.10.1 since CTS 3.1.9.2 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and the immediate restoration of the required flow. The suspension of all operations involving a reduction in PCS boron concentration includes potential dilution sources such as those flow paths associated with the charging pumps. CTS 3.10.1c allows up to one hour (when flow rates are <2810 gpm but ≥ 650 gpm), or up to 15 minutes (when flow rates are < 650 gpm) to verify charging pump status. Since the requirements of CTS 3.1.9.2 are more restrictive and supersede the actions of CTS 3.10.1c, a specific evaluation of changes from the CTS to proposed ITS 3.4.7 is made relative to CTS 3.1.9.2.

A.7 CTS 4.2, Table 4.2.2 item 14.c has been revised to include the actual flow rate value required by the LCO. This revision is a change in format only to establish consistency with NUREG-1432 and does not alter the requirement of the CTS.

L.2 CTS 3.1.9.2 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.7, this same action is not stipulated since a loss of one heat removal means (SGs or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 200°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.7. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

L.3 CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided certain restrictions are met. Restriction "a" of Exception 1 prohibits any operation that would cause a reduction in the PCS inventory. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not contain a prohibition on operations which result in a reduction in PCS inventory. This is because a reduction in PCS inventory within the bounds of the Applicable mode (i.e., PCS loops filled ) will not impact the ability of the PCS to perform the decay heat removal function. During the period when forced flow through the reactor core is stopped, the decay heat removal function is accomplished by the SGs which promote natural circulation in the PCS. By maintaining the PCS loops filled (no voids in the loop piping), the ability to establish natural circulation is preserved. Therefore, any reductions in the PCS inventory which do not result in void formations in the PCS loops are acceptable. This change is consistent with NUREG-1432.

RAI 3.4-14 L.4 INSERT

RAI 3.4-17 L.5 INSERT

3.4-17 (ITS 3.4.7) DOC L.5

The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since ITS 3.4.7 provides the appropriate Required Actions when the required flow rate is not met. For flow rates <2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates <650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pumps are operating. Although the actions of CTS 3.10.1 are related to the ability to maintain shutdown margin (i.e., the ability to detect a boron dilution event within the time assumed in the analysis), the initiating event for this condition is a degraded or complete loss of forced circulation in the PCS. When the PCS temperature is ≤200°F, loop flow requirements are dictated by ITS 3.4.7. ITS 3.4.7 requires one SDC train be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, ITS 3.4.7 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.7 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.7 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.7, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 5 without reliance on a separate action. Since the requirements of ITS 3.4.7 provide the appropriate actions in response to a low flow condition in the PCS, the requirement of CTS 3.10.1c are no longer necessary and have been deleted. This change is consistent with NUREG 1432.

3. **Does this change involve a significant reduction in a margin of safety?**

The margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change does not affect any accident or transient analysis. In MODE 5 with the PCS loops filled, the primary function of the PCS is to remove decay heat from the reactor core. Allowing a reduction in PCS inventory while forced flow through the reactor core is stopped will not affect the heat removal capability of the PCS while in this plant condition. Therefore, this change does not involve a significant reduction in a margin of safety.

RAI 3.4-14 L.4 INSERT

RAI 3.4-17 L.5 INSERT

3.4-17 (ITS 3.4.7) NSHC L.5

The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since ITS 3.4.7 provides the appropriate Required Actions when the required flow rate is not met. For flow rates <2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates <650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pumps are operating. Although the actions of CTS 3.10.1 are related to the ability to maintain shutdown margin (i.e., the ability to detect a boron dilution event within the time assumed in the analysis), the initiating event for this condition is a degraded or complete loss of forced circulation in the PCS. When the PCS temperature is ≤200°F, loop flow requirements are dictated by ITS 3.4.7. ITS 3.4.7 requires one SDC train be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, ITS 3.4.7 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.7 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.7 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.7, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 5 without reliance on a separate action. Since the requirements of ITS 3.4.7 provide the appropriate actions in response to a low flow condition in the PCS, the requirement of CTS 3.10.1c are no longer necessary and have been deleted. This change is consistent with NUREG 1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes an administrative requirement associated with the CTS when PCS flow is below the required limit This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. The restriction on charging pump operation is intended to maximize the rate at which unborated water could potentially enter the PCS when the PCS flow rate was less than required such that the conclusions in the boron dilution accident remained valid. Once the charging pumps were configured as required, plant operation would be allowed to continue at a reduced PCS flow rate. In the ITS, this restriction is no longer necessary since the Required Actions of the ITS require all operations involving a reduction in PCS boron concentration to be suspended immediately. Although the ITS is not as prescriptive as the CTS, an equivalent level of protection against an inadvertent boron dilution event is provided because the ITS precludes any operation involving a dilution of the PCS and is not limited to only charging pump operations Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST*:**

3.4-18 ITS 3.4.8 and ITS 3.4.8 Actions
CTS 3.10.1.c.2
DOC M.1

The Actions required by CTS 3.10.1.c.2 when RCS flowrate is less than the limit require specific actions associated with verifying charging pumps not operating and shutdown margin. These actions are deleted in ITS 3.4.8. DOC M.1 states that ITS 3.4.8 is more restrictive because RCS flow limits are carried forward from CTS 3.10.1.c and the Actions time limit for a flow limit violation is shorter.

***Comment*:** The specific shutdown margin requirements and the charging pump monitoring actions are not included in, or encompassed by, ITS 3.4.8 Actions. This is a less restrictive change. Provide additional discussion and justification for the less restrictive change.

***Consumers Energy Response*:**

A new justification (Specification 3.4.8, DOC L.5) has been provided to address the less restrictive aspect of the change made to CTS 3.10.1c. Previously, the change to CTS 3.10.1c was evaluated to be more restrictive as discussed in DOC M.1. However, since this evaluation is no longer warranted, DOC M.1 has been deleted. A new determination of no significant hazards consideration (Specification 3.4.8, NSHC L.5) has also been provided for DOC L.5.

***Affected Submittal Pages*:**

Att 3 CTS page 3-50 (ITS 3.4.9 page 3 of 5)
Att 3 CTS page 3-51 (ITS 3.4.9 page 4 of 5)
Att 3 ITS 3.4.8 page 3 of 6
Att 3 ITS 3.4.8 page 6 of 6
Att 4 ITS 3.4.8 page 7 of 7

(See 3.1)

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS

Applicability

Applies to operation of CONTROL RODS and hot channel factors during operation.

Objective

To specify limits of CONTROL ROD movement to assure an acceptable power distribution during power operation, limit worth of individual rods to values analyzed for accident conditions, maintain adequate shutdown margin after a reactor trip and to specify acceptable power limits for power tilt conditions.

Specifications

3.10.1 Shutdown Margin Requirements

a. With four primary coolant pumps in operation at hot shutdown and above, the shutdown margin shall be 2%.

b. With less than four primary coolant pumps in operation at hot shutdown and above, boration shall be immediately initiated to increase and maintain the shutdown margin at ≥3.75%.

c. At less than the hot shutdown condition, with at least one primary coolant pump in operation or at least one shutdown cooling pump in operation, with a flow rate ≥2810 gpm, the boron concentration shall be greater than the cold shutdown boron concentration for normal cooldowns and heatups, ie, non-emergency conditions.

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate < 2810 gpm but ≥ 650 gpm, then within one hour either:

1. (a) Establish a shutdown margin of ≥ 3.5% and — A.5

LCO a.
LCO b.

(b) Assure two of the three charging pumps are electrically disabled. — A.5

OR

2. At least every 15 minutes verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, terminate charging pump operation and insure that the shutdown margin requirements are met and maintained.

M.1

L.5
RAI 3.4-18

Amendment No. ~~31, 43, 57, 68, 70, 118~~, 162
October 26, 1994

3 of 5



20-a

3.4.8

RAI 3.4-18

| 3.10 | CONTROL ROD AND POWER DISTRIBUTION LIMITS (Continued) |
|---|---|
| 3.10.1 | Shutdown Margin Requirements (Continued) |

→ A.1 → M.1 L.5

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate less than 650 gpm, within one hour:

(a) Initiate surveillance at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15-minute surveillance period, terminate charging pump operation an insure that the shutdown margin requirements are met and maintained.

d. If a CONTROL ROD cannot be tripped, shutdown margin shall be increased by boration as necessary to compensate for the worth of the withdrawn inoperable CONTROL ROD.

e. The drop time of each CONTROL ROD shall be no greater than 2.5 seconds from the beginning of rod motion to 90% insertion.

3.10.2 (Deleted)

3.10.3 Part-Length Control Rods

The part-length control rods will be completely withdrawn from the core (except for control rod exercises and physics tests).

→ (See 3.1)

Amendment No. ~~21, 118~~, 162
October 26, 1994
4 of 5

**MORE RESTRICTIVE CHANGES (M)**

Not used

RAI 3.4-18

M.1 CTS 3.10.1c contains actions based on the inability to provide recirculation of the PCS at the specified flow rate. With primary system recirculation flow rate < 2810 gpm but ≥ 650 gpm, the CTS requires that within one hour either; a shutdown margin of 3.5% be established, and two of the three charging pumps be electrically disabled; or at least every 15 minutes a verification be made that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. In addition, the CTS also requires that if primary system recirculation flow rate is less than 650 gpm, then within one hour a surveillance be performed at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. The basis for imposing a minimum flow rate of 2810 gpm is to provide sufficient time for operators to terminate a boron dilution under asymmetric conditions. With flow rates < 2810 gpm and ≥ 650 gpm, an additional restriction on charging pump Operability will ensure the acceptance criteria for an inadvertent boron dilution will not be violated. The flow requirements and charging pump limitation of CTS 3.10.1c have been moved to the LCO of proposed ITS 3.4.8 since they represent restrictions on PCS (loop) operation. In MODE 5 with the PCS loops not filled, the function of the PCS loops is to provided decay heat removal and act as a carrier for soluble boric acid. ITS 3.4.8 stipulate the necessary requirements to ensure an adequate heat removal capability exists and that mixing of the PCS is sufficient to ensure the assumptions of the boron dilution analysis are not violated. To ensure the mixing function is acceptable, one SDC train is required to be in operation with ≥ 2810 gpm through the reactor core, or one SDC train is required to be in operation with ≥ 650 gpm through the reactor core and two of the three charging pumps are incapable of reducing the boron concentration in the PCS below the minimum value necessary to maintain the required Shutdown Margin. Placing these requirements in ITS 3.4.8 results in an additional restriction on plant operations since the CTS would allow up to one hour to take actions when the required flow rate is not met versus the Immediate Completion Time of the ITS. In addition, the option to initiate a surveillance every 15 minutes to verify charging pumps are not in operation (CTS 3.10.1c.2 and CTS 3.10.1c.2.(a)) in lieu of restoring the required flow, has been deleted.

L.3 CTS 3.1.9.3 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.8, this same action is not stipulated since a loss of one SDC train only results in a loss of redundancy and the one remaining SDC train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 200°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.8. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

L.4 The LCO of CTS 3.1.9.3 has been modified by the addition of a new Note. Note 2 in proposed ITS 3.4.8 allows one SDC train to be inoperable for ≤ 2 hours for surveillance testing provided the other SDC train is Operable and in operation. The purpose of this Note is to permit one of the two required SDC trains to be inoperable for surveillance testing without entering the Required Actions. The allowance to have one SDC train inoperable for up to 2 hours is acceptable since the remaining SDC train is required to be Operable and in operation. A single Operable SDC train in operation is adequate to provide the required cooling and mixing functions of the PCS. Thus, the addition of this Note only reduces the requirement for redundancy during a short period necessary to support surveillance testing. This change is consistent with NUREG-1432.

RAI 3.4-18

L.5 INSERT

3.4-18 (ITS 3.4.8) DOC L.5

CTS 3.10.1c contains actions based on the inability to provide recirculation of the PCS at the specified flow rate. With primary system recirculation flow rate <2810 gpm but ≥ 650 gpm, the CTS requires that within one hour either; a shutdown margin of 3.5% be established, and two of the three charging pumps be electrically disabled; or at least every 15 minutes a verification be made that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. In addition, the CTS also requires that if primary system recirculation flow rate is less than 650 gpm, then within one hour a surveillance must be performed at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. The basis for imposing a minimum flow rate of 2810 gpm is to provide sufficient time for operators to terminate a boron dilution under asymmetric conditions. With flow rates < 2810 gpm and ≥ 650 gpm, an additional restriction on charging pump Operability will ensure the acceptance criteria for an inadvertent boron dilution will not be violated. The flow requirements and charging pump limitation of CTS 3.10.1c have been moved to the LCO of proposed ITS 3.4.8. In MODE 5 with the PCS loops not filled, the function of the PCS loops is to provide decay heat removal and act as a carrier for soluble boric acid. ITS 3.4.8 stipulates the necessary requirements to ensure adequate heat removal capability exists and that mixing of the PCS is sufficient to ensure the assumptions of the boron dilution analysis are not violated. To ensure the mixing function is acceptable, one SDC train is required to be in operation with ≥ 2810 gpm through the reactor core, or one SDC train is required to be in operation with ≥ 650 gpm through the reactor core and two of the three charging pumps are incapable of reducing the boron concentration in the PCS below the minimum value necessary to maintain the required Shutdown Margin. With less flow through the core than required, ITS 3.4.8 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.8 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.8 requires the immediate suspension of <u>all</u> operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.8, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 5 without reliance on a separate action. Since the requirements of ITS 3.4.8 provide the appropriate actions in response to a low flow condition in the PCS, the requirement of CTS 3.10.1c are no longer necessary and have been deleted.

1. (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only allows the redundant SDC train to be inoperable for a short period to perform surveillance testing without taking the Required Actions of the Technical Specifications. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change allows one of the two required SDC trains to be inoperable for surveillance testing without entering the Required Actions provided the remaining SDC train is Operable and in operation. The proposed change does not affect any accident or transient analysis. The heat removal and mixing function of the PCS remains unchanged. Any decrease in the margin of safety as a result of having the redundant SDC train inoperable for a short period of time to perform surveillance testing, would most likely be offset by the benefit gained by assuring the Operability of the SDC being tested and the increased attentiveness of the operators during this period. Therefore, this change does not involve a significant reduction in a margin of safety.

RAI 3.4-18 L.5 INSERT

3.4-18 (ITS 3.4.8) NSHC L.5

CTS 3.10.1c contains actions based on the inability to provide recirculation of the PCS at the specified flow rate. With primary system recirculation flow rate <2810 gpm but ≥ 650 gpm, the CTS requires that within one hour either; a shutdown margin of 3.5% be established, and two of the three charging pumps be electrically disabled; or at least every 15 minutes a verification be made that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. In addition, the CTS also requires that if primary system recirculation flow rate is less than 650 gpm, then within one hour a surveillance must be performed at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. The basis for imposing a minimum flow rate of 2810 gpm is to provide sufficient time for operators to terminate a boron dilution under asymmetric conditions. With flow rates < 2810 gpm and ≥ 650 gpm, an additional restriction on charging pump Operability will ensure the acceptance criteria for an inadvertent boron dilution will not be violated. The flow requirements and charging pump limitation of CTS 3.10.1c have been moved to the LCO of proposed ITS 3.4.8. In MODE 5 with the PCS loops not filled, the function of the PCS loops is to provide decay heat removal and act as a carrier for soluble boric acid. ITS 3.4.8 stipulates the necessary requirements to ensure adequate heat removal capability exists and that mixing of the PCS is sufficient to ensure the assumptions of the boron dilution analysis are not violated. To ensure the mixing function is acceptable, one SDC train is required to be in operation with ≥ 2810 gpm through the reactor core, or one SDC train is required to be in operation with ≥ 650 gpm through the reactor core and two of the three charging pumps are incapable of reducing the boron concentration in the PCS below the minimum value necessary to maintain the required Shutdown Margin. With less flow through the core than required, ITS 3.4.8 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.8 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.8 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.8, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 5 without reliance on a separate action. Since the requirements of ITS 3.4.8 provide the appropriate actions in response to a low flow condition in the PCS, the requirement of CTS 3.10.1c are no longer necessary and have been deleted.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes an administrative requirement associated with the CTS when PCS flow is below the required limit. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. The restriction on charging pump operation is intended to maximize the rate at which unborated water could potentially enter the PCS when the PCS flow rate was less than required such that the conclusions in the boron dilution accident remained valid. Once the charging pumps were configured as required, plant operation would be allowed to continue at a reduced PCS flow rate. In the ITS, this restriction is no longer necessary since the Required Actions of the ITS require <u>all</u> operations involving a reduction in PCS boron concentration to be suspended immediately. Although the ITS is not as prescriptive as the CTS, an equivalent level of protection against an inadvertent boron dilution event is provided because the ITS precludes any operation involving a dilution of the PCS and is not limited to only charging pump operations Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST***:

3.4-19 ITS SR 3.4.9.2
CTS SR 3.4.9.2
JFD 16
TSTF-93

CTS SR 3.4.9.2 specifies a 92 day surveillance frequency for verifying the capacity of the pressurizer heaters. ITS SR 3.4.9.2 changes this frequency to 18 months. JFD 16 placed reliance on the content of TSTF-93.

***Comment***: Assure that modifications made to the TSTF following submittal of the Palisades ITS conversion request are included.

***Consumers Energy Response***:

The Palisades plant ITS Conversion submittal includes Revision 3 of TSTF-93 which was previously approved by the NRC. To date, there have been no additional changes (approved or pending) against ISTS SR 3.4.9.2. Consumers Energy will continue to monitor and evaluate generic changes to NUREG-1432 for impact on the ITS Conversion submittal.

***Affected Submittal Pages***:

None

***NRC REQUEST***:

3.4-20 ITS SR 3.4.14.1
CTS 3.3.3
DOC A.2

CTS 3.3.3 requires all PIVs to be tested prior to returning to power operations every time the plant has been in a refueling shutdown. ITS SR 3.4.14.1 deletes the frequency of post-refueling shutdown, and instead relies upon the frequency of after having been in Mode 5 for more than 7 days. DOC A.2 justifies this change as an administrative change based on a history of "generally" being in Mode 5 for at least 7 days during the transition from Mode 6 to Mode 4.

***Comment***: This appears to be based on historical data. It is not stated that it is impossible to transition through Mode 5 in less than 7 days, and the licensee did not provide technical justification for the length of delay. Furthermore, the qualification of "generally" indicates that this may have occurred in the past. Therefore, this change may be less restrictive, particularly in light of the industry trend to reduce the total length of refueling outages. Provide additional discussion and justification for the potentially less restrictive change.

***Consumers Energy Response***:

A new justification (Specification 3.4.14, DOC L.4) has been provided to address the less restrictive aspect of the change made to CTS 3.3.3 which requires all PIVs be tested prior to returning to power operations every time the plant has been in a Refueling Shutdown Condition. Previously, the change to CTS 3.3.3 was characterized as being administrative in nature as discussed in DOC A.2. However, since a conditional frequency for testing PIVs has been deleted, this change has been re-characterized as less restrictive and supersedes the discussion in DOC A.2. In support of this justification, a new determination of no significant hazards consideration (Specification 3.4.14, NSHC L.4) has been provided.

***Affected Submittal Pages***:

Att 3 CTS page 3-30 (ITS 3.4.14 page 1 of 6)
Att 3 CTS Page 4-16 (ITS 3.4.14 page 4 of 6)
Att 3 ITS 3.4.14 page 1 of 13
Att 3 ITS 3.4.14 page 13 of 13
Att 4 ITS 3.4.14 page 6 of 6

L.4 RAI 3.4-20

3.3 EMERGENCY CORE COOLING SYSTEM (Continued)

A.2

L.3

APPLIC M.1

3.3.3 Prior to returning to the Power Operation Condition after every time the plant has been placed in the Refueling Shutdown Condition or the Cold Shutdown Condition for more than 72 hours and testing of Specification 4.3.h has not been accomplished in the previous 9 months, or prior to returning the check valves in Table 4.3.1 to service after maintenance, repair or replacement, the following conditions shall be met: — LA.1

LCO

a. All pressure isolation valves listed in Table 4.3.1 shall be functional as a pressure isolation device, except as specified in b. Valve leakage shall not exceed the amounts indicated. — LA.2

M.2 — b. In the event that integrity of any pressure isolation valve specified in Table 4.3.1 cannot be demonstrated, at least two valves in each high pressure line having a non-functional valve must be in and remain in, the mode corresponding to the isolated condition.(1) A.4 <ADD RA A.1 & RA A.2> — M.2

RA B.1 & B.2 c. If Specification a. and b. cannot be met, an orderly shutdown shall be initiated and the reactor shall be in hot shutdown condition within 12 hours, and cold shutdown within the next 24 hours.

M.3

A.3 — (1) Motor-operated valves shall be placed in the closed position and power supplies deenergized.

~~3.3.4 Two HPSI pumps shall be operable when the PCS temperature is >325°F.~~

~~a) One HPSI pump may be inoperable provided the requirements of Section 3.3.2.c are met.~~

(See 3.5)

~~3.3.5 Two HPSI pumps shall be rendered incapable of injection into the PCS when PCS temperature is <300°F, if the reactor vessel head is installed.~~

~~Note: Specification 3.3.5 does not prohibit use of the HPSI pumps for emergency addition of makeup to the PCS.~~

(See 3.4.12)

<ADD Actions TBL NOTES 1 & 2> — A.4

<ADD RA A.1 Note> — M.4



Amendment No. ~~51~~, ~~101~~, ~~117~~, ~~131~~, ~~161~~, ~~163~~, 171
April 5, 1996

22-a

(M.8) ← < ADD SR 3.4.14.1 FREQ - 18 months

(A.6) ← < ADD SR 3.4.14.1 NOTE 1 >

< ADD SR 3.4.14.2 >

(M.7)

(A.1)

4.3 SYSTEMS SURVEILLANCE

APPLICABILITY

Applies to preoperational and inservice structural surveillance of the reactor vessel and other Class 1, Class 2 and Class 3 system components.

OBJECTIVE

To insure the integrity of the Class 1, Class 2 and Class 3 piping systems and components.

SPECIFICATIONS

a,b,c,d,e,f - Deleted

RAI 3.4-20

g. A surveillance program to monitor radiation induced changes in the mechanical and impact properties of the reactor vessel materials shall be maintained as described in Section 4.5.3 of the FSAR. (LA.7)

(LA.2) h. Periodic leakage testing(a)(b) (LA.4) (LA.3) AND SR NOTE on each check valve listed in Table 4.3.1 shall be accomplished prior to returning to the Power Operation Condition (M.1) after every time the plant has been placed in the Refueling Shutdown Condition or the Cold Shutdown Condition for more than 72 hours if such testing has not been accomplished within the previous 9 months, and prior to returning the check valves to service after maintenance, repair or replacement work is performed on the valves. (LA.1)

L.4 (A.2)

(L.3)

SR 3.4.14.1 FREQ

(L.2) i. Whenever integrity of a pressure isolation valve listed in Table 4.3.1 cannot be demonstrated and credit is being taken for compliance with Specification 3.3.3.b, the integrity of the remaining check valve in each high pressure line having a leaking valve shall be determined and recorded daily and the position of the other closed valve located in that pressure line shall be recorded daily.

SR 3.4.14.3

(LA.6) j. Following each use of the LPSI system for shutdown cooling, the reactor shall not be made critical until the LPSI check valves (CK-3103, CK-3118, CK-3133 and CK-3148) have been verified closed.

(LA.4) ←

(a) To satisfy ALARA requirements, leakage may be measured indirectly (as from the performance of pressure indicators) if supported by computations showing that the method is capable of demonstrating valve compliance with the leakage criteria.

(LA.3) ← (b) Reduced pressure testing is acceptable (see footnote 5, Table 4.3.1). Minimum test differential pressure shall not be less than 150 psid.

SR 3.4.14.1 NOTE (4)

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

Not used

RAI 3.4-20

A.2 CTS 3.3.3 requires all PIVs to be tested prior to returning to Power Operations after every time the plant has been placed in the Refueling Shutdown Condition, or the Cold Shutdown Condition for more than 72 hours (See Discussion of Change L.2 for this specification which justifies a change to 7 days). In proposed ITS 3.4.14, a similar testing requirement is associated with the Frequency of SR 3.4.14.1. However, SR 3.4.14.1 does not stipulate the plant condition of "Refueling Shutdown" since this plant condition does not exist in the ITS. The CTS defines "Refueling Shutdown" as a condition when the primary coolant is at Refueling Boron Concentration (i.e., at least 1720 ppm boron and the reactor subcritical by $\geq 5\% \Delta \rho$ with all control rods withdrawn) and $T_{ave}$ is less than 210°F. In the ITS, the Mode which closely matches the CTS plant condition of Refueling Shutdown is "MODE 6, Refueling." ITS MODE 6 is defined by having one or more of the reactor vessel head closure bolts less than fully tensioned. In general, placing the unit in MODE 6 and then returning it to MODE 4 would require the unit to be in MODE 5 for at least 7 days. Thus, it is not necessary to specify "Refueling Shutdown" (MODE 6) as a condition for performing PIV testing since the plant would have met the 7 days cold shutdown limitation for valve testing. This change is considered administrative in nature since it will not alter the Frequency at which PIV testing is required but will simply eliminate an extraneous reference to a plant condition which is not generally achieved in less than 7 days. This change is consistent with NUREG-1432.

L.2 CTS 4.3i requires that whenever the integrity of a PIV can not be demonstrated and credit is being taken for compliance with specification 3.3.3b, "the integrity of the remaining check valve in each high pressure line having a leaking valve shall be determined and recorded daily and the position of the other closed valve located in that pressure line shall be recorded daily." In proposed ITS 3.4.14, Required Action A.1 requires an inoperable PIV be isolated from the high pressure portion of the affected system by use of one closed manual, deactivated automatic, or check valve. In addition, each valve used for isolation must have been verified to meet the leakage requirements setforth in SR 3.4.14.1. The ITS does not specify that the integrity of the remaining check valve be determined daily since this action represent a condition which is known to exist at the time of isolation, and which must continued to be met by the requirements of SR 3.0.1. Thus, the ITS simply removes an administrative function by eliminating the requirement to record the integrity of a check valve used to isolate an inoperable PIV on a daily basis. The requirement of CTS 4.3i which states "and the position of the other closed valve located in that pressure line shall be recorded daily" is no longer applicable as explained in Discussion of Change M.2 for this specification. This change is consistent with NUREG-1432.

L.3 CTS 3.3.3 and CTS 4.3h required periodic leakage testing of the specified PIVs every time the plant has been placed in the "Cold Shutdown Condition for more than 72 hours and such testing has not been accomplished within the previous 9 months." Proposed SR 3.4.14.1 also requires leakage testing of specified PIVs but the Frequency is stated, in part, as "whenever the plant has been in MODE 5 for 7 days or more if leakage testing has not been performed in the previous 9 months." The amount of time the plant must be shutdown before PIV leakage testing is required by the ITS has been relaxed from the requirements of the CTS. The ITS allows the plant to be in MODE 5 for up to 7 days before testing is required. The CTS only allows the plant to be in Cold Shutdown Conditions for 3 days before testing is required. The extended period of MODE 5 operation allowed by the ITS does not significantly increase the probability of a malfunction of the PIVs since the change in plant status over the four additional days of shutdown time does not change significantly. This change is consistent with NUREG-1432.

RAI 3.4-20

L.4 INSERT

3.4-20 (ITS 3.4.14) DOC L.4

CTS 3.3.3 and CTS 4.3h require all PIVs to be tested prior to returning to Power Operation after every time the plant has been placed in the Refueling Shutdown Condition, or the Cold Shutdown Condition for more than 72 hours (See Discussion of Change L.3 for this specification which justifies a change to 7 days). In proposed ITS 3.4.14, a similar testing requirement is associated with the Frequency of SR 3.4.14.1. However, SR 3.4.14.1 does not stipulate the plant condition of "Refueling Shutdown" since this plant condition does not exist in the ITS. Rather, proposed SR 3.4.14.1 contains a Frequency of "18 months" (See Discussion of Change M.8). The CTS defines "Refueling Shutdown" as a condition when the primary coolant is at Refueling Boron Concentration (i.e., at least 1720 ppm boron and the reactor subcritical by $\geq$ 5% $\Delta\rho$ with all control rods withdrawn) and $T_{ave}$ is less than 210°F. In the ITS, the Mode which closely matches the CTS plant condition of Refueling Shutdown is "MODE 6, Refueling." Presently, based on fuel design, an operating cycle for the Palisades plant is approximately 18 months. The CTS Frequency of "every time the plant has been placed in the Refueling Shutdown Condition" is essentially the same as the ITS Frequency of "18 months," However, deletion of the CTS Frequency has been characterized as less restrictive since literal application of the CTS Frequency could result in additional and unnecessary performances of PIV testing. The proposed change eliminates the potential for unnecessary testing by deleting the conditional based surveillance frequency contained in the CTS. This change is acceptable since PIV testing will continue to be performed consistent with 10CFR50.55a and within the frequency allowed by ASME Code Section XI. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   The proposed change relaxes the surveillance frequency for PIV leak testing. A less frequent performance of a Surveillance Requirement does not result in any hardware changes. The frequency of performance also does not significantly increase the probability of occurrence for initiation of any analyzed event since the function of the equipment, or limit for the parameter, does not change (and therefore any initiation scenarios are not changed) and the proposed frequency has been determined to be adequate to demonstrate reliable operation of the equipment or compliance with the parameter. Further, the frequency of performance of a surveillance does not significantly increase the consequences of an accident because a change in frequency does not change the assumed response of the equipment in performing its specified mitigation functions, or change the response of the core parameters to assumed scenarios, from that considered with the original frequency. Therefore, the proposed change does not involve a significant 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 necessitate 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 still ensure compliance with the limiting condition for operation is 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 relaxes the surveillance frequency for PIV leak testing. Changes in the monitored parameter have been determined to be relatively slow during the proposed intervals, and the proposed frequency has been determined to be sufficient to identify significant impact on compliance with the assumed conditions of the safety analysis. In addition, other indications continue to be available to indicate potential noncompliance. Therefore, an extended surveillance interval does not involve a significant reduction in the margin of safety.

RAI 3.4-20

L.4 INSERT

3.4-20 (ITS 3.4.14) NSHC L.4

CTS 3.3.3 and CTS 4.3h require all PIVs to be tested prior to returning to Power Operation after every time the plant has been placed in the Refueling Shutdown Condition, or the Cold Shutdown Condition for more than 72 hours (See Discussion of Change L.3 for this specification which justifies a change to 7 days). In proposed ITS 3.4.14, a similar testing requirement is associated with the Frequency of SR 3.4.14.1. However, SR 3.4.14.1 does not stipulate the plant condition of "Refueling Shutdown" since this plant condition does not exist in the ITS. Rather, proposed SR 3.4.14.1 contains a Frequency of "18 months" (See Discussion of Change M.8). The CTS defines "Refueling Shutdown" as a condition when the primary coolant is at Refueling Boron Concentration (i.e., at least 1720 ppm boron and the reactor subcritical by $\geq$ 5% $\Delta\rho$ with all control rods withdrawn) and $T_{ave}$ is less than 210°F. In the ITS, the Mode which closely matches the CTS plant condition of Refueling Shutdown is "MODE 6, Refueling." Presently, based on fuel design, an operating cycle for the Palisades plant is approximately 18 months. The CTS Frequency of "every time the plant has been placed in the Refueling Shutdown Condition" is essentially the same as the ITS Frequency of "18 months," However, deletion of the CTS Frequency has been characterized as less restrictive since a literal application of the CTS Frequency could result in additional and unnecessary performances of PIV testing. The proposed change eliminates the potential for unnecessary by deleting the conditional based surveillance frequency contained in the CTS. This change is acceptable since PIV testing will continue to be performed consistent with 10CFR50.55a and within the frequency allowed by ASME Code Section XI. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change eliminates an administrative requirement associated with the CTS to perform a surveillance on a conditional based frequency. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates the requirement to perform a CTS surveillance after every time the plant has been placed in the Refueling Shutdown Condition. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to perform a leakage test on PIVs every time the plant is placed in the Refueling Shutdown Condition. Rather, testing is performed every 18 months. This change does not affect established safety limits, operating limits, or design assumptions. No accident or transient analysis are affected by this change. The proposed change continues to ensure that the PIVs are tested at an adequate frequency to ensure they will function as required. Therefore, this change does not involve a significant reduction in a margin of safety.

***NRC REQUEST*:**

3.4-21 ITS 3.4.14.1
STS SR 3.4.14.1
JFD 19

STS SR 3.4.14.1 requires verification of PIV leakage within 24 hours following PIV actuation. ITS 3.4.14.1 deletes this requirement. JFD 19 places reliance on NRC's Order for Modification of License for Event V concerns.

***Comment*:** Provide clarification regarding how the NRC Order, dated April 20, 1980, supports the proposed deviation from the STS.

***Consumers Energy Response*:**

The Order for Modification of License issued by the NRC on April 20, 1981 transmitted revised technical specifications for the Palisades plant which required periodic surveillance over the life of the plant and specified limiting conditions for operation for PCS pressure isolation valves." These technical specifications were based, in part, on information provided to the NRC in response to their 10 CFR 50.54(f) letter, as well as other previously docketed information. The technical specifications issued in support of the Order for Modification remain essentially unchanged and form part of the current licensing basis. The option not to adopt the Frequency of "within 24 hours following valve actuation due to automatic or manual action or flow through the valve" (ISTS SR 3.4.14.1) maintains consistency with the conclusion originally reached by the NRC.

***Affected Submittal Pages*:**

None

***NRC REQUEST*:**

3.4-22 STS 3.4.15 Actions A through D
STS LCO 3.0.4 Actions A and B
JFD 6 and JFD 7
TSTF-60

STS 3.4.15 Actions A through D provide some differences depending on which of the leakage detection instruments are inoperable. One of these differences is an exemption from LCO 3.0.4, which only applies to Actions A and B. JFD 6 and JFD 7 explain these deviations to the STS, which comply with the CTS. However, JFD 7 places partial reliance on the provisions of TSTF-60.

***Comment*:** Explain any of these changes that are not based on TSTF-60.

***Consumers Energy Response*:**

TSTF-60 modified ISTS 3.4.15 by justifying that LCO 3.0.4 was applicable to ISTS Action D. As there was already an LCO 3.0.4 exception to ISTS Actions A and B, and LCO 3.0.4 is not applicable to ISTS Action C, the LCO 3.0.4 exception Note could be placed at the top of the Actions Table and deleted from Actions A and B. Placing the LCO 3.0.4 exception Note at the top of the Actions Table indicates the exception applies to all Actions in the Table. Thus, for each of the leakage detection instruments required by the LCO an exception to LCO 3.0.4 applied. The change to ISTS 3.4.15 by TSTF-60 established an equivalent level of requirement that currently exists in CTS Table 3.17.6. That is, the provisions of LCO 3.0.4 are not applicable to the PCS leakage detection instruments in either the ISTS, or the CTS. Since proposed ITS 3.4.15 is based on the requirements of CTS Table 3.17.6, the requirements of ISTS 3.4.15 as modified by TSTF-60 are equivalent to the requirements of proposed ITS 3.4.15.

***Affected Submittal Pages*:**

None

***NRC REQUEST*:**

3.4-23 ITS 3.4.15 Actions B.1 and B.2
STS 3.4.15 Actions E.1 and E.2
JFD 2

STS 3.4.15 Actions E.1 and E.2 specify completion times of 6 days and 36 days respectively. ITS 3.4.15 Actions B.1 and B.2 (changed from E. 1 and E.2 due to deletion of previous actions) changed the completion times to 6 hours and 36 hours respectively. Although this appears to be a correction of typographical errors in the STS, this is not explicitly stated in the JFDs. JFD 2 generically refers to these deviations as editorial in nature.

***Comment*:** Provide discussion and justification for the deviation from the STS. If the STS is in error, has a generic TSTF been submitted?

***Consumers Energy Response*:**

A new JFD (#10) has been provided to discuss the change in the Completion Times for ISTS 3.4.15 RA E.1 and E.2 from units of "days" to units of "hours".

***Affected Submittal Pages*:**

Att 5 ISTS 3.4.15 pg 3.4-38
Att 6 ITS 3.4.15 pg 3 of 3

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| D. Required containment atmosphere radioactivity monitor inoperable.<br>AND<br>Required containment air cooler condensate flow rate monitor inoperable. | D.1<br><br>OR<br>D.2 | Restore required containment atmosphere radioactivity monitor to OPERABLE status.<br><br>Restore required containment air cooler condensate flow rate monitor to OPERABLE status. | 30 days<br><br><br>30 days |
| B. Required Action and associated Completion Time not met. | B.1<br>AND<br>B.2 | Be in MODE 3.<br><br>Be in MODE 5. | 6 days hours<br><br>36 days hours |
| C. All required monitors channels inoperable. | C.1 | Enter LCO 3.0.3. | Immediately |

CTS 3.17.6.2.1
(6)
(10)
RAI 3.4-23
(2)
CTS 3.17.6.21

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.4.15.2 Perform CHANNEL CHECK of the required containment atmosphere radioactivity gaseous monitor. | [12] hours |

CTS TBL 4.17.6 #7b, Col. 1
(2)

(continued)



25-a

3.4-23 (ITS 3.4.15) JFD 10

The change in Completion Time for ISTS Required Action E from units of "days" to units of "hours" was made to establish consistency within the Improved Technical Specifications. That is, ISTS 3.4.15 uses units of "days" and the Bases for ISTS 3.4.15 uses units of "hours." To date, a generic change request (TSTF) has not been submitted based on agreement between the CEOG and OTSB that this change does not meet the threshold for a generic change and that the discrepancy is limited to NUREG-1432 only (i.e., the error does not exist in the other ISTS NUREGs). A markup of ISTS 3.4.15 showing the appropriate corrections has been forwarded via the CEOG for future incorporation in NUREG-1432. This method of correcting minor editorial changes alleviates the administrative burden of processing a TSTF and has been found acceptable by both the industry and NRC OTSB.

***NRC REQUEST*:**

3.4-24 STS 3.4.16 Acton C.1
STS SR 3.4.16.2
ITS 3.4.16
CTS 3.1.4.e
JFD 7
TSTF-28

STS 3.4.16 Action C.1 requires the performance of STS SR 3.4.16.2 within 4 hours whenever gross specific activity is above the limits. CTS 3.1.4.e contains a similar requirement. ITS 3.4.16 deletes this requirement. JFD 7 states that this is due to conflicts within STS 3.4.16, and the fact that the sampling requirements of STS SR 3.4.16.2 will be performed anyway to verify restoration.

***Comment*:** While the first argument appears to have some validity, the second argument leaves some questions. An example may be when the plant intends to shut down anyway, and therefore does not perform the sampling because of no desire or intention to immediately resume power operations. Furthermore, JFD 7 places reliance on the provisions of TSTF-28. Applicability and acceptance of this deviation from the STS is dependent upon TSTF-28, which has been approved, but some of the other discussion seems to differ from the TSTF and its correlation with the licensee's other arguments.

***Consumers Energy Response*:**

The Required Action of ISTS Condition C as modified by TSTF-28 is consistent with the requirements of CTS 3.1.4d. That is, if the gross specific activity of the primary coolant is not within limits, the plant must be shut down below 500°F within 6 hours. Discovery that the gross specific activity is not within limits is most likely to occur during performance of the weekly surveillance. Even if this were not the case, proposed SR 3.0.1 states that "failure to meet a surveillance, whether such failure is experienced between performances of the surveillance, shall be failure to meet the LCO". In either case, if the plant is shut down prior to restoring the gross specific activity to within limits, SR 3.0.4 would prevent a subsequent plant heatup to 500°F or above until the surveillance requirement for gross specific activity has been met. It should also be noted that prior to the approval of TSTF-28 which removed the Required Action to perform a Dose Equivalent I-131 sample within 4 hours, plants had the option to shut down in less than 4 hours thereby eliminating the need to perform the sample. In this case, the provision of SR 3.0.4 would again prevent a subsequent return to the mode of applicability until all surveillance requirements were met.

***Affected Submittal Pages*:**
None

***NRC REQUEST***:

3.9-1 ITS 3.9.2
CTS 3.17.6.1.c
STS 3.9.2, ACTION B
TSTF-96

CTS 3.17.6.1.c requires verifying SHUTDOWN MARGIN within 4 hours and once each 12 hours thereafter when one or two Neutron Flux Monitoring channels are inoperable. STS 3.9.2, ACTION B, requires verifying the boron concentration within 4 hours and once per 12 hours thereafter when 2 required SRM's are inoperable. ITS 3.9.2 does not include verifying the boron concentration within 4 hours. The justification for the removal of the CTS requirement and deviation from the STS is based on TSTF-96.

***Comment***: Acceptance of this change is contingent on the NRC acceptance of TSTF-96.

***Consumers Energy Response***:

TSTF-96 has been approved by the NRC.

***Affected Submittal Pages***:

None

***NRC REQUEST***:

3.9-2 ITS 3.9.4
CTS 3.1.9.3 Action 1.b

CTS 3.1.9.3, Action 1.b, requires maintaining PCS temperature as low as practical with available equipment. ITS 3.9.4 does not include this requirement. The requirement is moved to unidentified plant procedures.

***Comment***: Identify appropriate document, e.g., bases, FSAR (TRM by reference), etc., to which the subject requirement will be relocated.

***Consumers Energy Response***:

The change associated with CTS 3.1.9.3, Action 1.b for proposed ITS 3.9.4 and ITS 3.9.5 has been re-characterized from "Less Restrictive-Administrative" (LA) to "Less Restrictive"(L). As such, DOC LA.2 for ITS 3.9.4 has been deleted and replaced by DOC L.2, and DOC LA.2 for ITS 3.9.5 has been deleted and replaced by DOC L.1. Since the subject requirement is being deleted, identification of the appropriate relocation document is no longer necessary. In support of this change, a new determination of no significant hazards consideration has been provided for Specification 3.9.4 (NSHC L.2) and Specification 3.9.5, (NSHC L.1).

***Affected Submittal Pages***:

Att 3 CTS page 3-25j (ITS 3.9.4 page 1 of 4)
Att 3 CTS page 3-25j (ITS 3.9.5 page 1 of 2)
Att 3 ITS 3.9.4 page 4 of 5
Att 3 ITS 3.9.4 page 5 of 5
Att 3 ITS 3.9.5 page 3 of 3
Att 4 ITS 3.9.4 page 3 of 3
Att 4 ITS 3.9.5 page 1 of 1

3.9.4 SDC and Coolant Circulation - High Water Level ← (A.1)

3.1.9 **SHUTDOWN COOLING (SDC)**

**Specification**

SR 3.9.4.1

3.1.9.3 One SDC train shall be in operation providing ≥ 1000 gpm flow through the reactor core and at least two of the means of decay heat removal listed below shall be OPERABLE: — (A.3)

LCO & APPLIC

1. SDC train A consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan. — (LA.1)

2. SDC train B consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.

3. The refueling cavity with water level ≥ 647'.

**Applicability** — MODE 6 WITH — (A.3)

(See 3.9.5 & 3.9.4) Specification 3.1.9.3 applies when there is fuel in the reactor with PCS Temperature is < 200°F and the PCS loops NOT filled.

**Exceptions** — (A.1)

LCO-NOTE 1 → 1. All flow through the reactor core may be intentionally stopped for up to 1 hour provided: (Per 8 hour Period) — (M.1)

a. No operations are permitted that would cause reduction of the PCS boron concentration or PCS inventory, and

b. Core outlet temperature stays ≤ 200°F, and — (L1)

c. Two SDC trains are OPERABLE.

LCO-NOTE 2 2. One or both required SDC trains may be intentionally rendered inoperable for testing or maintenance for up to 2 hours (Per 8 hour Period) provided: — (M.1)

a. One SDC train is providing flow through the reactor core, and

b. Core outlet temperature stays ≤ 200°F, and

APPLIC c. The refueling cavity water level is ≥ 647'.

**Action**

COND A 1. With fewer OPERABLE means of decay heat removal than required: — RAI 3.9-2

RA A.3 a. Immediately initiate corrective action to return a second train to OPERABLE status, and

b. Maintain PCS temperature as low as practical with available equipment. — ~~(LA.2)~~ L2

COND A 2. With less flow through the core than required:

RA. A.1 a. Immediately suspend all operations involving a reduction in PCS boron concentration, and

RA. A.3 b. Immediately initiate corrective action to return a train to operation providing flow through the core.

(M.2) — ⟨ADD REQUIRED ACTION A.4⟩



Amendment No. ~~161~~, 173
October 10, 1996

3.9.5 SDC and Coolant Circulation - Low Water Level - (A.1)

3.1.9 SHUTDOWN COOLING (SDC)

Specification

SR 3.9.5.1

3.1.9.3 One SDC train shall be in operation providing ≥ 1000 gpm flow through the reactor core, and at least two of the means of decay heat removal listed below shall be OPERABLE:

LCO

1. SDC train A consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.
2. SDC train B consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan. (LA.1)
3. The refueling cavity with water level ≥ 647' (See 3.9.4)

Applicability

APPLIC

Specification 3.1.9.3 applies when there is fuel in the reactor, with PCS Temperature is < 200°F and the PCS loops NOT filled. (A2) MODE 6 with the Water level < 647' Elevation <See also 3.4>

Exceptions (A.1)

1. All flow through the reactor core may be intentionally stopped for up to 1 hour provided: (M.2)
   a. No operations are permitted that would cause reduction of the PCS boron concentration or PCS inventory, and
   b. Core outlet temperature stays ≤ 200°F, and
   c. Two SDC trains are OPERABLE.
2. One or both required SDC trains may be intentionally rendered inoperable for testing or maintenance for up to 2 hours provided: (See 3.9.4)
   a. One SDC train is providing flow through the reactor core, and
   b. Core outlet temperature stays ≤ 200°F, and
   c. The refueling cavity water level is ≥ 647'.

Action

COND A 1. With fewer OPERABLE means of decay heat removal than required: RAI 3.9-2

RA A.1 a. Immediately initiate corrective action to return a second train to OPERABLE status, and

b. Maintain PCS temperature as low as practical with available equipment. (LA.2) L.1

COND B 2. With less flow through the core than required:

RA B.1 a. Immediately suspend all operations involving a reduction in PCS boron concentration, and

RA.B.2 b. Immediately initiate corrective action to return a train to operation providing flow through the core.

(A.3) <ADD REQUIRED ACTION A.2> 3-25J

(M.1) <ADD REQUIRED ACTION B.3>

Amendment No. ~~161~~, 173
October 10, 1996

RAI 3.9-2

Not Used

LA.2 In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.4, a comparable condition exists when SDC train/loop requirements are not met. However, ITS 3.9.4 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical when a loss of shutdown cooling exist. As such, CTS Action 1.b has been removed from the CTS and placed in plant procedures. This change is acceptable since these details are not necessary to adequately describe the actual regulatory requirement and placing this information in license controlled documents will not result in a significant impact on safety. This change is consistent with NUREG-1432.

LA.3 CTS 3.8.1f specifies, in part, that one (SDC) heat exchanger shall be in operation. ITS 3.9.4 specifies that one SDC train shall be Operable and in operation. In the ITS, the details of what constitutes an Operable SDC train are contained in the Bases. As such, the reference to the heat exchangers in CTS 3.8.1f has been moved to the Bases. This change is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

**LESS RESTRICTIVE CHANGES (L)**

L.1 CTS 3.1.9.3 allows all flow through the reactor core to be intentionally stopped for up to 1 hour provided, in part, that the core outlet temperature stays ≤ 200°F and two SDC trains are Operable. Proposed ITS 3.9.4 does not contain these additional restrictions. While in MODE 6 with the refueling cavity water level ≥ 647' elevation, an increase in primary coolant system temperature above 200°F is not an immediate concern. The affects of elevated coolant temperatures at or above the boiling point would eventually challenge the integrity of the fuel cladding, which is a fission product barrier, and lead to a reduction in boron concentration due to boron plating-out on components near the area of boiling. However, due to the relative short time flow is allowed to be suspended (up to 1 hour per 8 hour period), sufficient boiling would not occur such that it would result in a signification reduction in the boron concentration or present a challenge to the fission product barrier. Coolant temperatures above the saturation temperature with no forced circulation become an immediate concern only when the reactor vessel head is installed due to the potential of vapor formations in the primary coolant system loops. The additional restriction in the CTS to maintain two SDC trains Operable when all flow through the reactor core is intentionally stopped is excessively restrictive since two redundant heat removal methods are still available. That is, when flow is stopped, one SDC train is still required to be Operable and the refueling cavity water level is still required to be ≥ 647' elevation thus providing adequate and redundant heat removal capability. This change is consistent with NUREG-1432.

RAI 3.9-2

L.2 INSERT

3.9-2 (ITS 3.9.4)DOC L.2

In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.4, a comparable condition exists when SDC train loop requirements are not met. However, ITS 3.9.4 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). When a loss of shutdown cooling exists, Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical. During a plant condition when the water level in the refueling cavity is ≥637' elevation, this volume of water provides an adequate available heat sink during the time corrective actions are taken to restore the alternate heat removal method. Therefore, CTS Action 1.b can be deleted from the ITS since it will not result in a significant impact on safety. This change is consistent with NUREG-1432.

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 In CTS 3.1.9.3, the details associated with SDC train Operability have been moved to the Bases of proposed ITS 3.9.5. The CTS states that an Operable SDC train consist of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan." In the ITS, the details of what constitutes an Operable SDC train are contained in the Bases. As such, the reference to the SDC pumps and heat flow paths in CTS 3.1.9.3 have been moved to the Bases. This change is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

RAI 3.9-2 Not Used

LA.2 In CTS 3.1.9.3 when there is fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.5, a comparable condition exist when SDC train loop requirements are not met. However, ITS 3.9.5 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical when a loss of shutdown cooling exist. As such, CTS Action 1.b has been removed from the CTS and placed in plant procedures. This change is acceptable since these details are not necessary to adequately describe the actual regulatory requirement and placing this information in license controlled documents will not result in a significant impact on safety. This change is consistent with NUREG-1432.

## LESS RESTRICTIVE CHANGES (L)

~~There were no "Less Restrictive" changes associated with this specification.~~

RAI 3.9-2

L.1 INSERT

3.9-2 (ITS 3.9.5)DOC L.1

In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.5, a comparable condition exists when SDC train loop requirements are not met. However, ITS 3.9.5 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). The loss of a single SDC train results in a loss of redundancy. For this case, cooling is still available from the Operable SDC train and the appropriate action is to restore the inoperable train. With two SDC trains inoperable, a loss of shutdown cooling exists and Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical as well as providing other compensatory measures and restoration actions. Since the actions of CTS 3.1.9.3 to maintain the PCS temperature as low as practical with available equipment is more appropriate in plant procedures, it can be deleted from the ITS with no impact on plant safety. This change is consistent with NUREG-1432.

3. **Does this change involve a significant reduction in a margin of safety?**

The margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change eliminates the requirement to maintain core outlet temperature ≤200°F and to have two Operable SDC trains during the period when all flow through the reactor core is intentionally stopped. Relaxing this requirement does not impact factors that are related to the margin of safety since no changes have been made to plant design, plant equipment or the way in which the plant is operated. Prolong elevated temperatures in the primary coolant system in excess of 212°F would eventually result in fuel assembly damage. However, the technical specification continue to limit the duration in which all flow through the reactor core is allowed to be stopped to 1 hour in a 8 hour period. In addition, the technical specifications also require two redundant heat removal method to be available, they are; a refueling cavity water level ≥647' elevation and one Operable SDC train. As such, the likelihood of fuel damage as a result of elevated temperature is very unlikely. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

RAI 3.9-2

L.2 INSERT

3.9-2 (ITS 3.9.4) NSHC L.2

In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.4, a comparable condition exists when SDC train loop requirements are not met. However, ITS 3.9.4 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). When a loss of shutdown cooling exists, Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical. During a plant condition when the water level in the refueling cavity is ≥637' elevation, this volume of water provides an adequate available heat sink during the time corrective actions are taken to restore the alternate heat removal method. Therefore, CTS Action 1.b can be deleted from the ITS since it will not result in a significant impact on safety. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Deletion of a required action is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a heat removal means since this condition is appropriately addressed by plant procedures, and because the refueling cavity contains a sufficient volume of water to provide an adequate heat sink by natural circulation. The proposed change does not affect any accident or transient analysis. Adequate compensatory actions are established in the Technical Specifications to restore the inoperable decay heat removal means as soon as possible and to preclude loading irradiated fuel assemblies in the core. Therefore, this change does not involve a significant reduction in a margin of safety.

LESS RESTRICTIVE CHANGE (L).1

~~There were no "Less Restrictive" changes associated with this specification.~~

L.1 INSERT

RAI 3.9-2

3.9-2 (ITS 3.9.5)NSHC L.1

In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.5, a comparable condition exists when SDC train loop requirements are not met. However, ITS 3.9.5 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). The loss of a single SDC train results in a loss of redundancy. For this case, cooling is still available from the Operable SDC train and the appropriate action is to restore the inoperable train. With two SDC trains inoperable, a loss of shutdown cooling exists and Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical as well as providing other compensatory measures and restoration actions. Since the actions of CTS 3.1.9.3 to maintain the PCS temperature as low as practical with available equipment is more appropriate in plant procedures, it can be deleted from the ITS with no impact on plant safety. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the CTS requirement to "maintain the PCS temperature as low as practical with available equipment" whenever fewer means of decay heat removal contained in the accompanying specification are Operable. Deletion of a required action is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the CTS requirement to "maintain the PCS temperature as low as practical with available equipment" whenever fewer means of decay heat removal contained in the accompanying specification are Operable. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the CTS requirement to "maintain the PCS temperature as low as practical with available equipment" whenever fewer means of decay heat removal contained in the accompanying specification are Operable. In the event of a total loss of decay heat removal, plant procedures provide the appropriate actions to restore the inoperable decay heat removal mechanism to service in the most efficient and safe manner practical using the necessary available plant equipment. The proposed change does not affect any accident or transient analysis. Since adequate compensatory actions are established in plant procedures to restore the inoperable decay heat removal means as soon as possible, deleting this requirement from the CTS will have no affect on the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

**ENCLOSURE 2**

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

**CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS
RESPONSE TO AUGUST 24, 1998 REQUEST FOR
ADDITIONAL INFORMATION**

**MARKED-UP PAGES FOR SPECIFICATION 3.9.3 BASES**

BASES

APPLICABLE SAFETY ANALYSES

Containment penetration isolation is not required by the fuel handling accident to maintain offsite doses within the guidelines of 10 CFR 100, but operating experience indicates that containment isolation provides significant reduction of the resulting offsite doses. Therefore, the Containment Penetrations satisfy the requirements of Criterion 4 of 10 CFR 50.36(c)(2).

LCO

This LCO limits the consequences of a fuel handling accident in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires the equipment hatch, air locks and any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment penetrations.

For the OPERABLE containment penetrations, this LCO ensures that these penetrations are isolable by the Refueling Containment High Radiation instrumentation. The OPERABILITY requirements for this LCO do not assume a specific closure time for the valves in these penetrations since the accident analysis makes no specific assumptions about containment closure time after a fuel handling accident.

LCO 3.9.3.a is modified by a Note which allows the equipment hatch to be opened if the Fuel Handling Area Ventilation System is in compliance with LCO 3.7.12. LCO 3.9.3.b is modified by a Note which allows both doors of the personnel air lock to be simultaneously opened provided the equipment hatch is opened. With both doors in the personnel air lock opened and the equipment hatch opened, the Fuel Handling Area Ventilation System maintains the atmosphere in the spent fuel pool area at a negative pressure relative to the auxiliary building (adjacent to the personnel air lock) and containment building. In the event of a fuel handling accident inside containment, any radioactivity released to the containment atmosphere will either remain in the containment or be filtered through the Fuel Handling Area Ventilation System. As such, with the equipment hatch removed, and both personnel air lock doors opened, the consequences of a fuel handling accident in containment would not exceed those calculated for a fuel handling accident in the spent fuel pool area.

INSERT →

INSERT

In the event of a fuel handling accident inside containment with both doors in the personnel air lock open and the equipment hatch open, the Fuel Handling Area Ventilation System would be available to filter the fission products in the containment atmosphere prior to their being released to the environment thereby significantly reducing the offsite dose.

# SECTION 3.9

## INSERT 1

Containment penetrations "that provide direct access from containment atmosphere to outside atmosphere" are those which would allow passage of air containing radioactive particulates to migrate from inside the containment to the atmosphere outside the containment even though no measurable differential pressure existed. Specifically, they do not include penetrations which are filtered, or penetrations whose piping is filled with liquid.

## INSERT 2

Containment penetration isolation is not required by the fuel handling accident to maintain offsite doses within the guidelines of 10 CFR 100, but operating experience indicates that containment isolation provides significant reduction of the resulting offsite doses. Therefore, the Containment Penetrations satisfy the requirements of Criterion 4 of 10 CFR 50.36(c)(2).

## INSERT 3

do not assume a specific closure time for the valves in these penetrations since the accident analysis makes no specific assumptions about containment closure time after a fuel handling accident.

## INSERT 4

LCO 3.9.3.a is modified by a Note which allows the equipment hatch to be opened if the Fuel Handling Area Ventilation System is in compliance with LCO 3.7.12. LCO 3.9.3.b is modified by a Note which allows both doors of the personnel air lock to be simultaneously opened provided the equipment hatch is opened. With both doors in the personnel air lock opened and the equipment hatch opened, the Fuel Handling Area Ventilation System maintains the atmosphere in the spent fuel pool area at a negative pressure relative to the auxiliary building (adjacent to the personnel air lock) and containment building. In the event of a fuel handling accident inside containment, any radioactivity released to the containment atmosphere will either remain in the containment or be filtered through the Fuel Handling Area Ventilation System. As such, with the equipment hatch removed, and both personnel air lock doors opened, the consequences of a fuel handling accident in containment would not exceed those

Insert →

INSERT

In the event of a fuel handling accident inside containment with both doors in the personnel air lock open and the equipment hatch open, the Fuel Handling Area Ventilation System would be available to filter the fission products in the containment atmosphere prior to their being released to the environment thereby significantly reducing the offsite dose.

**ENCLOSURE 3**

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

**CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS**
**RESPONSE TO AUGUST 24, 1998 REQUEST FOR ADDITIONAL INFORMATION**

**REVISED PAGES FOR SECTION 3.4**

CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS
RESPONSE TO AUGUST 24, 1998 REQUEST FOR ADDITIONAL INFORMATION
REVISED PAGES FOR SECTION 3.4

## Page Change Instructions

Revise the Palisades submittal for conversion to Improved Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by date and contain vertical lines in the margin indicating the areas of change.

| REMOVE PAGES | INSERT PAGES | REV DATE | NRC COMMENT# |
|---|---|---|---|
| **ATTACHMENT 1 TO ITS CONVERSION SUBMITTAL** | | | |
| ITS 3.4.1-1 | ITS 3.4.1-1 | 11/04/98 | RAI 3.4-2 |
| ITS 3.4.1-2 | ITS 3.4.1-2 | 11/04/98 | RAI 3.4-2 |
| **ATTACHMENT 2 TO ITS CONVERSION SUBMITTAL** | | | |
| ITS B 3.4.1-2 | ITS B 3.4.1-2 | 11/04/98 | RAI 3.4-2 |
| **ATTACHMENT 3 TO ITS CONVERSION SUBMITTAL** | | | |
| CTS 3.4.1 pg 3-1b | CTS 3.4.1 pg 3-1b | 11/04/98 | RAI 3.4-1 |
| CTS 3.4.4 pg 3-1b | CTS 3.4.4 pg 3-1b | 11/04/98 | Pending TSCR |
| CTS 3.4.5 pg 3-1b | CTS 3.4.5 pg 3-1b | 11/04/98 | RAI 3.4-8 |
| CTS 3.4.6 pg 3-1b | CTS 3.4.6 pg 3-1b | 11/04/98 | RAI 3.4-11 |
| CTS 3.4.6 pg 3-25h | CTS 3.4.6 pg 3-25h | 11/04/98 | RAI 3.4-12 |
| CTS 3.4.6 pg 3-50 | CTS 3.4.6 pg 3-50 | 11/04/98 | RAI 3.4-13 |
| CTS 3.4.6 pg 3-51 | CTS 3.4.6 pg 3-51 | 11/04/98 | RAI 3.4.13 |
| CTS 3.4.7 pg 3-1b | CTS 3.4.7 pg 3-1b | 11/04/98 | RAI 3.4.14 |
| CTS 3.4.7 pg 3-50 | CTS 3.4.7 pg 3-50 | 11/04/98 | RAI 3.4-17 |
| CTS 3.4.7 pg 3-51 | CTS 3.4.7 pg 3-51 | 11/04/98 | RAI 3.4-17 |
| CTS 3.4.8 pg 3-1b | CTS 3.4.8 pg 3-1b | 11/04/98 | Pending TSCR |
| CTS 3.4.8 pg 3-50 | CTS 3.4.8 pg 3-50 | 11/04/98 | RAI 3.4-18 |
| CTS 3.4.8 pg 3-51 | CTS 3.4.8 pg 3-51 | 11/04/98 | RAI 3.4-18 |
| CTS 3.4.14 pg 3-30 | CTS 3.4.14 pg 3-30 | 11/04/98 | RAI 3.4-20 |
| CTS 3.4.14 pg 4-16 | CTS 3.4.14 pg 4-16 | 11/04/98 | RAI 3.4-20 |
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| DOC 3.4.4 pg 1 of 3 | DOC 3.4.4 pg 1 of 3 | 11/04/98 | RAI 3.4-6 |
| DOC 3.4.5 pg 1 of 4 through DOC 3.4.5 pg 4 of 4 | DOC 3.4.5 pg 1 of 5 through DOC 3.4.5 pg 5 of 5 | 11/04/98 | RAI 3.4-8 |
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CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS
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## Page Change Instructions

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| **ATTACHMENT 3 TO ITS CONVERSION SUBMITTAL** (continued) | | | |
| DOC 3.4.7 pg 1 of 6 | DOC 3.4.7 pg 1 of 7 | 11/04/98 | RAI 3.4-14 |
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| DOC 3.4.8 pg 3 of 6 | DOC 3.4.8 pg 3 of 6 | 11/04/98 | RAI 3.4-15 |
| through | through | | RAI 3.4-17 |
| DOC 3.4.8 pg 6 of 6 | DOC 3.4.8 pg 6 of 6 | 11/04/98 | RAI 3.4-18 |
| DOC 3.4.14 pg 1 of 13 | DOC 3.4.14 pg 1 of 13 | 11/04/98 | RAI 3.4-20 |
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| **ATTACHMENT 4 TO ITS CONVERSION SUBMITTAL** | | | |
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| NSHC 3.4.7 pg 6 of 6 | NSHC 3.4.7 pg 9 of 9 | | RAI 3.4-17 |
| NSHC 3.4.8 pg 1 of 7 | NSHC 3.4.8 pg 1 of 10 | 11/04/98 | RAI 3.4-18 |
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| NSHC 3.4.8 pg 7 of 7 | NSHC 3.4.8 pg 10 of 10 | | |
| NSHC 3.4.14 pg 1 of 6 | NSHC 3.4.14 pg 1 of 8 | 11/04/98 | RAI 3.4-20 |
| through | through | | |
| NSHC 3.4.14 pg 6 of 6 | NSHC 3.4.14 pg 8 of 8 | | |

**CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS**
**RESPONSE TO AUGUST 24, 1998 REQUEST FOR ADDITIONAL INFORMATION**
**REVISED PAGES FOR SECTION 3.4**

## Page Change Instructions

| REMOVE PAGES | INSERT PAGES | REV DATE | NRC COMMENT# |
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| **ATTACHMENT 5 TO ITS CONVERSION SUBMITTAL** | | | |
| NUREG 3.4-1 | NUREG 3.4-1 | 11/04/98 | RAI 3.4-2 |
| NUREG 3.4-3 | NUREG 3.4-3 | 11/04/98 | RAI 3.4-2 |
| NUREG 3.4-38 | NUREG 3.4-38 | 11/04/98 | RAI 3.4-23 |
| NUREG B 3.4-2 | NUREG B 3.4-2 | 11/04/98 | RAI 3.4-2 |
| **ATTACHMENT 6 TO ITS CONVERSION SUBMITTAL** | | | |
| JFD 3.4.1 pg 3 of 4 | JFD 3.4.1 pg 3 of 4 | 11/04/98 | RAI 3.4-4 |
| JFD 3.4.1 pg 4 of 4 | JFD 3.4.1 pg 4 of 4 | 11/04/98 | RAI 3.4-2 |
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| JFD 3.4.15 pg 3 of 3 | JFD 3.4.15 pg 3 of 3 | 11/04/98 | RAI 3.4-23 |

## 3.4 PRIMARY COOLANT SYSTEM (PCS)

### 3.4.1 PCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 PCS DNB parameters for pressurizer pressure, cold leg temperature, and PCS total flow rate shall be within the limits specified below:

a. Pressurizer pressure ≥ 2010 psia and ≤ 2100 psia;

b. The PCS cold leg temperature ($T_c$) shall not exceed the value given by the following equation:

$$T_c \le 542.99 + 0.0580(P-2060) + 0.00001(P-2060)^2 + 1.125(W-138) - 0.0205(W-138)^2$$

Where: $T_c$ = PCS cold leg temperature in °F
P = nominal operation pressure in psia
W = total recirculating mass flow in 1E6 lb/hr corrected to the operating temperature conditions.

----------------------------NOTE--------------------------
If the measured primary coolant system flow is greater than 150.0 E6 lbm/hr, the maximum $T_c$ shall be less than or equal to the $T_c$ derived at 150.0 E6 lbm/hr.
----------------------------------------------------------

c. PCS total flow rate ≥ 352,000 gpm.

APPLICABILITY: MODE 1.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Pressurizer pressure, PCS cold leg temperature, or PCS total flow rate not within limits. | A.1 Restore parameter(s) to within limit. | 2 hours |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 2. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.1.1 | Verify pressurizer pressure ≥ 2010 psia and ≤ 2100 psia. | 12 hours |
| SR 3.4.1.2 | Verify PCS cold leg temperature $\leq 542.99 + 0.0580(P-2060) + 0.00001(P-2060)^2 + 1.125(W-138) - 0.0205(W-138)^2$. | 12 hours |
| SR 3.4.1.3 | ------------------NOTE------------------<br>Not required to be performed until 24 hours after ≥ 90% RTP.<br>----------------------------------------<br><br>Verify PCS total flow rate is ≥ 352,000 gpm. | 18 months<br><br>AND<br><br>After each plugging of 10 or more steam generator tubes |

BASES

APPLICABLE SAFETY ANALYSES

The requirements of LCO 3.4.1 represent the initial conditions for DNB limited transients analyzed in the safety analyses (Ref. 1). The safety analyses have shown that transients initiated from the limits of this LCO will meet the DNBR Safety Limit (SL 2.1.1). This is the acceptance limit for the PCS DNB parameters. Changes to the facility that could impact these parameters must be assessed for their impact on the DNBR criterion. The transients analyzed for include loss of coolant flow events and dropped or struck control rod events. A key assumption for the analysis of these events is that the core power distribution is within the limits of LCO 3.1.6, "Regulating Rod Group Position Limits"; LCO 3.2.3, "Quadrant Power Tilt"; and LCO 3.2.4, "AXIAL SHAPE INDEX." The safety analyses are performed over the following range of initial values: PCS pressure 1700 - 2300 psia, core inlet temperature 500-580°F, and a measured reactor vessel inlet coolant flow rate ≥ 352,000 gpm.

The PCS DNB limits satisfy Criterion 2 of 10 CFR 50.36(c)(2).

LCO

This LCO specifies limits on the monitored process of variables PCS pressurizer pressure and PCS cold leg temperature, and the calculated value of PCS total flow rate to ensure that the core operates within the limits assumed for the plant safety analyses. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient.

The LCO numerical values for pressure and temperature are given for the measurement location but have not been adjusted for instrument error. Plant specific limits of instrument error are established by the plant staff to meet the operational requirements of this LCO. Instrument errors and the PCS flow rate measurement error are applied to the LCO numerical values in the safety analysis.

(A.1)

3.4.1 PCS Pressure Temperature and Flow DNBR Limits

3.4.1

<ADD Applicability> (A.2)-(A.3)-(A.4) (L.3)

3.1 PRIMARY COOLANT SYSTEM (A.1)

Applicability

Applies to the operable status of the primary coolant system.

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

(See 3.4.5 thru 3.4.8)

a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running.

(See 3.4.4)

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

LCO "C"

c. The measured four primary coolant pumps operating reactor vessel flow shall be ≥ 352,000 gpm.

(See 3.4.4 3.4.5)

d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F.

(See 3.2)

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

3.4 ~~3.1~~ 3.4.4 PCS Loops - MODES 1 and 2 — 3.4.4 (A.1)

## PRIMARY COOLANT SYSTEM

~~Applicability~~

~~Applies to the operable status of the primary coolant system.~~

~~Objective~~

~~To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.~~

~~Specifications~~

~~3.1.1 Operable Components~~

(See 3.4.5 thru 3.4.8)

~~a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running.~~

LCO & Applic (A.2) (A.3) (M.1)

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

(See 3.4.1)

~~c. The measured four primary coolant pumps operating reactor vessel flow shall be ≥ 352,000 gpm.~~

LCO & Applic (A.2)

~~d.~~ Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F.

(See 3.4.5) (See 3.2)

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

<Add RA A.1> (M.2)

<Add SR 3.4.4.1> (M.3)

Revised 11/04/98



Amendment No. ~~31~~, ~~85~~, ~~118~~, ~~119~~, ~~134~~, ~~137~~, ~~161~~, ~~169~~,

3.4 ~~3.1~~ 3.4.5 PCS Loops - MODE 3 (A1) 345

PRIMARY COOLANT SYSTEM (PCS) → (A1)

Applicability

Applies to the operable status of the primary coolant system.

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

<ADD Note1> → (M1)

a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running. (L.2)

LCO & Applic (See 3.4.6 thru 3.4.8) (A.3)

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

(See 3.4.4)

c. The measured four primary coolant pumps operating reactor vessel flow shall be ≥ 352,000 gpm.

(See 3.4.1)

d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F. (A.3)

(A.2) LCO & Applic

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

(See 3.2)

(L1) <Add RA A.1 & RA B.1>

(M1) <Add RA C.1 & RA C.2> No loops operable

(M1) <Add RA C.1 & RA C2> No loops operable

Add SR 3.4.5.1, SR 3.4.5.2, SR 3.4.5.3 (M.3)



Revised 11/04/98

Amendment No. ~~31~~, ~~85~~, ~~118~~, ~~119~~, ~~134~~, ~~137~~, ~~161~~, ~~169~~,

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3.4.6 PCS Loops - MODE 4

3.1 PRIMARY COOLANT SYSTEM (PCS)

(A.1)

Applicability

Applies to the operable status of the primary coolant system.

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

(A.2)

a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running. (L.2)

(See 3.44)

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

(See 3.41)

c. The measured four primary coolant pumps operating reactor vessel flow shall be ≥ 352,000 gpm.

(See 345 344)

d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F.

(See 3.2)

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

Revised 11/04/98

Primary Coolant System (A.1)
3.4.6 PCS Loop - MODE 4

3.1.9 SHUTDOWN COOLING (SDC)

Specification

LCO 3.1.9.1 One PCS loop or SDC train shall be in operation providing ≥ 2810 gpm flow through the reactor core, and at least two of the means of decay heat removal listed below shall be OPERABLE:

1. SDC train A consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.
2. SDC train B consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.
3. PCS loop 1 consisting of an OPERABLE Primary Coolant Pump and an OPERABLE Steam Generator and secondary water level ≥ -84%.
4. PCS loop 2 consisting of an OPERABLE Primary Coolant Pump and an OPERABLE Steam Generator and secondary water level ≥ -84%.

(LA.1)

Applicability

Applic. Specification 3.1.9.1 applies when there is fuel in the reactor, with PCS Temperature is > 200°F and ≤ 300°F. (< — A.3)

Exception

LCO Note 1

1. All flow through the reactor core may be intentionally stopped for up to 1 hour (per 8 hour period — M.1) provided:
   a. No operations are permitted that would cause reduction of the PCS boron concentration, and
   b. Core outlet temperature stays ≥ 10°F below saturation temperature.

Action

Cond A&B
1. With fewer OPERABLE means of decay heat removal than required:
   RA A.1 a. Immediately initiate corrective action to return a second loop or train to OPERABLE status, and (L.3)
   b. Maintain PCS temperature as low as practical with available equipment. (L.1)
   RA B.1 c. If a SDC train is available, be < 200°F within 24 hours.

Cond C
2. With less flow through the core than required:
   RA C.1 a. Immediately suspend all operations involving a reduction in PCS boron concentration, and
   RA C.2.1 RA C.2.2 b. Immediately initiate corrective action to return a loop or train to operation providing flow through the core.



Amendment No. 161
August 12, 1994



Revised
11/04/98

(see 3.1)

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS

Applicability

Applies to operation of CONTROL RODS and hot channel factors during operation.

Objective

To specify limits of CONTROL ROD movement to assure an acceptable power distribution during power operation, limit worth of individual rods to values analyzed for accident conditions, maintain adequate shutdown margin after a reactor trip and to specify acceptable power limits for power tilt conditions.

Specifications

3.10.1 Shutdown Margin Requirements

a. With four primary coolant pumps in operation at hot shutdown and above, the shutdown margin shall be 2%.

b. With less than four primary coolant pumps in operation at hot shutdown and above, boration shall be immediately initiated to increase and maintain the shutdown margin at ≥3.75%.

c. At less than the hot shutdown condition, with at least one primary coolant pump in operation or at least one shutdown cooling pump in operation, with a flow rate ≥2810 gpm, the boron concentration shall be greater than the cold shutdown boron concentration for normal cooldowns and heatups, ie, non-emergency conditions.

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate < 2810 gpm but ≥ 650 gpm, then within one hour either:

1. (a) Establish a shutdown margin of ≥ 3.5% and

   (b) Assure two of the three charging pumps are electrically disabled.

OR

2. At least every 15 minutes verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, terminate charging pump operation and insure that the shutdown margin requirements are met and maintained.

(L.4)

Amendment No. ~~31, 43, 57, 68, 70, 118~~, 162
October 26, 1994



Revised
11/04/98

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS (Continued) → (A.1)

3.10.1 Shutdown Margin Requirements (Continued)

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate less than 650 gpm, within one hour: → (L.4)

(a) Initiate surveillance at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15-minute surveillance period, terminate charging pump operation an insure that the shutdown margin requirements are met and maintained.

d. If a CONTROL ROD cannot be tripped, shutdown margin shall be increased by boration as necessary to compensate for the worth of the withdrawn inoperable CONTROL ROD.

e. The drop time of each CONTROL ROD shall be no greater than 2.5 seconds from the beginning of rod motion to 90% insertion.

3.10.2 (Deleted)

3.10.3 Part-Length Control Rods

The part-length control rods will be completely withdrawn from the core (except for control rod exercises and physics tests).

(See 3.1)

3.4.7 PCS Loops - MODE 5, Loops Filled

3.4.7

3.1 PRIMARY COOLANT SYSTEM (PCS)

(A.1)

Applicability

Applies to the operable status of the primary coolant system.

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running. (A.2) (L.4)

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception: (See 3.4.4)

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

c. The measured four primary coolant pumps operating reactor vessel flow shall be ≥ 352,000 gpm. (See 3.4.1)

d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F. (See 3.4.5, 3.4.4)

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours. (See 3.2)

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(See 3.1)

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS

Applicability

Applies to operation of CONTROL RODS and hot channel factors during operation.

Objective

To specify limits of CONTROL ROD movement to assure an acceptable power distribution during power operation, limit worth of individual rods to values analyzed for accident conditions, maintain adequate shutdown margin after a reactor trip and to specify acceptable power limits for power tilt conditions.

Specifications

3.10.1 Shutdown Margin Requirements

a. With four primary coolant pumps in operation at hot shutdown and above, the shutdown margin shall be 2%.

b. With less than four primary coolant pumps in operation at hot shutdown and above, boration shall be immediately initiated to increase and maintain the shutdown margin at ≥3.75%.

c. At less than the hot shutdown condition, with at least one primary coolant pump in operation or at least one shutdown cooling pump in operation, with a flow rate ≥2810 gpm, the boron concentration shall be greater than the cold shutdown boron concentration for normal cooldowns and heatups, ie, non-emergency conditions.

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate < 2810 gpm but ≥ 650 gpm, then within one hour either:

1. (a) Establish a shutdown margin of ≥ 3.5% and

   (b) Assure two of the three charging pumps are electrically disabled.

   OR

2. At least every 15 minutes verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, terminate charging pump operation and insure that the shutdown margin requirements are met and maintained.

(1.5)

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3.4.7

| 3.10 | CONTROL ROD AND POWER DISTRIBUTION LIMITS (Continued) |
|---|---|
| 3.10.1 | Shutdown Margin Requirements (Continued) |

→ (A.1)

→ (L.5)

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate less than 650 gpm, within one hour:

(a) Initiate surveillance at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15-minute surveillance period, terminate charging pump operation an insure that the shutdown margin requirements are met and maintained.

d. If a CONTROL ROD cannot be tripped, shutdown margin shall be increased by boration as necessary to compensate for the worth of the withdrawn inoperable CONTROL ROD.

e. The drop time of each CONTROL ROD shall be no greater than 2.5 seconds from the beginning of rod motion to 90% insertion.

3.10.2 (Deleted)

3.10.3 Part-Length Control Rods

The part-length control rods will be completely withdrawn from the core (except for control rod exercises and physics tests).

→ (See 3.1)

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3.4.8 PCS Loops MODE 5, Loops not Filled 3.4.8

3.1 PRIMARY COOLANT SYSTEM

Applicability

Applies to the operable status of the primary coolant system. A.1

Objective

To specify certain conditions of the primary coolant system which must be met to assure safe reactor operation.

Specifications

3.1.1 Operable Components

a. At least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm shall be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above, except during an emergency loss of coolant flow situation. Under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown cooling pumps running. L.1

(See 3.4.4)

b. Four primary coolant pumps shall be in operation whenever the reactor is operated above hot shutdown, with the following exception:

Before removing a pump from service, thermal power shall be reduced as specified in Table 2.3.1 and appropriate corrective action implemented. With one pump out of service, return the pump to service within 12 hours (return to four-pump operation) or be in hot shutdown (or below) with the reactor tripped (from the C-06 panel, opening the 42-01 and 42-02 circuit breakers) within the next 12 hours. Start-up (above hot shutdown) with less than four pumps is not permitted and power operation with less than three pumps is not permitted.

(See 3.4.1)

c. The measured four primary coolant pumps operating reactor vessel flow shall be ≥ 352,000 gpm.

(See 3.4.5 3.4.4)

d. Both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F.

(See 3.2)

e. The AXIAL SHAPE INDEX (ASI) shall be maintained within the limits specified in the COLR.

(1) When the ASI exceeds the limits specified in the COLR, within 15 minutes initiate corrective actions to restore the ASI to the acceptable region. Restore the ASI to acceptable values within one hour or be at less than 70% of rated power within the following two hours.

Revised 11/04/98

(See 3.1)

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS

Applicability

Applies to operation of CONTROL RODS and hot channel factors during operation.

Objective

To specify limits of CONTROL ROD movement to assure an acceptable power distribution during power operation, limit worth of individual rods to values analyzed for accident conditions, maintain adequate shutdown margin after a reactor trip and to specify acceptable power limits for power tilt conditions.

Specifications

3.10.1 Shutdown Margin Requirements

a. With four primary coolant pumps in operation at hot shutdown and above, the shutdown margin shall be 2%.

b. With less than four primary coolant pumps in operation at hot shutdown and above, boration shall be immediately initiated to increase and maintain the shutdown margin at ≥3.75%.

c. At less than the hot shutdown condition, with at least one primary coolant pump in operation or at least one shutdown cooling pump in operation, with a flow rate ≥2810 gpm, the boron concentration shall be greater than the cold shutdown boron concentration for normal cooldowns and heatups, ie, non-emergency conditions.

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate < 2810 gpm but ≥ 650 gpm, then within one hour either:

LCO a.
LCO b.

1. (a) Establish a shutdown margin of ≥ 3.5% and — A.5

(b) Assure two of the three charging pumps are electrically disabled. — A.5

OR

L.5

2. At least every 15 minutes verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, terminate charging pump operation and insure that the shutdown margin requirements are met and maintained.

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3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS (Continued) → A.1

3.10.1 Shutdown Margin Requirements (Continued)

→ L.5

During non-emergency conditions, at less than the hot shutdown condition with no operating primary coolant pumps and a primary system recirculating flow rate less than 650 gpm, within one hour:

(a) Initiate surveillance at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15-minute surveillance period, terminate charging pump operation an insure that the shutdown margin requirements are met and maintained.

d. If a CONTROL ROD cannot be tripped, shutdown margin shall be increased by boration as necessary to compensate for the worth of the withdrawn inoperable CONTROL ROD.

e. The drop time of each CONTROL ROD shall be no greater than 2.5 seconds from the beginning of rod motion to 90% insertion.

3.10.2 (Deleted)

3.10.3 Part-Length Control Rods

The part-length control rods will be completely withdrawn from the core (except for control rod exercises and physics tests).

→ (See 3.1)

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3.3 EMERGENCY CORE COOLING SYSTEM (Continued) (L.4) (L.3)

APPLIC (M.1) 3.3.3 Prior to returning to the Power Operation Condition after every time the plant has been placed in the Refueling Shutdown Condition or the Cold Shutdown Condition for more than 72 hours and testing of Specification 4.3.h has not been accomplished in the previous 9 months, or prior to returning the check valves in Table 4.3.1 to service after maintenance, repair or replacement, the following conditions shall be met: (LA.1)

LCO a. All pressure isolation valves listed in Table 4.3.1 shall be functional as a pressure isolation device, except as specified in b. Valve leakage shall not exceed the amounts indicated. (LA.2)

(M.2) b. In the event that integrity of any pressure isolation valve specified in Table 4.3.1 cannot be demonstrated, at least two valves in each high pressure line having a non-functional valve must be in and remain in, the mode corresponding to the isolated condition.[1] (A.4) <ADD RA A.1 & RA A.2> - (M.2)

RA B.1 & B.2 c. If Specification a. and b. cannot be met, an orderly shutdown shall be initiated and the reactor shall be in hot shutdown condition within 12 hours, and cold shutdown within the next 24 hours. (M.3)

(A.3) [1] Motor-operated valves shall be placed in the closed position and power supplies deenergized.

~~3.3.4 Two HPSI pumps shall be operable when the PCS temperature is >325°F.~~

~~a) One HPSI pump may be inoperable provided the requirements of Section 3.3.2.c are met.~~

(See 3.5)

~~3.3.5 Two HPSI pumps shall be rendered incapable of injection into the PCS when PCS temperature is <300°F, if the reactor vessel head is installed.~~

~~Note: Specification 3.3.5 does not prohibit use of the HPSI pumps for emergency addition of makeup to the PCS.~~

(See 3.4.12)

<ADD ACTIONS TBL NOTES 1 & 2> - (A.4)

<ADD RA A.1 Note> - (M.4)

Revised 11/04/98



Amendment No. ~~51~~, ~~101~~, ~~117~~, ~~131~~, ~~161~~, ~~163~~, 171
April 5, 1996

(M.8) ← < ADD SR 3.4.14.1 FREQ - 18 months

(A.6) ← < ADD SR 3.4.14.1 NOTE 1 >

< ADD SR 3.4.14.2 >

(M.7)

3.4.14

(A.1)

4.3 SYSTEMS SURVEILLANCE

APPLICABILITY

Applies to preoperational and inservice structural surveillance of the reactor vessel and other Class 1, Class 2 and Class 3 system components.

OBJECTIVE

To insure the integrity of the Class 1, Class 2 and Class 3 piping systems and components.

SPECIFICATIONS

a,b,c,d,e,f - Deleted

g. A surveillance program to monitor radiation induced changes in the mechanical and impact properties of the reactor vessel materials shall be maintained as described in Section 4.5.3 of the FSAR. (LA.7)

(LA.2) h. Periodic leakage testing[(a)(b)] on each check valve listed in Table 4.3.1 shall be accomplished prior to returning to the Power Operation Condition after every time the plant has been placed in the Refueling Shutdown Condition or the Cold Shutdown Condition for more than 72 hours if such testing has not been accomplished within the previous 9 months, and prior to returning the check valves to service after maintenance, repair or replacement work is performed on the valves. (M.1) (LA.1)

(LA.4) (LA.3) AND SR NOTE

(L.4) (L.3)

SR 3.4.14.1 FREQ

(L.2) i. Whenever integrity of a pressure isolation valve listed in Table 4.3.1 cannot be demonstrated and credit is being taken for compliance with Specification 3.3.3.b, the integrity of the remaining check valve in each high pressure line having a leaking valve shall be determined and recorded daily and the position of the other closed valve located in that pressure line shall be recorded daily.

SR 3.4.14.3

(LA.6) j. Following each use of the LPSI system for shutdown cooling, the reactor shall not be made critical until the LPSI check valves (CK-3103, CK-3118, CK-3133 and CK-3148) have been verified closed.

(LA.4) ←

[(a)] To satisfy ALARA requirements, leakage may be measured indirectly (as from the performance of pressure indicators) if supported by computations showing that the method is capable of demonstrating valve compliance with the leakage criteria.

(LA.3) ← [(b)] Reduced pressure testing is acceptable (see footnote 5, Table 4.3.1). Minimum test differential pressure shall not be less than 150 psid.

SR 3.4.14.1 NOTE 4

Revised 11/04/98

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

A.2 CTS 3.1.1c has been modified to include an "Applicability" statement consistent with proposed ITS 3.4.1. The ITS requires DNB parameters to be met in MODE 1. CTS 3.1.1c does not explicitly state a required mode or condition for primary system flow rates, however, CTS 4.15 does require that the primary system flow rate be verified within the first 31 days of rated power operation. As such, it is reasonably concluded that the applicable mode for CTS 3.1.1c is during power operations. In the CTS, Power Operations is defined as a condition with the reactor critical and neutron flux greater than 2% Rated Power. Although the ITS definition of MODE 1 is slightly less restrictive when compared to the definition of Power Operations in the CTS (see DOC L.3), the intent of the CTS and ITS requirements are consistent in that they both provide limits relative to DNBR sensitive parameters during plant conditions when DNBR is most likely to occur.

Therefore, specifying the Applicability for primary system flow rate as MODE 1 is administrative in nature.

A.3 CTS 3.1.1g requires the indicated reactor inlet temperature to be within limit "at steady state power operation." Proposed ITS 3.4.1 requires the reactor inlet temperature to be Operable in MODE 1. In the CTS, Power Operations is defined as a condition with the reactor critical and neutron flux greater than 2% Rated Power. Although the ITS definition of MODE 1 is slightly less restrictive when compared to the definition of Power Operations in the CTS (see DOC L.3), the intent of the CTS and ITS requirements are consistent in that they both provide a limit on reactor inlet temperature during plant conditions when DNBR is most likely to occur. The portion of CTS 3.1.1g which reads "at steady state" is intended to apply to the plant condition at which the reactor inlet temperature is verified to be within limits. This statement is not intended to be exclusive to the applicability such that it would allow the reactor inlet temperature to exceed its limit during short-term operational transients such as power increases and power decreases. The intent of this phrase is consistent with the Bases for the Applicability of ISTS 3.4.1 which states "In MODE 1, the limits on RCS pressurizer pressure, RCS cold leg temperature, and RCS flow rate must be maintained during steady state operation in order to ensure that DNBR criteria will be met." Therefore, specifying an Applicable Mode for reactor inlet temperature as MODE 1 is considered administrative in nature.

A.4 CTS 3.1.1f requires the nominal primary system operation pressure to be within limit but does not specify an applicable mode or plant condition. Proposed ITS 3.4.1 requires the pressurizer pressure to be within limit in MODE 1. Specification 3.1.1.f was included in the CTS by Amendment No. 21 (dated April 29, 1976) to limit the maximum nominal primary system operating pressure due to fuel densification effects on unpressurized fuel. In support of Amendment No. 21, various transients and accidents in the FSAR were evaluated. The Loss of External Load event was identified to be limiting with respect to system pressure due to the challenge it presented to the acceptance criteria for both primary and secondary system pressurization and DNBR. As stated in the FSAR, the Loss of External Load event is credible only for rated power and power operation events because there is no load on the turbine at other reactor conditions. As such, the intent of CTS 3.1.1f is to establish a limit which is applicable during Power Operations. Although the ITS definition of MODE 1 is slightly less restrictive when compared to the definition of Power Operations in the CTS (see DOC L.3), the intent of the CTS and ITS requirements are consistent in that they both provide a limit on primary system pressure during plant conditions when DNBR is most likely to occur. Therefore, specifying an Applicable Mode for pressurizer pressure as MODE 1 is considered administrative in nature.

A.5 The Bases of the current Technical Specifications for this section have been completely replaced by revised Bases that reflect the format and applicable content consistent with NUREG-1432. The revised Bases are shown in the proposed Technical Specification Bases.

**MORE RESTRICTIVE CHANGES (M)**

M.1 CTS 3.1.1f states that the nominal primary system operating pressure shall not exceed 2100 psia. Proposed ITS 3.4.1 specifies this same parameter as pressurizer pressure and limits the pressure from ≥ 2010 psia to ≤ 2100 psia. The nominal primary system operating pressure band used in the DBA analysis is ± 50 psi. As stated in the Discussion of Change for item "A.4," CTS 3.1.1f was added to the technical specifications to address fuel densification effects on unpressurized fuel and was not intended to limit primary system pressure solely for DNB considerations. However, since the nominal value for pressurizer pressure used in the transient analysis is 2060 psia, and the nominal primary system operating pressure band is ± 50 psi, a pressure limit of ≥ 2010 psia to ≤ 2100 psia has been established to represent the initial pressure condition for DNB limited transients in the safety analyses. By specifying a pressure band of ≥ 2010 psia and ≤ 2100 psia, an additional restriction has been placed on the lower primary system pressure allowed during MODE 1 (Power Operations). This change is consistent with NUREG-1432.

M.2 Two new Surveillance Requirements have been proposed to ensure DNB parameters are within limit. SR 3.4.1.1 requires a verification of pressurizer pressure, and SR 3.4.1.2 requires a verification of reactor inlet temperature, every 12 hours. The 12 hour surveillance frequency is sufficient to ensure these parameters can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and to verify operation is within safety analysis assumptions. This change is consistent with NUREG-1432.

M.3 CTS 4.15 specifies the requirement for primary system flow measurement and states that the measurement shall be made "within the first 31 days of rated power operation." Proposed SR 3.4.1.3 also requires a verification of the primary system flow rate but stipulates that the SR must be performed within 24 hours after reaching or exceeding 90% Rated Thermal Power. SR 3.4.1.3 is more restrictive than CTS 4.15 since it limits both the time (31 days versus 24 hours) and power level (100% versus 90%) associated with the performance of the test. Thus, the time the reactor may be operated near the point where DNB could be most limiting, without a verification of the required primary system flow rate, is reduced. This is an additional restriction on plant operations and is consistent with NUREG-1432.

**RESTRICTIVE CHANGES - REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)**

LA.1 CTS 4.15 states that the primary system flow measurement shall be made with "four primary coolant pumps in operation." Proposed SR 3.4.1.3 does not specify the number of pumps required to be in operation since the only requirement (of this LCO) is to meet the minimum flow assumed in the analysis. The number of primary coolant pumps required to be in operation to meet the safety analysis assumption for forced flow and core heat removal (and ultimately the acceptance criteria for DNB) is provided in proposed ITS 3.4.4, "PCS Loops-MODES 1 and 2. The Bases of ITS 3.4.4 specify that both PCS loops with both primary coolant pumps shall be in operation. Since the details regarding the number of primary coolant pumps is adequately covered in the Bases for ITS 3.4.4, it is not necessary to place this detail in the SR for flow measurement. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program proposed in ITS Chapter 5.0. This change is consistent NUREG-1432.

## LESS RESTRICTIVE CHANGES (L)

L.1 In the CTS, if reactor vessel flow (3.1.1c) or nominal primary system pressure (CTS 3.1.1f) are not within limit, the plant must enter CTS 3.0.3 since specific actions are not provided when these parameters are outside their limit. CTS 3.0.3 allows 1 hour to initiate actions to place the plant in a condition in which the specification does not apply, and 6 hours to be in at least Hot Standby. Proposed ITS 3.4.1 Required Action A.1 addresses this same plant condition but allows 2 hours to restore these parameters to within limit. If primary system pressure or PCS flow rate can not be restored in the allowed time, Required Action B.1 requires the plant to be placed in MODE 2 within 6 hours. ITS Required Action A.1 is less restrictive than the action of the CTS since the ITS allows 2 hours to restore the out of limit parameter verse the 1 hour allowed by the CTS. The 2 hour Completion Time in the ITS provides sufficient time to determine the cause of the off normal condition and adjust plant parameters to restore the out of limit variable. The 6 hours to be in MODE 2 (ITS), and the 6 hours to be in Hot Standby (CTS), are essentially equivalent (see the Discussion of Changes for Chapter 1.0, "Use and Application") since both actions place the plant in a mode in which the specification no longer applies. This change is consistent with NUREG-1432.

L.2 CTS 3.1.1g. (1) requires the reactor inlet temperature be restored within 30 minutes if it exceeds its limit. Proposed ITS 3.4.1 Action A allows 2 hours to restore the reactor inlet temperature if it exceeds its limit. The proposed Required Action of the ITS is less restrictive than the action of the CTS since the ITS allows an additional 1.5 hours to restore the out of limit parameter. The 2 hour Completion Time stipulated in the ITS provides sufficient time to determine the cause of the off normal condition and adjust plant parameters to restore the out of limit temperature without initiating a premature plant shutdown. This change is consistent with NUREG-1432.

L.3 The Mode of Applicability proposed in ITS 3.4.1, "DNB Parameters" represents a slight relaxation from the requirements of CTS 3.1.1c, CTS 3.1.1f and CTS 3.1.1g. As discussed in DOCs A.2, A.3, and A.4 for specification 3.4.1, CTS 3.1.1 does not contain an explicit mode of applicability for primary system flow rate, primary system pressure (pressurizer pressure), or reactor inlet temperature. However, it was reasonably concluded that the mode of applicability for these requirements is during "Power Operations." The CTS defines Power Operations as a condition with the reactor critical and neutron flux greater than 2% of Rated Power." In ITS 3.4.1, the Mode of Applicability is stated as Mode 1. The ITS defines Mode 1 as a plant condition with keff $\geq$ 0.99 and Rated Thermal Power (RTP) > 5%. Thus, ITS 3.4.1 is less restrictive when compared to CTS 3.1.1 since the ITS excludes plant operations between 2% and 5% RTP. This proposed change is acceptable since the parameters associated with ITS 3.4.1 are required to be maintained within limits to ensure that DNBR criteria will be met in the event of an unplanned transient. For the DNB limited events described in the Palisade's plant safety analysis, the conclusion of these analyses remain unchanged for events initiated between 2% and 5% RTP. This is due, in part, to the excess margin that is available to accommodate transients initiated at 100% RTP. In addition, for DNB sensitive events initiated at Hot Zero Power (HZP), violation of Standard Review Plan acceptance criteria is prevented by the Reactor Protection System (RPS). Inputs to the RPS instrumentation include the same parameters (i.e., primary system flow rate, primary system pressure, and reactor inlet temperature) monitored in ITS 3.4.1. Thus, adequate protection is provided to ensure that DNBR criteria will continue to be met between 2% and 5% RTP. Therefore, this change can be made without a significant impact on public health and safety. This change is consistent with NUREG-1432.

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

A.2 CTS 3.1.1b requires four primary coolant pumps to be in operation. CTS 3.1.1d requires both steam generators be capable of performing their heat transfer function. Proposed ITS 3.4.4 requires two PCS loops to be in operation. The Bases of ITS 3.4.4 clarifies that the Operability requirements related to steam generators in Modes 1 and 2 are addressed by LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation," and LCO 3.4.13, PCS Operational Leakage." As such, a steam generator is considered Operable when it has adequate water level (LCO 3.3.1), and tube integrity is demonstrated acceptable in accordance with the Steam Generator Tube Surveillance Program (LCO 3.4.13). Therefore, it is not necessary to stipulate the requirement for Operable steam generators in ITS 3.4.4 since this requirement is adequately addressed by other specifications. Thus, the difference between the CTS and the ITS for PCS loops and steam generators can be characterized as administrative since there is no change in the requirements. This change is consistent with NUREG-1430, "Standard Technical Specifications, Babcock and Wilcox Plants" which previously corrected the disjoint between the LCO and Surveillance Requirements that presently exists in NUREG-1431 ("Standard Technical Specifications, Westinghouse Plants") and NUREG-1432.

A.3 CTS 3.1.1b requires four PCPs to be in operation "whenever the reactor is operated above hot shutdown." Proposed ITS 3.4.4 requires four PCPs to be in operation in MODES 1 and 2. The CTS plant condition of "hot shutdown" translates to "MODE 3" in the ITS. As such, the CTS requirement to have four PCPs in operation above "hot shutdown" is the same as the ITS requirement to have four PCPs in operation in MODES 1 and 2. Thus, the difference between the CTS and the ITS can be characterized as administrative since there is no change in requirements between the CTS and ITS. This change is consistent with NUREG-1432.

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

A.2 CTS 3.1.1d requires that both steam generators be capable of performing their heat transfer function. Proposed ITS 3.4.5 requires two PCS loops to be Operable. The Bases of ITS 3.4.5 states that the LCO requires two PCS loops to be Operable with the intent of requiring both SGs to be capable of transferring heat from the primary coolant at a controlled rate. As such, the requirements of CTS 3.1.1d and the requirements of ITS 3.4.5 are the same since both the CTS and ITS require both SG to be Operable. Thus, the difference between the CTS and the ITS can be characterized as administrative since there is no change in the requirements between the CTS and ITS. This change is consistent with NUREG-1432.

A.3 CTS 3.1.1a contains the requirement for primary coolant pumps and applies when the plant is operating in cold shutdown or above. CTS 3.1.1d contains the requirement for steam generators and is applies whenever the average temperature of the primary coolant is above 300°F. The Applicability of proposed ITS 3.4.5 is MODE 3. MODE 3 is defined, in part, by an average primary coolant temperature ≥ 300°F and translates to a CTS plant condition of hot shutdown. As such the applicability of CTS 3.1.1a and CTS 3.1.1d are inclusive of the Applicability of ITS 3.4.5. Thus, the difference between the CTS and the ITS can be characterized as administrative since there is no change in the requirements between the CTS and ITS. This change is consistent with NUREG-1432.

## MORE RESTRICTIVE CHANGES (M)

M.1 CTS 3.1.1a requires, in part, that at least one primary coolant pump be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above. Proposed ITS 3.4.5 requires one PCS loop to be in operation while in MODE 3. The ITS Bases states that a minimum of one running PCP meets the LCO requirement for one loop in operation. LCO 3.4.5 is further modified by a Note which allows all PCPs to not be in operation for ≤ 1 hour per 8 hour period, provide no operations are permitted that would cause a reduction of the PCS boron concentration, and core outlet temperature is maintained at least 10°F below saturation temperature. Although the ITS allows the PCPs to not be in operation for a short period of time under certain restrictions, the overall requirements of the ITS are more restrictive than the CTS since the ITS requires a PCP to be in operation any time the plant is in MODE 3 regardless if a change in PCS boron concentration is being made. In addition, the Required Actions of ITS Condition C which addresses the situation when no PCS loops are in operation, requires the immediate suspension of all operations involving a reduction of the PCS boron concentration, and that actions be initiated immediately to restore one PCS loop to operation. These actions are appropriate since forced circulation of the PCS is necessary to ensure a homogenous mixture of the soluble boron. . This change is consistent with NUREG-1432.

M.2 CTS 3.1.1d specifies that both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F. However, the CTS does not provide specific actions if both steam generators becomes inoperable. Therefore, the plant must apply the actions of CTS LCO 3.0.3. When the plant is in hot shutdown, CTS 3.0.3 allows one hour to initiate actions to place the plant in a condition in which the specification does not apply, and an additional 24 hours to place the plant in cold shutdown. Once the average temperature of the PCS is below 300°F, further actions are not required. In proposed ITS 3.4.5, Condition C addresses, in part, the situation when no PCS loop are Operable. The Required Action of the ITS is to immediately suspend all operations involving a reduction of PCS boron concentration, and to immediately initiate action to restore one PCS loop to Operable status and operation. In the ITS, when Immediately is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner. As such, the requirements of the ITS are more restrictive than the CTS since the ITS requires immediate actions to restore versus the one hour allowed by CTS 3.0.3. In addition, the CTS requirement to place the plant in a condition in which the specification does not apply (i.e., below 300°F) would not be practical since this condition represents a loss of the decay heat removal capability. This change is consistent with NUREG-1432.

M.3 Three new Surveillance Requirements have been included as part of ITS 3.4.5. SR 3.4.5.1 requires a verification that the required PCS loop is in operation every 12 hours, SR 3.4.5.2 requires a verification that the secondary side water level in each SG is ≥ -84% every 12 hours, and SR 3.4.5.3 requires a verification that correct breaker alignment and indicated power are available to the required pump that is not in operation. Although the ability to ascertain the status of PCS loops and SGs is provided elsewhere in the CTS (e.g., Channel Checks for accident monitoring instruments) the inclusions of these SRs provides a concise requirement directly related to the LCO for PCS loops. As such, the addition of these SRs has been characterized as more restrictive. This change is consistent with NUREG-1432.

**LESS RESTRICTIVE CHANGES - REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)**

LA.1 There were no "Removal of Detail" changes associated with this specification.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.1d specifies that both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F. However, the CTS does not provide specific actions if one of the steam generators becomes inoperable. Therefore, the plant must apply the actions of CTS LCO 3.0.3. When the plant is in hot shutdown, CTS 3.0.3 allows one hour to initiate actions to place the plant in a condition in which the specification does not apply, and an additional 24 hours to place the plant in cold shutdown. Once the average temperature of the PCS is below 300°F, further actions are not required. In proposed ITS 3.4.5, Condition A addresses the situation when one required PCS loop is inoperable, and Condition B addresses the situation when the Required Actions and associated Completion Time of Condition A are not met. Condition A allows 72 hours to restore the required PCS loop to an Operable status, and Condition B allows 24 hours to be in MODE 4. The Required Actions of the ITS are less restrictive than the CTS because the ITS allows 72 hours to restore an inoperable loop to Operable status plus an additional 24 hours to place the plant in MODE 4. The CTS only allows 25 hours to place the plant in cold shutdown. (Note: the CTS does not define a plant condition between 210°F and 525°F. Additional clarification related to Applicability is provided in Discussion of Change A.2) Specifying 72 hours in the ITS is acceptable since the loss of one required PCS loop only represents a loss in redundancy. With one PCS loop inoperable, one Operable PCS loop and one running PCP are available to provide the necessary heat removal function and soluble boron mixing function in the PCS. The ITS Completion Time of 24 hours to place the plant in MODE 4 when an inoperable PCS loop can not be restored in 72 hours is acceptable since it is compatible with the required operation to achieve cooldown and depressurization from the existing plant conditions in a orderly manner without challenging plant systems. This change is consistent with NUREG-1432.

L.2 CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.5 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 3. LCO 3.4.5 contains a Note which allows all primary coolant pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.5 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 3, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increase in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

A.2 The requirements of CTS 3.1.1a when PCS temperature is > 200°F and ≤ 300°F are being deleted since they have been superseded by the requirements of CTS 3.1.9.1. CTS 3.1.1a requires at least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm to be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above. CTS 3.1.9.1 requires one PCS loop or SDC train to be in operation providing ≥ 2810 gpm flow through the reactor core and applies whenever there is fuel in the reactor with PCS temperature > 200°F and ≤ 300°F. The pump requirements of CTS 3.1.9.1 are more restrictive than the pump requirements of CTS 3.1.1a since CTS 3.1.9.1 always requires a pump to be in operation regardless if a change in boron concentration is occurring. In addition, CTS 3.1.9.1 provides specific actions which must be initiated immediately if the flow is less than required. CTS 3.1.1a does not contain specific actions when the flow requirements are not met and thus, must invoke the provisions of CTS LCO 3.0.3 which allows 1 hour to initiate action to place the plant in a condition in which the specification does not apply. Although the actions of CTS 3.1.9.1 do not explicitly preclude an increase in PCS boron concentration as stipulated in CTS 3.1.1a, the immediate completion time emphasizes the importance of restoring the required flow as soon as possible. Any action to initiate an increase in boron concentration during a loss of flow event would only be taken to assure the safe condition of the reactor core in accordance with approved Off Normal Procedures. Since the requirements of CTS 3.1.9.1 supersede the requirements of CTS 3.1.1a, a specific evaluation of changes from the CTS to proposed ITS 3.4.6 is made relative to CTS 3.1.9.1.

A.3 The Applicability of CTS 3.1.9.1 has been revised to be consistent with the Applicability of proposed ITS 3.4.6. CTS 3.1.9.1 specifies a PCS temperature of > 200°F and ≤ 300°F, ITS 3.4.6 defines MODE 4, in part, by an average primary coolant temperature of > 200°F and < 300°F. This change has been characterized as administrative in nature since the actual difference between the CTS and ITS (less than 1°F) is insignificant and has no relative impact on the health and safety of the public or plant.

A.4 CTS 3.1.1i contains a restriction on the simultaneous operation of primary coolant pumps P-50A and P-50B. In ITS 3.4.6, this same restriction applies however, the phrase "when the PCS cold leg temperature is <300°F" has been deleted since it is redundant with the Applicability. Since this is no change in the actual requirements, this change is considered administrative in nature.

A.5 Not used.

A.6 The PCP starting limitations specified in CTS 3.1.1h have been incorporated into proposed ITS 3.4.6 with the exception of limit (1) which states that "PCS cold leg temperature ($T_c$) is > 430°F." The inclusion of this starting restriction is not applicable in MODE 4 since the maximum allowable temperature in MODE 4 is 300°F.

A.7 CTS 4.2, Table 4.2.2 item 14.c has been revised to include the actual flow rate value required by the LCO. This revision is a change in format only to establish consistency with NUREG-1432 and does not alter the requirement of the CTS.

## MORE RESTRICTIVE CHANGES (M)

M.1 CTS 3.1.9.1 Exception 1 provides an allowance to suspend all flow through the reactor core for up to 1 hour provided certain restrictions are met. Proposed ITS 3.4.6 also contains this allowance (LCO Note 1) but restricts its use in any 8 hour period. The intent of this change is to prescribe a limit on the frequency this exception may be utilized and to avoid the potential misapplication of its use by repeatedly relying on the exception. Although the 8 hour period has no analytical basis, it has been included in the ITS to maintain consistency with NUREG-1432. As such, this is an additional restriction on plant operations.

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 CTS 3.1.9.1 contains details associated with PCS loop and SDC train Operability. In proposed ITS 3.4.6, the details associated with PCS loop and SDC train Operability are contained in the Bases. The CTS states that an Operable SDC train consists of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan" and that an Operable PCS loop consists of "an Operable Primary Coolant Pump and an Operable Steam Generator and secondary water level ≥ -84%. In the ITS, an Operable PCS loop consists of one Operable PCP and an SG that is Operable in accordance with the Steam Generator Tube Surveillance Program and that has a minimum water level of -84%. Similarly, for the SDC system, an Operable SDC train is composed of an Operable SDC pump capable of providing forced flow to the SDC heat exchanger. Support systems Operability (e.g., Component Cooling Water, Service Water, ultimate heat sink etc.) is addressed by the definition of Operability. As such, the proposed Bases description of Operability is equivalent to the details contained in CTS 3.1.9.1. Specifying the details of what constitutes an Operable PCS loop and SDC train in the Bases is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.9.1 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.6, this same action is not stipulated since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 300°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.6. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

L.2 CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.6 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 4. LCO 3.4.6 contains a Note which allows all primary coolant pumps and shutdown cooling pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.6 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 4, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increases in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

L.3 In the event only one SDC train is available to perform the decay heat removal function in Mode 4, CTS 3.1.9.1 Action 1.a requires that corrective actions be initiated immediately to return a second loop or train to Operable status. In addition, CTS 3.1.9.1 Action 1.c requires the primary coolant temperature be < 200°F within 24 hours. For this same case, proposed ITS 3.4.6 Condition B only requires the plant be placed in Mode 5 within 24 hours and does not require corrective actions be initiated immediately to return a second loop or train to Operable status. The Required Actions of ITS 3.4.6 represent a relaxation from the requirements of CTS 3.1.9.1. The acceptability of this change is based on the reliability of the remaining Operable SDC train in performing the decay heat removal function. Recognition of this capability eliminates the urgency to immediately initiate corrective actions and allows the plant to be placed in a lower mode in a timely fashion. This change is consistent with NUREG-1432.

L.4 The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since ITS 3.4.6 provides the appropriate Required Actions when the required flow rate is not met. For flow rates < 2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates < 650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pumps are operating. Although the actions of CTS 3.10.1 are associated with maintaining shutdown margin (i.e., the ability to detect a boron dilution event within the time assumed in the analysis), the initiating event for this condition is a degraded or complete loss of forced circulation in the PCS. When the PCS temperature is > 200°F and ≤ 300°F, loop flow requirements are dictated by ITS 3.4.6. ITS 3.4.6 requires one PCS loop or SDC train be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, ITS 3.4.6 requires the immediate suspension of all operations involving a reduction in PCS boron concentration. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.6 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.6 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.6, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥ 3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 4 without reliance on a separate action. Since the requirements of ITS 3.4.6 provide the appropriate actions in response to a low flow condition in the PCS, the requirements of CTS 3.10.1c are no longer necessary and have been deleted. This change is consistent with NUREG 1432.

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

A.2 The requirements of CTS 3.1.1a when PCS temperature is < 200°F are being deleted since they have been superseded by the requirements of CTS 3.1.9.2. CTS 3.1.1a requires at least one primary coolant pump or one shutdown cooling pump with a flow rate greater than or equal to 2810 gpm to be in operation whenever a change is being made in the boron concentration of the primary coolant and the plant is operating in cold shutdown or above. CTS 3.1.9.2 requires one PCS loop or SDC train to be in operation providing ≥ 2810 gpm flow through the reactor core and applies whenever there is fuel in the reactor, PCS loops are filled, and the PCS temperature is < 200°F. The pump requirements of CTS 3.1.9.2 are more restrictive than the pump requirements of CTS 3.1.1a since CTS 3.1.9.2 always requires a pump to be in operation regardless if a change in boron concentration is occurring. In addition, CTS 3.1.9.2 provides specific actions which must be initiated immediately if the flow is less than required. CTS 3.1.1a does not contain specific actions when the flow requirements are not met and thus, must invoke the provisions of CTS LCO 3.0.3 which allows 1 hour to initiate action to place the plant in a condition in which the specification does not apply. Although the actions of CTS 3.1.9.2 do not explicitly preclude an increase in PCS boron concentration as stipulated in CTS 3.1.1a, the immediate completion time emphasizes the importance of restoring the required flow as soon as possible. Any action to initiate an increase in boron concentration during a loss of flow event would only be taken to assure the safe condition of the reactor core in accordance with approved Off Normal Procedures. Since the requirements of CTS 3.1.9.2 supersede the requirements of CTS 3.1.1a, a specific evaluation of changes from the CTS to proposed ITS 3.4.6 is made relative to CTS 3.1.9.2.

A.3 The PCP starting limitations specified in CTS 3.1.1h have been incorporated into proposed ITS 3.4.7 with the exception of limit (1) which states that "PCS cold leg temperature ($T_c$) is > 430°F." The inclusion of this starting restriction is not applicable in MODE 5 since the maximum allowable temperature in MODE 5 is 200°F.

A.4 The Applicability of CTS 3.1.9.2 has been revised to be consistent with the Applicability of proposed ITS 3.4.7. CTS 3.1.9.2 specifies a PCS temperature of < 200°F, ITS 3.4.7 defines MODE 5, in part, by an average primary coolant temperature of ≤ 200°F. This change has been characterized as administrative in nature since the actual difference between the CTS and ITS (less than 1°F) is insignificant and has no relative impact on the health and safety of the public or plant.

A.5 In CTS 3.1.9.2, Exceptions 1 and 2 restriction "b" has been reworded to be consistent with the terminology presented in NUREG-1432. Restriction "b"states that "core outlet temperature stays ≤ 200°F." In proposed ITS 3.4.7, this same restriction (LCO Note 1.b) is stated as "core outlet temperature is maintained at least 10°F below saturation temperature." While in MODE 5, the PCS is generally depressurized and the corresponding saturation temperature is approximately 212°F (not accounting for water head). Maintaining the core outlet temperature at least 10°F below saturation temperature in this condition would equate to a maximum temperature of 202°F. The difference between the CTS requirement (≤ 200°F) and the ITS requirement (≤ 202°F) is insignificant and has no relative impact on the health and safety of the public or plant. As such, this change has been characterized as administrative in nature.

A.6 Not used.

A.7 CTS 4.2, Table 4.2.2 item 14.c has been revised to include the actual flow rate value required by the LCO. This revision is a change in format only to establish consistency with NUREG-1432 and does not alter the requirement of the CTS.

## MORE RESTRICTIVE CHANGES (M)

M.1 CTS 3.1.9.2 specifies that one PCS loop or SDC train shall be in operation. Proposed ITS 3.4.7 specifies that one SDC train shall be in operation and includes an LCO Note which allows all SDC trains to be removed from operation during planned heatups to MODE 4 when at least one PCS loop is in operation. The requirements of the ITS are more restrictive than the CTS since the CTS would allow an operating PCP to fulfill the flow requirements any time in MODE 5 regardless if a planned heatup to MODE 4 was in progress. Due to the inability to produce steam in the SGs in MODE 5, an operating PCP loop without cooling from an Operable SDC train would eventually result in a temperature increase above the upper temperature limit of MODE 5 (200°F). Therefore, the CTS has been revised to maintain one SDC train in operation while in MODE 5. This change is consistent with NUREG-1432.

M.2 CTS 3.1.9.2 Exception 1 provides an allowance to suspend all flow through the reactor core for up to 1 hour provided certain restrictions are met. Proposed ITS 3.4.7 also contains this allowance (LCO Note 1) but restricts its use in any 8 hour period. The intent of this change is to prescribe a limit on the frequency this exception may be utilized and to avoid the potential misapplication of its use by repeatedly relying on the exception. Although the 8 hour period has no analytical basis, it has been included in the ITS to maintain consistency with NUREG-1432. As such, this is an additional restriction on plant operations.

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 CTS 3.1.9.2 contains details associated with SDC train Operability. In proposed ITS 3.4.7, the details associated with SDC train Operability are contained in the Bases. The CTS states that an Operable SDC train consists of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan." In the ITS, an Operable SDC train is composed of an Operable SDC pump capable of providing forced flow to the SDC heat exchanger. Support systems Operability (e.g., Component Cooling Water, Service Water, ultimate heat sink etc.) is addressed by the definition of Operability. As such, the proposed Bases description of Operability is equivalent to the details contained in CTS 3.1.9.2. Specifying the details of what constitutes an Operable SDC train in the Bases is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided, in part, two SDC trains are Operable. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not stipulate that both SDC trains have to be Operable since the redundant heat removal function is being provided by the required SGs. Even though the SGs cannot produce steam in MODE 5 (i.e., the temperature is below 212°F), they are capable of being a heat sink due to their large contained volume of secondary side water. In the absents of forced flow in the PCS, as long as the SG secondary side water is at a lower temperature than the PCS, SG level is maintained equal to or greater than the limit specified in the LCO, and the primary coolant loops are filled, heat transfer will occur via natural circulation. Therefore, CTS 3.1.9.2 Exception 1 has been revised to delete the requirement to have two SDC trains Operable when all flow through the reactor core is stopped since it is excessively restrictive considering the redundant heat removal function provided by the required SGs. This change is consistent with NUREG-1432.

L.2 CTS 3.1.9.2 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.7, this same action is not stipulated since a loss of one heat removal means (SGs or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 200°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.7. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

L.3 CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided certain restrictions are met. Restriction "a" of Exception 1 prohibits any operation that would cause a reduction in the PCS inventory. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not contain a prohibition on operations which result in a reduction in PCS inventory. This is because a reduction in PCS inventory within the bounds of the Applicable mode (i.e., PCS loops filled ) will not impact the ability of the PCS to perform the decay heat removal function. During the period when forced flow through the reactor core is stopped, the decay heat removal function is accomplished by the SGs which promote natural circulation in the PCS. By maintaining the PCS loops filled (no voids in the loop piping), the ability to establish natural circulation is preserved. Therefore, any reductions in the PCS inventory which do not result in void formations in the PCS loops are acceptable. This change is consistent with NUREG-1432.

L.4 CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.7 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 5. LCO 3.4.7 contains a Note which allows all primary coolant pumps and shutdown cooling pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.7 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 5, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increases in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

L.5 The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since ITS 3.4.7 provides the appropriate Required Actions when the required flow rate is not met. For flow rates < 2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates < 650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pumps are operating. Although the actions of CTS 3.10.1 are related to the ability to maintain shutdown margin (i.e., the ability to detect a boron dilution event within the time assumed in the analysis), the initiating event for this condition is a degraded or complete loss of forced circulation in the PCS. When the PCS temperature is ≤ 200°F, loop flow requirements are dictated by ITS 3.4.7. ITS 3.4.7 requires one SDC train be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, ITS 3.4.7 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.7 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.7 requires the immediate suspension of <u>all</u> operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.7, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥ 3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 5 without reliance on a separate action. Since the requirements of ITS 3.4.7 provide the appropriate actions in response to a low flow condition in the PCS, the requirement of CTS 3.10.1c are no longer necessary and have been deleted. This change is consistent with NUREG 1432.

## MORE RESTRICTIVE CHANGES (M)

M.1 Not used.

M.2 A new SR has been proposed (SR 3.4.8.3) to verify that two of the three charging pumps are incapable of reducing the boron concentration in the PCS and is specified at a frequency of every 12 hours. The SR is modified by a Note which clarifies that performance (of the SR) is only required when complying with the applicable portion of the LCO. The addition of this SR is necessary to support the structure of the LCO in proposed ITS 3.4.8 (See Discussion of Change M.1) which includes limitations on the minimum SDC train flow rate during MODE 5 with the PCS loops not filled. This change is an additional restriction on plant operations.

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 CTS 3.1.9.3 contains details associated with SDC train Operability. In proposed ITS 3.4.8, the details associated with SDC train Operability are contained in the Bases. The CTS states that an Operable SDC train consists of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan." In the ITS, an Operable SDC train is composed of an Operable SDC pump capable of providing forced flow through the reactor vessel at a specified ($> 2810$ gpm or $\geq 650$ gpm) flow rate. Support systems Operability (e.g., Component Cooling Water, Service Water, ultimate heat sink etc.) is addressed by the definition of Operability. As such, the proposed Bases description of Operability is equivalent to the details contained in CTS 3.1.9.3. Specifying the details of what constitutes an Operable SDC train in the Bases is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.1a requires one SDC pump with a flow rate ≥ 2810 gpm to be in operation whenever a change is being made in the boron concentration of the PCS and the plant is operating in cold shutdown or above. The basis for this requirement is to ensure adequate mixing of the primary coolant volume to prevent boron stratification, and to provide sufficient time for the operators to terminate a boron dilution under asymmetric conditions. The assumptions of the Palisades boron dilution analysis dictate the minimum flow requirement for this specification. There is no plant specific analysis for boron stratification while increasing the boron concentration of the PCS. However, engineering judgment suggests that some flow is required for mixing during this period. Proposed ITS 3.4.8 does not impose any specific flow rate restriction for an increase in the PCS boron concentration, but does impose flow restrictions to protect against an inadvertent boron dilution. The minimum flow allowed by ITS 3.4.8 is 650 gpm. Based on engineering judgement, a minimum flow rate of 650 gpm is adequate to ensure proper mixing of the PCS while increasing the PCS boron concentration. With less flow than required, ITS 3.4.8 mandates that actions be initiated immediately to restore the required flow. Although ITS 3.4.8 does not explicitly preclude an increase in PCS boron concentration as stipulated in CTS 3.1.1a, the immediate completion time emphasizes the importance of restoring the required flow as soon as possible. Any action to initiate an increase in boron concentration during a loss of flow event would only be taken to assure the safe condition of the reactor core in accordance with approved Off Normal Procedures. Therefore, the requirement of CTS 3.1.1a to maintain SDC flow ≥ 2810 whenever changes (increases) in PCS boron concentration are being made is no longer necessary and has been deleted.

L.2 In CTS 3.1.9.3, the minimum SDC flow rate of 1000 gpm is being deleted and replaced by the SDC flow rates contained in CTS 3.10.1c. The flow rate requirements of CTS 3.10.1c will be incorporated into the requirements of proposed ITS 3.4.8. This change is being made because the 1000 gpm flow rate stipulated in CTS 3.1.9.3 is based on operating experience rather than analysis. The flow rates of 2810 gpm and 650 gpm contained in CTS 3.10.1c are analytically derived to support the conclusion of the boron dilution event. Preserving these values in ITS 3.4.8 will ensure sufficient time is provided to plant operators to terminate a boron dilution event under asymmetric conditions.

L.3 CTS 3.1.9.3 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.8, this same action is not stipulated since a loss of one SDC train only results in a loss of redundancy and the one remaining SDC train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 200°F are prohibited since a change in Modes is precluded while in the Required Actions of ITS 3.4.8. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

L.4 The LCO of CTS 3.1.9.3 has been modified by the addition of a new Note. Note 2 in proposed ITS 3.4.8 allows one SDC train to be inoperable for ≤ 2 hours for surveillance testing provided the other SDC train is Operable and in operation. The purpose of this Note is to permit one of the two required SDC trains to be inoperable for surveillance testing without entering the Required Actions. The allowance to have one SDC train inoperable for up to 2 hours is acceptable since the remaining SDC train is required to be Operable and in operation. A single Operable SDC train in operation is adequate to provide the required cooling and mixing functions of the PCS. Thus, the addition of this Note only reduces the requirement for redundancy during a short period necessary to support surveillance testing. This change is consistent with NUREG-1432.

L.5 CTS 3.10.1c contains actions based on the inability to provide recirculation of the PCS at the specified flow rate. With primary system recirculation flow rate < 2810 gpm but ≥ 650 gpm, the CTS requires that within one hour either; a shutdown margin of 3.5% be established, and two of the three charging pumps be electrically disabled; or at least every 15 minutes a verification be made that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. In addition, the CTS also requires that if primary system recirculation flow rate is less than 650 gpm, then within one hour a surveillance must be performed at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. The basis for imposing a minimum flow rate of 2810 gpm is to provide sufficient time for operators to terminate a boron dilution under asymmetric conditions. With flow rates < 2810 gpm and ≥ 650 gpm, an additional restriction on charging pump Operability will ensure the acceptance criteria for an inadvertent boron dilution will not be violated. The flow requirements and charging pump limitation of CTS 3.10.1c have been moved to the LCO of proposed ITS 3.4.8. In MODE 5 with the PCS loops not filled, the function of the PCS loops is to provide decay heat removal and act as a carrier for soluble boric acid. ITS 3.4.8 stipulates the necessary requirements to ensure adequate heat removal capability exists and that mixing of the PCS is sufficient to ensure the assumptions of the boron dilution analysis are not violated. To ensure the mixing function is acceptable, one SDC train is required to be in operation with ≥ 2810 gpm through the reactor core, or one SDC train is required to be in operation with ≥ 650 gpm through the reactor core and two of the three charging pumps are incapable of reducing the boron concentration in the PCS below the minimum value necessary to maintain the required Shutdown Margin. With less flow through the core than required, ITS 3.4.8 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.8 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.8 requires the immediate suspension of <u>all</u> operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.8, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥ 3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 5 without reliance on a separate action. Since the requirements of ITS 3.4.8 provide the appropriate actions in response to a low flow condition in the PCS, the requirement of CTS 3.10.1c are no longer necessary and have been deleted.

## ADMINISTRATIVE CHANGES (A)

A.1 All reformatting and renumbering are in accordance with NUREG-1432. As a result, the Technical Specifications (TS) should be more readily readable, and therefore understandable by plant operators as well as other users. The reformatting, renumbering, and rewording process involves no technical changes to existing Technical Specifications.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During Improved Technical Specification (ITS) development certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or implied) to the TS. Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more details does not result in a technical change.

A.2 Not used.

A.3 CTS 3.3.3b provides the required actions in the event PIV integrity can not be met. The actions are modified by a footnote which states that "motor operated valves shall be placed in the closed position and power supplies de-energized." In the ITS, Required Action A.1 provides the isolation actions when PIV leakage limits can not be met and requires the isolation of the high pressure portion of the affected system from the low pressure portion of the system by use of one closed manual valve, deactivated automatic, or check valve. The ITS action of establishing a closed manual valve or deactivated automatic valve is equivalent to the CTS footnote of placing a motor operated valve in the closed position and having its power supply de-energized. That is, both the ITS and CTS ensure that an inadvertent opening of a power operated valve in the high pressure portion of a piping system which is used to isolate a PIV with excessive leaking, will not occur. Since the intent of the CTS has remained, this change has been characterized as administrative in nature. This change is consistent with NUREG-1432.

A.4 CTS 3.3.3 has been modified to include a method for tracking allowable out of service times for PIVs with excessive leakage, and to ensure an evaluation is performed on the affected system containing an inoperable PIV. Action Table Note 1 of proposed ITS 3.4.14 provides a method of modifying how Completion Times are tracked by specifying that separate entry condition is allowed for each flow path. This allows the Conditions and Completion Times to be entered and tracked separately for each inoperable PIV. Action Table Note 2 requires that the applicable Conditions and Required Actions for systems made inoperable by an inoperable PIV are entered since isolation of a leaking flow path may have affected other system operabilities. The addition of these Notes in the ITS is considered administrative in nature since these changes do not involve a technical change to the CTS, but merely support the usage rules associated with the ITS. This change is consistent with NUREG-1432.

A.5 CTS 3.17.6.17a) provides the actions when one or two SDC suction valve interlock channels are inoperable. The CTS requires the circuit breaker for the associated valve operator to be Racked Out. Furthermore, the CTS states that the breaker may be racked in only during operation of the associated valve. In proposed ITS 3.4.14, the allowance to rack in a breaker during the operation of the associated valve does not need to be stated since the plant condition in which the affected valves are required to be open to support plant operation is not inclusive in the Mode of Applicability. The Applicability of ITS 3.4.14 is MODES 1, 2, and 3, and MODE 4, except during the SDC mode of operation, or transition to or from the SDC mode of operation. As such, operation of a valve which has been deactivated to comply with the Required Actions (for an inoperable SDC suction valve interlock function) is no longer precluded since the plant is no longer in the Mode of Applicability. Thus, the ITS contains the same operational flexibility as the CTS. Therefore, this change has been characterized as administrative in nature since it does not alter the intent of the CTS.

A.6 CTS 4.3h requires periodic leakage testing of each PIV prior to returning the plant to Power Operation Conditions. Proposed SR 3.4.14.1 also requires testing of each required PIV but is modified by a Note. Note 1 of SR 3.4.14.1 states that testing is "Not required to be performed in MODES 3 and 4." The purpose of this Note is to avoid a potential LCO 3.0.4 conflict by allowing the SR to be performed after entering the Mode of Applicability of the required PIVs. As such, the ITS requires the leakage limit for PIVs to be met prior to entering MODE 4, and performance of the required test to be completed prior to entering MODE 2. Although the addition of Note 1 would impose an additional restriction on plant operation, this change has been characterized as administrative in nature since the more restrictive requirement for leak testing PIVs has been addressed in Discussion of Change M.1 of this document. Thus the inclusion of Note 1 is only required to avoid conflicts with the usage rule associated with the ISTS. This change is consistent with NUREG-1432.

## MORE RESTRICTIVE CHANGES (M)

M.1 CTS 3.3.3 requires that all required PIVs be functional as a pressure isolation device "prior to returning to the Power Operation Condition." CTS 4.3 h requires testing of the PIVs specified by CTS 3.3.3 "prior to returning to the Power Operation Condition." Proposed ITS 3.4.14 also addresses allowable PIV leakage limits but states the Mode of Applicability as "MODES 1, 2, and 3, and MODE 4, except during the SDC mode of operation, or during transition to or from the SDC mode of operation." The Applicability of the ITS is more restrictive than the CTS since it includes a broader spectrum of plant conditions (i.e., MODES 2, 3, and 4). Accordingly, the surveillance requirement associated with PIV leak testing (SR 3.4.14.1) is also more restrictive than the CTS. These changes are acceptable since the ITS will require PIV leakage to be within limits during plant conditions which have the potential for causing an intersystem LOCA, and also ensure required testing is accomplished to confirm integrity of the affected systems. This change is consistent with NUREG-1432.

M.2 CTS 3.3.3b states that in the event integrity of any PIV can not be demonstrated, at least two valves in each high pressure line having a non-functional valve must be in and remain in, the mode corresponding to the isolated condition. In addition, CTS 3.3.3 b contains footnote 1 which states that motor operated valves shall be placed in the closed position and power supplies de-energized. The CTS does not however provide an explicit time for completing the actions required by CTS 3.3.3b. As such, the CTS relies upon discretion in determining failure to meet CTS 3.3.3b. The design of the plant piping systems which contain PIVs is such that there are two PIVs in series with one motor operated valve in the high pressure portion of the piping. The flow paths containing the PIVs are also part of the ECCS flow path required by LCO 3.5.2, "ECCS-Operating." During operations in MODES 1, 2, or 3, the PIVs and their associated motor operated isolation valves are maintained in the closed position. If isolation of a non-functioning PIV by a motor operated valve is necessary, one train of ECCS would become inoperable when power to the valve operator was removed. Although the requirements of CTS 3.3.3b would allow continuous operations with an inoperable PIV isolated by two valves, the Required Actions associated with the ECCS specification would require a plant shutdown. In proposed ITS 3.4.14, if one or more flow paths with leakage from one or more PIVs is not within limits, Required Action A.1 requires the isolation of the high pressure portion of the system from the low pressure portion of the system by use of one closed deactivated automatic valve, or check valve, within 4 hours. In addition, ITS Required Action A.2 requires the restoration of a PIV with excessive leakage within 72 hours. The Required Actions of the ITS are more restrictive than the CTS since the ITS imposes explicit times for completing the isolation function of an inoperable PIV. This change is consistent with NUREG-1432.

M.3 CTS 3.3.3c specifies the shutdown actions when the requirements associated PIV leakage limits can not be met. CTS 3.3.3 c requires the reactor to be placed in hot shutdown within 12 hours, and in cold shutdown within the next 24 hours. In proposed ITS 3.4.14, the default condition for a PIVs whose leakage limits can not be met is addressed by Required Actions B.1 and B.2. Required Action B.1 requires the plant to be placed in MODE 3 within 6 hours. Required Action B.2 requires the plant to be placed in MODE 5 within 36 hours. Although the overall time to place the plant in a condition in which the LCO no longer applies is the same for both the ITS and CTS (36 hours), the ITS requirement for placing the plant in MODE 3 is more restrictive than the CTS requirement to place the plant in hot shutdown (6 hours versus 12 hours). The proposed Completion Time is reasonable, based on operating experience, to reach this plant condition from full power and is consistent with Completion Time for similar type Required Actions. This change represents an additional restriction on plant operations and is consistent with NUREG-1432.

M.4 CTS 3.3.3b states that in the event integrity of any PIV can not be demonstrated, at least two valves in each high pressure line having a non-functional valve must be in and remain in, the mode corresponding to the isolated condition. Required Action A.1 of proposed ITS 3.4.14 also requires the isolation of a PIV with excessive leakage but stipulates that each valve used to satisfy the Required Action must have been verified to meet the leakage criteria of SR 3.4.14.1 and be on the PCS pressure boundary or high pressure portion of the system. Stipulating that each valve used for isolation must have been verified to meet the leakage criteria of SR 3.4.14.1 imposes an additional restriction on plant operations since the CTS would allow isolation using a valve whose leak tightness has not been verified. Inclusion of this Note in the ITS is acceptable since it ensures the valves used for isolation meet the same leakage requirement as the affected PIV and thereby provides protection for the lower pressure rated piping. This change is consistent with NUREG-1432.

M.5 CTS 3.17.6.17 states that "with one or two SDC suction valve interlock channels inoperable" (to) place circuit breaker for the associated valve operator in (the) Racked Out position." In proposed ITS 3.4.14, the "SDC suction valve interlock channels" are more appropriately addressed as the "SDC suction valve interlock function" since both channels of pressurizer narrow range pressure are needed to fulfill the open inhibit function. The inoperability of the SDC suction valve interlock function is addressed by Required Action C.1 which requires the affected penetration be isolated within 4 hours by use of a deactivated valve. The Required Actions of the ITS and CTS are equivalent since they both establish a condition which prevents the inadvertent overpressurization of the SDC piping. However, the CTS does not contain a specified time for completing the actions. As such, the Completion Time of the ITS represents an additional restriction on plant operations. The Completion Time of 4 hours is acceptable since it provides time to complete the Required Actions while limiting the exposure to a potential overpressure event, and is consistent with the allowed Completion Times for an inoperable PIVs. This change is consistent with NUREG-1432.

M.6 CTS 3.17.6.21 provides the shutdown actions if the requirements of CTS 3.17.6.17 (SDC suction valve interlock channels) can not be met. The CTS requires the reactor to be placed in Hot Shutdown within 12 hours, and in a condition where the affected equipment is no longer required in 48 hours. Proposed ITS 3.4.14 does not contain a default condition if the Required Actions for an inoperable SDC suction valve interlock function can not be met. Thus, the ITS requires entry into LCO 3.0.3. LCO 3.0.3 would allows 7 hours to place the plant in MODE 3, and 31 hours to place the plant in MODE 4. Although the ITS does not provide an explicit default condition for inoperable SDC suction valve interlock function, the requirements imposed by LCO 3.0.3 are more restrictive than the requirements of CTS 3.17.6.21. As such, the omission of the actions required by CTS 3.17.6.21 results in an additional restriction on plant operations. This change is consistent with NUREG-1432.

M.7 A new Surveillance Requirement (SR 3.4.14.2) has been added to ensure the SDC suction valve interlock is in the proper state when actual or simulated PCS pressure is $\geq$ 280 psia. The purpose of the SR is to ensure the SDC suction valves can not be inadvertently opened when PCS pressure is above the design pressure of the SDC system piping. Although the requirement of this SR is similar to the Channel Functional Test requirement of CTS Table 4.17.6, this change has been characterized as more restrictive since the actual value for the interlock function has been stated in the SR. This change is consistent with NUREG-1432.

M.8 CTS 4.3h requires periodic leakage testing on each specified PIV after every time the plant has been placed in the Refueling Shutdown Condition, or the Cold Shutdown Condition for more than 72 hours if such testing has not been accomplished within the previous 9 months. Proposed SR 3.4.14.1 specifies a similar Frequency but also requires testing to be performed every 18 months. The inclusion of this new Frequency imposes an additional restriction on plant operations since testing will be required every 18 months regardless if the plant is placed in Cold Shutdown. The proposed Frequency is acceptable since it establishes a testing period consistent with other ASME class 1 components. This change is consistent with NUREG-1432.

## LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)

LA.1 CTS 3.3.3 and CTS 4.3h require a test of the PIVs prior to returning the valves to service "after maintenance, repair or replacement." In the ITS, it is not necessary to stipulate testing requirements related to "maintenance, repair or replacement" since these activities are covered by the definition of Operability. Anytime maintenance, repair or replacement is performed on a component which is required to be Operable by the technical specifications (e.g., an instrument transmitter, or a valve), a determination of the impact on the component's ability to perform its intended function must be made. If it is determined the affected component is no longer Operable, then the component must be declared inoperable and then retested to ensure it will function as required. Plant procedures provide the appropriate administrative controls to ensure post-maintenance activities do not result in unintentional inoperability of required components. Therefore, the CTS requirement to perform a test of the PIVs prior to returning the valves to service "after maintenance, repair or replacement" is being moved to plant procedures. Placing these details in plant procedures is acceptable since they are not necessary to adequately describe the actual regulatory requirement and maintaining this information in plant procedures will not result in a significant impact on safety. Plant procedure will be controlled in accordance with administrative process for procedure revisions. This change is consistent with NUREG-1432.

LA.2 CTS Table 4.3.1 contains a listing of "Primary Coolant System Pressure Isolation Valves" which relate to the requirement for PIV leakage. In the ITS, this listing has been moved to the FSAR since it is not necessary to describe the actual regulatory requirement. As stated in Generic Letter 91-08, "Removal of Component Lists from Technical Specifications," "specifications may be stated in general terms that describe the types of components to which the requirements apply. This provides an acceptable alternative to identifying components by their plant identification number as they are currently listed in tables of TS components. The removal of components lists is acceptable because it does not alter existing TS requirements or those components to which they apply." As such, placing the PIVs listed in CTS Table 4.3.1 in the FSAR will not result in a significant impact on safety. Changes to the FSAR will be evaluated using the criteria established in 10 CFR 50.59. This change is consistent with NUREG-1432.

LA.3 CTS Table 4.3.1 contains a listing of "Primary Coolant System Pressure Isolation Valves" which relate to the requirement for PIV leakage. The Maximum Allowable Leakage column in Table 4.3.1 is modified by five Notes. In the ITS, CTS Notes 1, 2, 4, and 5 have been moved to the Bases since they do not contain information pertinent to the performance of, or are necessary to establish compliance with the actual surveillance requirement. Notes 1, 2 and 4 simply state if the test results are acceptable or unacceptable based on the limits established the actual SR. Note 5 clarifies acceptable test methods based on Section XI of the ASME Boiler and Pressure Vessel Code. Related to Note 5, is Note (b) to CTS 4.3h which states that reduced pressure testing is acceptable. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

LA.4 The requirement to perform periodic leakage testing specified in CTS 4.3h is modified by footnote (a) which states that "to satisfy ALARA requirements, leakage may be measured indirectly (as from the performance of pressure indicators) if supported by computation showing that the method is capable of demonstrating valve compliance with the leakage criteria." Proposed ITS 3.4.14 does not contain this same statement since this information only discusses an acceptable method of compliance with the LCO and is not necessary to describe the actual regulatory requirements. The allowance to indirectly measure leakage from a PIV using a pressure indicator does not alter the allowed leakage limit from a PIV but simply provides an alternate method for testing when personnel exposure to radiation is a consideration. Therefore, these details can be placed in plant procedures without a significant impact on safety. Placing these details in plant procedures is acceptable since changes to plant procedure are controlled in accordance with administrative process for procedure revisions. This change is consistent with NUREG-1432.

LA.5 CTS Table 4.17.6 item 17 requires a Channel Functional Test and a Channel Calibration of the SDC Suction Interlocks every 18 months. Proposed ITS 3.4.14 does not contain a similar requirement since the SDC Suction Interlock instruments do not initiate an automatic safety function. The function of the SDC Suction Interlock instruments is to monitor PCS pressure and to electrically prohibit the SDC suction valves from being remotely opened when PCS pressure is above the design pressure of the SDC system. The setpoint associated with these instruments has been selected to provide equipment protection and is not based on any accident or transient analysis events presented in FSAR Chapter 14. As such, there is no analytical value which can be compromised due to a failure to automatically initiate a protective function, or as a result of instrument drift. Therefore, the CTS requirement to perform a Channel Functional Test and a Channel Calibration of the SDC Suction Interlocks can be moved to a licensee controlled document without a significant impact on safety. Placing these requirements in the Operating Requirements Manual is acceptable since changes to the Operating Requirements Manual will be evaluated using the criteria established in 10 CFR 50.59. This change is consistent with NUREG-1432.

LA.6 CTS 4.3j requires that the check valves in the LPSI system, which are used for shutdown cooling, be verified in the closed position following their use. CTS 4.3j also lists the check valves by their equipment identification number. These numbers are; CK-3103, CK-3118, CK-3133, and CK-3148. Proposed SR 3.4.14.3 also requires a verification that the four check valves in the LPSI system that have been used for operation of the shutdown cooling are verified closed but does not include the equipment identification number of the check valves. This is because this information is not necessary to adequately describe the actual regulatory requirement. As such, this information may be moved to an appropriate licensee controlled document without a significant impact of the health and safety of the public. Therefore, the equipment identification numbers of the four LPSI check contained in CTS 4.3j have been moved to the Bases. Placing these details in the Bases provides adequate assurance they will be maintained since the Bases are controlled by the Bases Control Program proposed in ITS Chapter 5.0. This change is consistent NUREG-1432.

LA.7 CTS 4.3g stipulates that a surveillance program to monitor radiation induced changes in the mechanical and impact properties of the reactor vessel materials shall be maintained as described in Section 4.5.3 of the FSAR. In the ITS, this requirement has been deleted since it is duplicative of existing requirements. 10 CFR 50.60 requires that licensees for all light water nuclear power reactors meet fracture toughness requirements and have a material surveillance program for the reactor coolant pressure boundary. These requirements are set forth in Appendices G and H to 10 CFR Part 50. Since adequate regulatory requirements exist, CTS 4.3g can be deleted without any affects on public health and safety. This change is consistent with NUREG-1432.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS Table 3.17.6 item 17 requires two channels of SDC Suction Valve Interlocks to be Operable "above 200 psia PCS pressure." In proposed ITS 3.4.14, the SDC suction valve interlocks are required to be Operable in MODES 1, 2, and 3, and in MODE 4, except during the SDC mode of operation, or transition to or from the SDC mode of operation. The requirements associated with the Applicability of ITS 3.4.14 represent a relaxation from the requirements of the CTS since the ITS will allow PCS pressure to be greater than 200 psia without requiring the SDC suction valve interlock function to be Operable. The function of the SDC suction valve interlock to prevent the inadvertent opening of the isolation valves which provide the interface between the high pressure piping in the PCS and the low pressure piping in the SDC system during periods when the PCS pressure is above the design pressure of the SDC system. The Applicability of ITS 3.4.14 is appropriate since it continues to require the interlock function to be Operable whenever a potential for overpressurizing the SDC system piping from the PCS exists. This is ensured by requiring the interlock function to be Operable in all of MODE 4 unless the SDC system is in operation, or is being placed in, or removed from, operation. The lower temperature limit of MODE 4 is 201°F. At this temperature, the corresponding PCS pressure is well below the 300 psig design pressure of the SDC system suction piping. Thus, ITS 3.4.14 requires the interlock function to be Operable well below the pressure in which it is required to perform its protective function. ITS 3.4.14 does not require the interlock function to be Operable when the SDC system is in operation or is being placed in, or remove from, operation since these activities are procedurally controlled to occur only when the PCS pressure is within the design pressure of the SDC system piping. Therefore, the proposed change is acceptable since it contains the appropriate requirements to ensure the integrity of the SDC system is not violated. This change is consistent with NUREG-1432.

L.2 CTS 4.3i requires that whenever the integrity of a PIV can not be demonstrated and credit is being taken for compliance with specification 3.3.3b, "the integrity of the remaining check valve in each high pressure line having a leaking valve shall be determined and recorded daily and the position of the other closed valve located in that pressure line shall be recorded daily." In proposed ITS 3.4.14, Required Action A.1 requires an inoperable PIV be isolated from the high pressure portion of the affected system by use of one closed manual, deactivated automatic, or check valve. In addition, each valve used for isolation must have been verified to meet the leakage requirements setforth in SR 3.4.14.1. The ITS does not specify that the integrity of the remaining check valve be determined daily since this action represent a condition which is known to exist at the time of isolation, and which must continued to be met by the requirements of SR 3.0.1. Thus, the ITS simply removes an administrative function by eliminating the requirement to record the integrity of a check valve used to isolate an inoperable PIV on a daily basis. The requirement of CTS 4.3i which states "and the position of the other closed valve located in that pressure line shall be recorded daily" is no longer applicable as explained in Discussion of Change M.2 for this specification. This change is consistent with NUREG-1432.

L.3 CTS 3.3.3 and CTS 4.3h required periodic leakage testing of the specified PIVs every time the plant has been placed in the "Cold Shutdown Condition for more than 72 hours and such testing has not been accomplished within the previous 9 months." Proposed SR 3.4.14.1 also requires leakage testing of specified PIVs but the Frequency is stated, in part, as "whenever the plant has been in MODE 5 for 7 days or more if leakage testing has not been performed in the previous 9 months." The amount of time the plant must be shutdown before PIV leakage testing is required by the ITS has been relaxed from the requirements of the CTS. The ITS allows the plant to be in MODE 5 for up to 7 days before testing is required. The CTS only allows the plant to be in Cold Shutdown Conditions for 3 days before testing is required. The extended period of MODE 5 operation allowed by the ITS does not significantly increase the probability of a malfunction of the PIVs since the change in plant status over the four additional days of shutdown time does not change significantly. This change is consistent with NUREG-1432.

L.4 CTS 3.3.3 and CTS 4.3h require all PIVs to be tested prior to returning to Power Operation after every time the plant has been placed in the Refueling Shutdown Condition, or the Cold Shutdown Condition for more than 72 hours (See Discussion of Change L.3 for this specification which justifies a change to 7 days). In proposed ITS 3.4.14, a similar testing requirement is associated with the Frequency of SR 3.4.14.1. However, SR 3.4.14.1 does not stipulate the plant condition of "Refueling Shutdown" since this plant condition does not exist in the ITS. Rather, proposed SR 3.4.14.1 contains a Frequency of "18 months" (See Discussion of Change M.8). The CTS defines "Refueling Shutdown" as a condition when the primary coolant is at Refueling Boron Concentration (i.e., at least 1720 ppm boron and the reactor subcritical by $\geq$ 5% $\Delta \rho$ with all control rods withdrawn) and $T_{ave}$ is less than 210°F. In the ITS, the Mode which closely matches the CTS plant condition of Refueling Shutdown is "MODE 6, Refueling." Presently, based on fuel design, an operating cycle for the Palisades plant is approximately 18 months. The CTS Frequency of "every time the plant has been placed in the Refueling Shutdown Condition" is essentially the same as the ITS Frequency of "18 months," However, deletion of the CTS Frequency has been characterized as less restrictive since literal application of the CTS Frequency could result in additional and unnecessary performances of PIV testing. The proposed change eliminates the potential for unnecessary testing by deleting the conditional based surveillance frequency contained in the CTS. This change is acceptable since PIV testing will continue to be performed consistent with 10CFR50.55a and within the frequency allowed by ASME Code Section XI. This change is consistent with NUREG-1432.

**LESS RESTRICTIVE CHANGE L.1**

In the CTS, if reactor vessel flow (3.1.1c) or nominal primary system pressure (CTS 3.1.1f) are not within limit, the plant must enter CTS 3.0.3 since specific actions are not provided when these parameters are outside their limit. CTS 3.0.3 allows 1 hour to initiate actions to place the plant in a condition in which the specification does not apply, and 6 hours to be in at least Hot Standby. Proposed ITS 3.4.1 Required Action A.1 addresses this same plant condition but allows 2 hours to restore these parameters to within limit. If primary system pressure or PCS flow rate can not be restored in the allowed time, Required Action B.1 requires the plant to be placed in MODE 2 within 6 hours. ITS Required Action A.1 is less restrictive than the action of the CTS since the ITS allows 2 hours to restore the out of limit parameter versus the 1 hour allowed by the CTS. The 2 hour Completion Time in the ITS provides sufficient time to determine the cause of the off normal condition and adjust plant parameters to restore the out of limit variable. The 6 hours to be in MODE 2 (ITS), and the 6 hours to be in Hot Standby (CTS), are essentially equivalent (see the Discussion of Changes for Chapter 1.0, "Use and Application") since both actions place the plant in a mode in which the specification no longer applies. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change extends the allowed outage time when Pressurizer pressure and PCS flow rate are not within limits. An extension in the allowed outage time for an inoperable parameter is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change extends the time to restore Pressurizer pressure and PCS flow rate to within limits from 1 hour to 2 hours when these parameters are outside their specified limit. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. As such, the consequences of an accident occurring in the proposed 8 hours (2 hours plus 6 hours) are the same as the consequences occurring in the existing 7 hours (1 hour plus 6 hours). Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only extends the allowed outage time associated with Pressurizer pressure and PCS flow rate. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change extends the time to restore Pressurizer pressure and PCS flow rate to within limits from 1 hour to 2 hours when these parameters are outside their specified limit. The proposed change does not effect established safety limits, operating restrictions, or design assumptions. There are no changes to any accident or transient analysis. The additional 1 hour proposed to restore an out of limit Pressurizer pressure or PCS flow rate parameter provides sufficient time to determine the cause of the off normal condition and institute corrective measures to return the variable to within limit. Any decrease in margin as result of the additional 1 hour to restore an out of limit parameter would most likely be offset by the benefit gained by avoiding a premature shut down of the plant. Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.2

CTS 3.1.1g (1) requires the reactor inlet temperature be restored within 30 minutes if it exceeds its limit. Proposed ITS 3.4.1 Action A allows 2 hours to restore the reactor inlet temperature if it exceeds its limit. The proposed Required Action of the ITS is less restrictive than the action of the CTS since the ITS allows an additional 1.5 hours to restore the out of limit parameter. The 2 hour Completion Time stipulated in the ITS provides sufficient time to determine the cause of the off normal condition and adjust plant parameters to restore the out of limit temperature without initiating a premature plant shutdown. This change is consistent with NUREG-1432.

**1. Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change extends the allowed outage time when reactor inlet temperature is not within limits. An extension in the allowed outage time for an inoperable parameter is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change extends the time to restore the reactor inlet temperature to within limits from 30 minutes to 2 hours when this parameter is outside its specified limit. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. As such, the consequences of an accident occurring in the proposed 2 hours is the same as the consequences occurring in the existing 30 minutes. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only extends the allowed outage time associated with reactor inlet temperature. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change extends the time to restore reactor inlet temperature to within limits from 30 minutes to 2 hours when this parameter is outside its specified limit. The proposed change does not effect established safety limits, operating restrictions, or design assumptions. There are no changes to any accident or transient analysis. The additional 1.5 hours proposed to restore an out of limit reactor inlet temperature provides sufficient time to determine the cause of the off normal condition and institute corrective measures to return the variable to within limit. Any decrease in margin as a result of the additional 1.5 hours to restore an out of limit parameter would most likely be offset by the benefit gained by avoiding a premature shut down of the plant. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.3**

The Mode of Applicability proposed in ITS 3.4.1, "DNB Parameters" represents a slight relaxation from the requirements of CTS 3.1.1c, CTS 3.1.1f and CTS 3.1.1g. As discussed in DOCs A.2, A.3, and A.4 for specification 3.4.1, CTS 3.1.1 does not contain an explicit mode of applicability for primary system flow rate, primary system pressure (pressurizer pressure), or reactor inlet temperature. However, it was reasonably concluded that the mode of applicability for these requirements is during "Power Operations." The CTS defines Power Operations as a condition with the reactor critical and neutron flux greater than 2% of Rated Power." In ITS 3.4.1, the Mode of Applicability is stated as Mode 1. The ITS defines Mode 1 as a plant condition with keff $\geq$ 0.99 and Rated Thermal Power (RTP) > 5%. Thus, ITS 3.4.1 is less restrictive when compared to CTS 3.1.1 since the ITS excludes plant operations between 2% and 5% RTP. This proposed change is acceptable since the parameters associated with ITS 3.4.1 are required to be maintained within limits to ensure that DNBR criteria will be met in the event of an unplanned transient. For the DNB limited events described in the Palisade's plant safety analysis, the conclusion of these analyses remain unchanged for events initiated between 2% and 5% RTP. This is due, in part, to the excess margin that is available to accommodate transients initiated at 100% RTP. In addition, for DNB sensitive events initiate at Hot Zero Power (HZP), violation of Standard Review Plan acceptance criteria is prevented by the Reactor Protection System (RPS). Inputs to the RPS instrumentation include the same parameters (i.e., primary system flow rate, primary system pressure, and reactor inlet temperature) monitored in ITS 3.4.1. Thus, adequate protection is provided to ensure that DNBR criteria will continue to be met between 2% and 5% RTP. Therefore, this change can be made without a significant impact on public health and safety. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the plant condition in which various plant parameters must be controlled to prevent exceeding DNB limits in the event of an accident. Thus, this change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. Although this change would allow the initial conditions for DNB sensitive transients to be relaxed between 2% RTP and 5% RTP, the consequences for these events remains unchanged. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only relaxes the requirement for DNB parameters between 2% RTP and 5% RTP. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the plant condition in which various plant parameters must be controlled to prevent exceeding DNB limits in the event of an accident. The margin of safety for DNB sensitive transients is established by the events described in the FSAR which considers the most limiting case for DNB. This includes plant operations between 2% RTP and 5% RTP. Thus, the margin of safety previously established for DNB sensitive events described in the FSAR remain unchanged. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.1**

CTS 3.1.1d specifies that both steam generators shall be capable of performing their heat transfer function whenever the average temperature of the primary coolant is above 300°F. However, the CTS does not provide specific actions if one of the steam generators becomes inoperable. Therefore, the plant must apply the actions of CTS LCO 3.0.3. When the plant is in hot shutdown, CTS 3.0.3 allows one hour to initiate actions to place the plant in a condition in which the specification does not apply, and an additional 24 hours to place the plant in cold shutdown. Once the average temperature of the PCS is below 300°F, further actions are not required. In proposed ITS 3.4.5, Condition A addresses the situation when one required PCS loop is inoperable, and Condition B addresses the situation when the Required Actions and associated Completion Time of Condition A are not met. Condition A allows 72 hours to restore the required PCS loop to an Operable status, and Condition B allows 24 hours to be in MODE 4. The Required Actions of the ITS are less restrictive than the CTS because the ITS allows 72 hours to restore an inoperable loop to Operable status plus an additional 24 hours to place the plant in MODE 4. The CTS only allows 25 hours to place the plant in cold shutdown. (Note: the CTS does not define a plant condition between 210°F and 525°F. Additional clarification related to Applicability is provided in DOC A.2). Specifying 72 hours in the ITS is acceptable since the loss of one required PCS loop only represents a loss in redundancy. With one PCS loop inoperable, one Operable PCS loop and one running PCP are available to provide the necessary heat removal function and soluble boron mixing function in the PCS. The ITS Completion Time of 24 hours to place the plant in MODE 4 when an inoperable PCS loop can not be restored in 72 hours is acceptable since it is compatible with the required operation to achieve cooldown and depressurization from the existing plant conditions in a orderly manner without challenging plant systems. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change extends the allowed outage time when one PCS loop (steam generator) becomes inoperable in MODE 3. An extension in the allowed outage time for an inoperable component is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

1. (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change extends the time to restore an inoperable PCS loop from 1 hour to 72 hours and limits the plant shutdown to MODE 4. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. As such, the consequences of an accident occurring in the proposed 96 hours (72 hours plus 24 hours) is the same as the consequences occurring in the existing 25 hours (1 hour plus 24 hours). Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only extends the allowed outage time associated with an inoperable PCS loop in MODE 3. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change extends the time to restore an inoperable PCS loop from 1 hour to 72 hours and limits the plant shutdown to MODE 4 when the Required Actions can not be met. The proposed change does not affect established safety limits, operating restrictions, or design assumptions. There are no changes to any accident or transient analysis. The inoperability of one PCS loop only results in a loss of redundancy. The additional 71 hours to restore an inoperable steam generator provides sufficient time to determine the cause of the inoperability and to institute corrective measures. Any decrease in margin as a result of the additional 71 hours to restore an inoperable component would most likely be offset by the benefit gained by avoiding a premature shut down to MODE 4. Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.2

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.5 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 3. LCO 3.4.5 contains a Note which allows all primary coolant pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.5 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 3, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increase in the amount of actual or available Shutdown Margin. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

**1. Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 3 during the time that no PCS pumps are in operation. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 3 during the time that no PCS pumps are in operation. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 3 during the time that no PCS pumps are in operation. The addition of soluble boron to the PCS while the plant is in Mode 3 (with or without the operation of the PCS pumps) offsets the presence of core reactivity and thereby increases the amount of actual or available Shutdown Margin. As such, for accidents or transients involving the addition of negative reactivity in Mode 3 (e.g., main steam line break, boron dilution event, etc.) the proposed change provides an increase in the margin of safety. For other types of accidents or transients, the proposed change does not alter the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.1**

CTS 3.1.9.1 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment. In proposed ITS 3.4.6, this same action is not stipulated since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 300°F are prohibited since a change in modes is precluded while in the Required Actions of ITS 3.4.6. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Deletion of a required action is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and because any one remaining loop or train is capable of performing the decay heat removal function. The proposed change does not affect any accident or transient analysis and will not permit an increase in PCS temperature such that a change in modes is allowed to occur. Adequate compensatory actions are established in the Technical Specifications to restore the inoperable decay heat removal means as soon as possible. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.2**

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.6 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 4. LCO 3.4.6 contains a Note which allows all primary coolant pumps and shutdown cooling pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.6 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 4, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increases in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 4 during the time that no PCS or SDC pumps are in operation. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 4 during the time that no PCS or SDC pumps are in operation. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 4 during the time that no PCS or SDC pumps are in operation. The addition of soluble boron to the PCS while the plant is in Mode 4 (with or without the operation of the PCS or SDC pumps) offsets the presence of core reactivity and thereby increases the amount of actual or available Shutdown Margin. As such, for accidents or transients involving the addition of negative reactivity in Mode 4 (e.g., main steam line break, boron dilution event, etc.) the proposed change provides an increase in the margin of safety. For other types of accidents or transients, the proposed change does not alter the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.3**

In the event only one SDC train is available to perform the decay heat removal function in Mode 4, CTS 3.1.9.1 Action 1.a requires that corrective actions be initiated immediately to return a second loop or train to Operable status. In addition, CTS 3.1.9.1 Action 1.c requires the primary coolant temperature be $<200°F$ within 24 hours. For this same case, proposed ITS 3.4.6 Condition B only requires the plant be placed in Mode 5 within 24 hours and does not require corrective actions be initiated immediately to return a second loop or train to Operable status. The Required Actions of ITS 3.4.6 represent a relaxation from the requirements of CTS 3.1.9.1. The acceptability of this change is based on the reliability of the remaining Operable SDC train in performing the decay heat removal function. Recognition of this capability eliminates the urgency to immediately initiate corrective actions and allows the plant to be placed in a lower mode in a timely fashion. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes an administrative requirement associated with the CTS when fewer means of decay heat removal are operable than required. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates the requirement to immediately initiate corrective actions to return a second PCS loop or SDC train to an operable status in the event only one SDC train is operable in Mode 4. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change allows the plant to be placed in Mode 5 from Mode 4 within 24 hours when only one SDC train and no PCS loops are available for cooling without taking concurrent actions to restore a second SDC train or PCS loop to operable status. This change does not preclude restoration of a redundant SDC train or PCS loop, but simply eliminates the urgency to restore a second decay heat removal method based on the reliability of an Operable SDC train. This change relaxes an administrative requirement only and does not affect any accident analysis, operating limit, or design assumption. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.4**

The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since ITS 3.4.6 provides the appropriate Required Actions when the required flow rate is not met. For flow rates < 2810 gpm but ≥ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of ≥ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates < 650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pumps are operating. Although the actions of CTS 3.10.1 are associated with maintaining shutdown margin (i.e., the ability to detect a boron dilution event within the time assumed in the analysis), the initiating event for this condition is a degraded or complete loss of forced circulation in the PCS. When the PCS temperature is > 200°F and ≤ 300°F, loop flow requirements are dictated by ITS 3.4.6. ITS 3.4.6 requires one PCS loop or SDC train be in operation providing ≥ 2810 gpm flow through the reactor core. With less flow through the core than required, ITS 3.4.6 requires the immediate suspension of all operations involving a reduction in PCS boron concentration. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.6 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.6 requires the immediate suspension of all operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.6, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥ 3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 4 without reliance on a separate action. Since the requirements of ITS 3.4.6 provide the appropriate actions in response to a low flow condition in the PCS, the requirements of CTS 3.10.1c are no longer necessary and have been deleted. This change is consistent with NUREG 1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes administrative requirement associated with the CTS when PCS flow is below the required limit This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

1. (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. The restriction on charging pump operation is intended to maximize the rate at which unborated water could potentially enter the PCS when the PCS flow rate was less than required such that the conclusions in the boron dilution accident remained valid. Once the charging pumps were configured as required, plant operation would be allowed to continue at a reduced PCS flow rate. In the ITS, this restriction is no longer necessary since the Required Actions of the ITS require <u>all</u> operations involving a reduction in PCS boron concentration to be suspended immediately. Although the ITS is not as prescriptive as the CTS, an equivalent level of protection against an inadvertent boron dilution event is provided because the ITS precludes any operation involving a dilution of the PCS and is not limited to only charging pump operations Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.1

CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided, in part, two SDC trains are Operable. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not stipulate that both SDC trains have to be Operable since the redundant heat removal function is being provided by the required SGs. Even though the SGs cannot produce steam in MODE 5 (i.e., the temperature is below 212°F), they are capable of being a heat sink due to their large contained volume of secondary side water. In the absence of forced flow in the PCS, as long as the SG secondary side water is at a lower temperature than the PCS, SG level is maintained equal to or greater than the limit specified in the LCO, and the primary coolant loops are filled, heat transfer will occur via natural circulation. Therefore, CTS 3.1.9.2 Exception 1 has been revised to delete the requirement to have two SDC trains Operable when all flow through the reactor core is stopped since it is excessively restrictive considering the redundant heat removal function provided by the required SGs. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the requirement to maintain two SDC trains Operable when forced flow through the reactor core is intentionally stopped based on the availability of the required steam generators. Relaxing the requirements associated with an LCO is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change continues to ensure a redundant heat removal means is provided during the time when all forced flow through the reactor core is stopped. As such, the consequences of an accident have remained unchanged Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain two SDC trains Operable when forced flow through the reactor core is intentionally stopped based on the availability of the required steam generators providing the required backup heat removal function. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change does not affect any accident or transient analysis. Redundant decay heat removal capability is provided by the required steam generators which promote natural circulation in the PCS in the absence of forced circulation. Since the proposed change continues to require a redundant decay heat means during the time forced circulation is stopped, there is no reduction in the margin of safety. Thus, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.2

CTS 3.1.9.2 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment. In proposed ITS 3.4.7, this same action is not stipulated since a loss of one heat removal means (SGs or SDC train) only results in a loss of redundancy and that any one remaining loop or train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 200 °F are prohibited since a change in modes is precluded while in the Required Actions of ITS 3.4.7. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Deletion of a required action is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and because any one remaining loop or train is capable of performing the decay heat removal function. The proposed change does not affect any accident or transient analysis and will not permit an increase in PCS temperature such that a change in modes is allowed to occur. Adequate compensatory actions are established in the Technical Specifications to restore the inoperable decay heat removal means as soon as possible. Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.3

CTS 3.1.9.2 Exception 1 allows all flow through the reactor core to be stopped provided certain restrictions are met. Restriction "a" of Exception 1 prohibits any operation that would cause a reduction in the PCS inventory. Proposed ITS 3.4.7 also contains an allowance to stop all flow but does not contain a prohibition on operations which result in a reduction in PCS inventory. This is because a reduction in PCS inventory within the bounds of the Applicable mode (i.e., PCS loops filled ) will not impact the ability of the PCS to perform the decay heat removal function. During the period when forced flow through the reactor core is stopped, the decay heat removal function is accomplished by the SGs which promote natural circulation in the PCS. By maintaining the PCS loops filled (no voids in the loop piping), the ability to establish natural circulation is preserved. Therefore, any reductions in the PCS inventory which do not result in void formations in the PCS loops are acceptable. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the prohibition on PCS inventory reduction during the time when forced flow through the reactor core is stopped. Deletion of a restriction in the Technical Specifications is not assumed to be an initiator of any evaluated accident. The probability for a loss of PCS inventory such that the heat removal function of the PCS is lost, is not significantly affected by whether or not there is forced flow through the reactor core. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only deletes the prohibition on PCS inventory reduction during the time when forced flow through the reactor core is stopped. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change does not affect any accident or transient analysis. In MODE 5 with the PCS loops filled, the primary function of the PCS is to remove decay heat from the reactor core. Allowing a reduction in PCS inventory while forced flow through the reactor core is stopped will not affect the heat removal capability of the PCS while in this plant condition. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.4**

CTS 3.1.1a stipulates the requirement for having forced circulation in the PCS whenever a change is being made in the PCS boron concentration. Included in CTS 3.1.1a is an exception to the forced flow requirement during an "emergency loss of coolant flow situation." CTS 3.1.1a states that "under these circumstances, the boron concentration may be increased with no primary coolant pumps or shutdown coolant pumps operating." Proposed LCO 3.4.7 stipulates the requirement for having forced circulation in the PCS while the plant is in Mode 5. LCO 3.4.7 contains a Note which allows all primary coolant pumps and shutdown cooling pumps to be stopped for ≤ 1 hour per 8 hour period and does not preclude an increase in the PCS boron concentration during this time. As such, the requirement for changing PCS boron concentration in LCO 3.4.7 is less restrictive than the requirement in CTS 3.1.1a. The proposed change is acceptable since the addition of soluble boron to the PCS anytime the reactor is in Mode 5, regardless of PCS pump operation, will offset the presence of core reactivity and provide an increases in the margin of safety. Therefore this change can be made without a significant impact on the health and safety of the public. This change is consistent with NUREG-1432.

**1. Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 5 during the time that no PCS or SDC pumps are in operation. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

1. (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 5 during the time that no PCS or SDC pumps are in operation. As such, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the requirement of the CTS such that increases to the boron concentration of the PCS can be made in Mode 5 during the time that no PCS or SDC pumps are in operation. The addition of soluble boron to the PCS while the plant is in Mode 5 (with or without the operation of the PCS or SDC pumps) offsets the presence of core reactivity and thereby increases the amount of actual or available Shutdown Margin. As such, for accidents or transients involving the addition of positive reactivity in Mode 5 (e.g., main steam line break, boron dilution event, etc.) the proposed change provides an increase in the margin of safety. For other types of accidents or transients, the proposed change does not alter the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.5

The actions associated with CTS 3.10.1c when the recirculation flow rate of the PCS is less than 2810 gpm are being deleted since ITS 3.4.7 provides the appropriate Required Actions when the required flow rate is not met. For flow rates $<$ 2810 gpm but $\geq$ 650 gpm, CTS 3.10.1c requires that within one hour either; (1) a shutdown margin of $\geq$ 3.5% is established and two of the three charging pumps are electrically disabled, or (2) at least every 15 minutes a verification is made that no charging pumps are operating. For flow rates $<$ 650 gpm, CTS 3.10.1c requires a verification at least every 15 minutes that no charging pumps are operating. Although the actions of CTS 3.10.1 are related to the ability to maintain shutdown margin (i.e., the ability to detect a boron dilution event within the time assumed in the analysis), the initiating event for this condition is a degraded or complete loss of forced circulation in the PCS. When the PCS temperature is $\leq$ 200°F, loop flow requirements are dictated by ITS 3.4.7. ITS 3.4.7 requires one SDC train be in operation providing $\geq$ 2810 gpm flow through the reactor core. With less flow through the core than required, ITS 3.4.7 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.7 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.7 requires the immediate suspension of <u>all</u> operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.7, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be $\geq$ 3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 5 without reliance on a separate action. Since the requirements of ITS 3.4.7 provide the appropriate actions in response to a low flow condition in the PCS, the requirement of CTS 3.10.1c are no longer necessary and have been deleted. This change is consistent with NUREG 1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes an administrative requirement associated with the CTS when PCS flow is below the required limit This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

1. (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. The restriction on charging pump operation is intended to maximize the rate at which unborated water could potentially enter the PCS when the PCS flow rate was less than required such that the conclusions in the boron dilution accident remained valid. Once the charging pumps were configured as required, plant operation would be allowed to continue at a reduced PCS flow rate. In the ITS, this restriction is no longer necessary since the Required Actions of the ITS require all operations involving a reduction in PCS boron concentration to be suspended immediately. Although the ITS is not as prescriptive as the CTS, an equivalent level of protection against an inadvertent boron dilution event is provided because the ITS precludes any operation involving a dilution of the PCS and is not limited to only charging pump operations Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.1**

CTS 3.1.1a requires one SDC pump with a flow rate ≥ 2810 gpm to be in operation whenever a change is being made in the boron concentration of the PCS and the plant is operating in cold shutdown or above. The basis for this requirement is to ensure adequate mixing of the primary coolant volume to prevent boron stratification, and to provide sufficient time for the operators to terminate a boron dilution under asymmetric conditions. The assumptions of the Palisades boron dilution analysis dictate the minimum flow requirement for this specification. There is no plant specific analysis for boron stratification while increasing the boron concentration of the PCS. However, engineering judgment suggests that some flow is required for mixing during this period. Proposed ITS 3.4.8 does not impose any specific flow rate restriction for an increase in the PCS boron concentration, but does impose flow restrictions to protect against an inadvertent boron dilution. The minimum flow allowed by ITS 3.4.8 is 650 gpm. Based on engineering judgement, a minimum flow rate of 650 gpm is adequate to ensure proper mixing of the PCS while increasing the PCS boron concentration. With less flow than required, ITS 3.4.8 mandates that actions be initiated immediately to restore the required flow. Although ITS 3.4.8 does not explicitly preclude an increase in PCS boron concentration as stipulated in CTS 3.1.1a, the immediate completion time emphasizes the importance of restoring the required flow as soon as possible. Any action to initiate an increase in boron concentration during a loss of flow event would only be taken to assure the safe condition of the reactor core in accordance with approved Off Normal Procedures. Therefore, the requirement of CTS 3.1.1a to maintain SDC flow ≥ 2810 whenever changes (increases) in PCS boron concentration are being made is no longer necessary and has been deleted.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. Consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change deletes the requirement to maintain SDC pump flow rate ≥ 2810 gpm whenever an increase in PCS boron concentration is being made and the plant is in MODE 5 and the PCS loops not filled. Allowing the SDC flow rate to be < 2810 gpm during an increase in PCS boron concentration is not assumed to be an initiator or precursor of any analyzed event. In addition, the proposed change does not alter or impact the assumptions of any analyzed event. Therefore, the proposed change does not result in a significant 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only deletes the requirement to maintain SDC pump flow ≥ 2810 gpm while increasing the boron concentration of the PCS. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain SDC pump flow rate ≥ 2810 gpm while increasing the PCS boron concentration. In MODE 5, forced circulation provided by the SDC pumps ensures adequate mixing of the primary coolant volume to prevent boron stratification which may result in reactivity insertion. Although there is no plant specific analysis for boron stratification, some amount of flow is required for proper mixing. The Technical Specifications will continue to require the SDC pumps provide forced circulation of the PCS at ≥ 650 gpm whenever the plant is in MODE 5 and the PCS loops are not filled. Based on engineering judgement, a flow rate ≥ 650 gpm is adequate to maintain a homogenous mixture of soluble boric acid and prevent boron stratification in the PCS. As such, increasing the boron concentration of the PCS when SDC flow is ≤ 2810 gpm will not have a significant impact on a margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.2

In CTS 3.1.9.3, the minimum SDC flow rate of 1000 gpm is being deleted and replaced by the SDC flow rates contained in CTS 3.10.1c. The flow rate requirements of CTS 3.10.1c will be incorporated into the requirements of proposed ITS 3.4.8. This change is being made because the 1000 gpm flow rate stipulated in CTS 3.1.9.3 is based on operating experience rather than analysis. The flow rates of 2810 gpm and 650 gpm contained in CTS 3.10.1c are analytically derived to support the conclusion of the boron dilution event. Preserving these values in ITS 3.4.8 will ensure sufficient time is provided to plant operators to terminate a boron dilution event under asymmetric conditions.

**1. Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the SDC train flow rate requirement while the plant is in MODE 5 and the PCS loops are not filled. Relaxing the SDC flow requirement is not assumed to be an initiator of any evaluated accident since the Technical Specifications continue to ensure adequate flow is available to support the assumptions of any accident postulated while the plant is in MODE 5. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. The SDC flow rate of ≥ 1000 gpm is based on operating experience rather than analysis. The proposed flow rates specified in the Technical Specifications (i.e., ≥ 2810 gpm, or ≥ 650 gpm with charging pump restrictions) are based on analysis. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only relaxes the SDC train flow rate requirement while the plant is in MODE 5 and the PCS loops are not filled. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the SDC train flow rate requirement when the plant is in MODE 5 and the PCS loops are not filled. While in MODE 5, one function of the PCS is to act as a carrier of soluble boric acid. Recirculation of the PCS is accomplished by forced flow provided by the SDC pumps. To ensure the acceptance criteria for an inadvertent boron dilution will not be violated, a minimum SDC train flow rate is established. The proposed change relaxes the current value, which is based on operating experience, and replaces it with values that are analytically derived from the safety analysis. As such, the Technical Specifications continue to preserve the assumptions used in the safety analysis. Any reduction in the margin of safety resulting from reduced flow rates while the plant is in MODE 5 and the PCS loops are not filled, would mostly likely be offset by the increased margin gained by having operational flexibility to allow the SDC pumps to operate further from a point which would create vortexing in the pump suction and ultimately lead to a loss of decay heat removal. Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.3

CTS 3.1.9.3 Action 1. b states that with fewer Operable means of decay heat removal than required "maintain PCS temperature as low as practical with available equipment." In proposed ITS 3.4.8, this same action is not stipulated since a loss of one SDC train only results in a loss of redundancy and the one remaining SDC train is capable of performing the decay heat removal function. The immediate Completion Time of the ITS (and CTS) reflects the importance of maintaining the availability of two paths for decay heat removal. In addition, temperature increases above 200°F are prohibited since a change in modes is precluded while in the Required Actions of ITS 3.4.8. As such, it is not necessary to state that PCS temperature be maintained as low as practical since adequate core cooling is available and prompt operator action is initiated to restore the inoperable heat removal means. Therefore, CTS Action 1.b has been deleted. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Deletion of a required action is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means since a loss of one heat removal means (PCS loop or SDC train) only results in a loss of redundancy and because any one remaining loop or train is capable of performing the decay heat removal function. The proposed change does not affect any accident or transient analysis and will not permit an increase in PCS temperature such that a change in modes is allowed to occur. Adequate compensatory actions are established in the Technical Specifications to restore the inoperable decay heat removal means as soon as possible. Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.4

The LCO of CTS 3.1.9.3 has been modified by the addition of a new Note. Note 2 in proposed ITS 3.4.8 allows one SDC train to be inoperable for ≤ 2 hours for surveillance testing provided the other SDC train is Operable and in operation. The purpose of this Note is to permit one of the two required SDC trains to be inoperable for surveillance testing without entering the Required Actions. The allowance to have one SDC train inoperable for up to 2 hours is acceptable since the remaining SDC train is required to be Operable and in operation. A single Operable SDC train in operation is adequate to provide the required cooling and mixing functions of the PCS. Thus, the addition of this Note only reduces the requirement for redundancy during a short period necessary to support surveillance testing. This change is consistent with NUREG-1432.

**1. Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change allows one of the two required SDC trains to be inoperable for surveillance testing without entering the Required Actions provided the remaining SDC train is Operable and in operation. This change only results in a loss of SDC train redundancy for a short period during surveillance testing. A loss of redundancy is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

1. (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change only allows the redundant SDC train to be inoperable for a short period to perform surveillance testing without taking the Required Actions of the Technical Specifications. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change allows one of the two required SDC trains to be inoperable for surveillance testing without entering the Required Actions provided the remaining SDC train is Operable and in operation. The proposed change does not affect any accident or transient analysis. The heat removal and mixing function of the PCS remains unchanged. Any decrease in the margin of safety as a result of having the redundant SDC train inoperable for a short period of time to perform surveillance testing, would most likely be offset by the benefit gained by assuring the Operability of the SDC being tested and the increased attentiveness of the operators during this period. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.5**

CTS 3.10.1c contains actions based on the inability to provide recirculation of the PCS at the specified flow rate. With primary system recirculation flow rate < 2810 gpm but ≥ 650 gpm, the CTS requires that within one hour either; a shutdown margin of 3.5% be established, and two of the three charging pumps be electrically disabled; or at least every 15 minutes a verification be made that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. In addition, the CTS also requires that if primary system recirculation flow rate is less than 650 gpm, then within one hour a surveillance must be performed at least every 15 minutes to verify that no charging pumps are operating. If one or more charging pumps are determined to be operating in any 15 minute surveillance period, charging pump operation must be terminated and shutdown margin verified. The basis for imposing a minimum flow rate of 2810 gpm is to provide sufficient time for operators to terminate a boron dilution under asymmetric conditions. With flow rates < 2810 gpm and ≥ 650 gpm, an additional restriction on charging pump Operability will ensure the acceptance criteria for an inadvertent boron dilution will not be violated. The flow requirements and charging pump limitation of CTS 3.10.1c have been moved to the LCO of proposed ITS 3.4.8. In MODE 5 with the PCS loops not filled, the function of the PCS loops is to provide decay heat removal and act as a carrier for soluble boric acid. ITS 3.4.8 stipulates the necessary requirements to ensure adequate heat removal capability exists and that mixing of the PCS is sufficient to ensure the assumptions of the boron dilution analysis are not violated. To ensure the mixing function is acceptable, one SDC train is required to be in operation with ≥ 2810 gpm through the reactor core, or one SDC train is required to be in operation with ≥ 650 gpm through the reactor core and two of the three charging pumps are incapable of reducing the boron concentration in the PCS below the minimum value necessary to maintain the required Shutdown Margin. With less flow through the core than required, ITS 3.4.8 requires the immediate suspension of all operations involving a reduction in PCS boron concentrations. CTS 3.10.1c allows up to one hour to verify charging pump status. Once these verifications are made, CTS 3.10.1c allows continued operations at the lower flow rate. The requirements of ITS 3.4.8 are more restrictive than the requirements of CTS 3.10.1 since ITS 3.4.8 requires the immediate suspension of <u>all</u> operations involving a reduction in PCS boron concentration and does not limit the actions to only potential dilution sources associated with the charging pumps. In addition to the requirements of ITS 3.4.8, proposed ITS 3.1.1, "Shutdown Margin" requires that shutdown margin be ≥ 3.5% $\Delta\rho$ in Modes 4 and 5. As such, adequate shutdown margin is assured in Mode 5 without reliance on a separate action. Since the requirements of ITS 3.4.8 provide the appropriate actions in response to a low flow condition in the PCS, the requirement of CTS 3.10.1c are no longer necessary and have been deleted.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes an administrative requirement associated with the CTS when PCS flow is below the required limit. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change eliminates prescriptive requirements associated with the operation of the charging pumps when the PCS flow rate is less than the required limit. The restriction on charging pump operation is intended to maximize the rate at which unborated water could potentially enter the PCS when the PCS flow rate was less than required such that the conclusions in the boron dilution accident remained valid. Once the charging pumps were configured as required, plant operation would be allowed to continue at a reduced PCS flow rate. In the ITS, this restriction is no longer necessary since the Required Actions of the ITS require all operations involving a reduction in PCS boron concentration to be suspended immediately. Although the ITS is not as prescriptive as the CTS, an equivalent level of protection against an inadvertent boron dilution event is provided because the ITS precludes any operation involving a dilution of the PCS and is not limited to only charging pump operations Therefore, this change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.1

CTS Table 3.17.6 item 17 requires two channels of SDC Suction Valve Interlocks to be Operable "above 200 psia PCS pressure." In proposed ITS 3.4.14, the SDC suction valve interlocks are required to be Operable in MODES 1, 2, and 3, and in MODE 4, except during the SDC mode of operation, or transition to or from the SDC mode of operation. The requirements associated with the Applicability of ITS 3.4.14 represent a relaxation from the requirements of the CTS since the ITS will allow PCS pressure to be greater than 200 psia without requiring the SDC suction valve interlock function to be Operable. The function of the SDC suction valve interlock to prevent the inadvertent opening of the isolation valves which provide the interface between the high pressure piping in the PCS and the low pressure piping in the SDC system during periods when the PCS pressure is above the design pressure of the SDC system. The Applicability of ITS 3.4.14 is appropriate since it continues to require the interlock function to be Operable whenever a potential for overpressurizing the SDC system suction piping from the PCS exists. This is ensured by requiring the interlock function to be Operable in all of MODE 4 unless the SDC system is in operation, or is being placed in, or removed from, operation. The lower temperature limit of MODE 4 is 201°F. At this temperature, the corresponding PCS pressure is well below the 300 psig design pressure of the SDC system suction piping. Thus, ITS 3.4.14 requires the interlock function to be Operable well below the pressure in which it is required to perform its protective function. ITS 3.4.14 does not require the interlock function to be Operable when the SDC system is in operation or is being placed in, or remove from, operation since these activities are procedurally controlled to occur only when the PCS pressure is within the design pressure of the SDC system piping. Therefore, the proposed change is acceptable since it contains the appropriate requirements to ensure the integrity of the SDC system is not violated. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change relaxes the plant condition in which the SDC suction valve interlock function is required to be Operable such that it is only required when a potential for overpressurization of the SDC system piping exists. As such, the probability of an accident involving an inter-system LOCA resulting from the failure of the SDC suction valve interlock function can not be increased since the interlock function is still required to be Operable at pressure equal to and greater than the design pressure of the SDC system piping. Therefore, the probability of occurrence for a previously analyzed accident is not significantly increased.

1. (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not affect the initial conditions of any assumed analysis, or the availability and successful functioning of any equipment assumed to operate in response to analyzed events, or the setpoints at which any actions are initiated. Therefore, this change does not involve a significant increase in consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. There is no alteration to the parameters within which the plant is normally operated or in the setpoints which initiate protective or mitigative actions. No change is being proposed to the procedures governing normal plant operation or those procedures relied upon to mitigate a design basis event. The proposed change relaxes the plant condition in which the SDC suction valve interlock function is required to be Operable. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change relaxes the plant condition in which the SDC suction valve interlock function is required to be Operable such that it is only required when a potential for overpressurization of the SDC system piping exists. The function of the SDC suction valve interlock is to prevent an inadvertent opening of the isolation valves which provide the interface between the high pressure piping in the PCS and the low pressure piping in the SDC system during periods when the PCS pressure is above the design pressure of the SDC system. Eliminating the requirement to maintain the interlock Operable during periods when the PCS pressure is below the maximum design pressure of the SDC system does not result in a significant reduction in a margin of safety since an overpressurization event resulting from a failure of the interlock can not occur. Therefore, this change does not involve a significant reduction in the margin of safety.

## LESS RESTRICTIVE CHANGE L.2

CTS 4.3i requires that whenever the integrity of a PIV can not be demonstrated and credit is being taken for compliance with specification 3.3.3b, "the integrity of the remaining check valve in each high pressure line having a leaking valve shall be determined and recorded daily and the position of the other closed valve located in that pressure line shall be recorded daily." In proposed ITS 3.4.14, Required Action A.1 requires an inoperable PIV be isolated from the high pressure portion of the affected system by use of one closed manual, deactivated automatic, or check valve. In addition, each valve used for isolation must have been verified to meet the leakage requirements setforth in SR 3.4.14.1. The ITS does not specify that the integrity of the remaining check valve be determined daily since this action represent a condition which is known to exist at the time of isolation, and which must continued to be met by the requirements of SR 3.0.1. Thus, the ITS simply removes an administrative function by eliminating the requirement to record the integrity of a check valve used to isolate an inoperable PIV on a daily basis. The requirement of CTS 4.3i which states "and the position of the other closed valve located in that pressure line shall be recorded daily" is no longer applicable as explained in DOC M.2 for this specification. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change removes an administrative function by eliminating the requirement to record, on a daily basis, the integrity of a check valve used to isolate an inoperable PIV. The flow path which contains the inoperable PIV will continue to be isolated by an Operable valve which meets the specified leakage limits. Deletion of an administrative function is not assumed to be an initiator or precursor of any analyzed event. Therefore, the proposed change will not result in a significant increase in the probability or consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. There is no alteration to the parameters within which the plant is normally operated or in the setpoints which initiate protective or mitigative actions. No change is being proposed to the procedures governing normal plant operation or those procedures relied upon to mitigate a design basis event. The proposed change eliminates an administrative requirement to record the position of a valve used to isolated a PIV with excessive leakage. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change does not affect any accident or transient analysis. The change only removes an administrative function from the Technical Specifications by eliminating the requirement to record, on a daily basis, the integrity of a check valve used to isolate an inoperable PIV. The integrity of the valves used to perform the isolation function remain unaffected by this change. Administrative processes used to controls plant equipment provide the necessary assurance that the inoperable valve remains isolated. A loss of integrity by the isolation valve will appear as increased PCS leakage which is detectable by plant operators. As such, removing this administrative function from the requirements of the technical specification will not have an impact on the margin of safety. Therefore, the proposed change does not involve a significant reduction in a margin if safety.

**LESS RESTRICTIVE CHANGE L.3**

CTS 3.3.3 and CTS 4.3h required periodic leakage testing of the specified PIVs every time the plant has been placed in the "Cold Shutdown Condition for more than 72 hours and such testing has not been accomplished within the previous 9 months." Proposed SR 3.4.14.1 also requires leakage testing of specified PIVs but the Frequency is stated, in part, as "whenever the plant has been in MODE 5 for 7 days or more if leakage testing has not been performed in the previous 9 months." The amount of time the plant must be shutdown before PIV leakage testing is required by the ITS has been relaxed from the requirements of the CTS. The ITS allows the plant to be in MODE 5 for up to 7 days before testing is required. The CTS only allows the plant to be in Cold Shutdown Conditions for 3 days before testing is required. The extended period of MODE 5 operation allowed by the ITS does not significantly increase the probability of malfunction of the PIVs since the change in plant status over the four additional days of shutdown time does not change significantly. This change is consistent with NUREG-1432.

**1. Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

The proposed change relaxes the surveillance frequency for PIV leak testing. A less frequent performance of a Surveillance Requirement does not result in any hardware changes. The frequency of performance also does not significantly increase the probability of occurrence for initiation of any analyzed event since the function of the equipment, or limit for the parameter, does not change (and therefore any initiation scenarios are not changed) and the proposed frequency has been determined to be adequate to demonstrate reliable operation of the equipment or compliance with the parameter. Further, the frequency of performance of a surveillance does not significantly increase the consequences of an accident because a change in frequency does not change the assumed response of the equipment in performing its specified mitigation functions, or change the response of the core parameters to assumed scenarios, from that considered with the original frequency. Therefore, the proposed change does not involve a significant 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 necessitate 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 still ensure compliance with the limiting condition for operation is 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 relaxes the surveillance frequency for PIV leak testing. Changes in the monitored parameter have been determined to be relatively slow during the proposed intervals, and the proposed frequency has been determined to be sufficient to identify significant impact on compliance with the assumed conditions of the safety analysis. In addition, other indications continue to be available to indicate potential noncompliance. Therefore, an extended surveillance interval does not involve a significant reduction in the margin of safety.

## LESS RESTRICTIVE CHANGE L.4

CTS 3.3.3 and CTS 4.3h require all PIVs to be tested prior to returning to Power Operation after every time the plant has been placed in the Refueling Shutdown Condition, or the Cold Shutdown Condition for more than 72 hours (See Discussion of Change L.3 for this specification which justifies a change to 7 days). In proposed ITS 3.4.14, a similar testing requirement is associated with the Frequency of SR 3.4.14.1. However, SR 3.4.14.1 does not stipulate the plant condition of "Refueling Shutdown" since this plant condition does not exist in the ITS. Rather, proposed SR 3.4.14.1 contains a Frequency of "18 months" (See Discussion of Change M.8). The CTS defines "Refueling Shutdown" as a condition when the primary coolant is at Refueling Boron Concentration (i.e., at least 1720 ppm boron and the reactor subcritical by ≥ 5% $\Delta\rho$ with all control rods withdrawn) and $T_{ave}$ is less than 210°F. In the ITS, the Mode which closely matches the CTS plant condition of Refueling Shutdown is "MODE 6, Refueling." Presently, based on fuel design, an operating cycle for the Palisades plant is approximately 18 months. The CTS Frequency of "every time the plant has been placed in the Refueling Shutdown Condition" is essentially the same as the ITS Frequency of "18 months," However, deletion of the CTS Frequency has been characterized as less restrictive since a literal application of the CTS Frequency could result in additional and unnecessary performances of PIV testing. The proposed change eliminates the potential for unnecessary testing by deleting the conditional based surveillance frequency contained in the CTS. This change is acceptable since PIV testing will continue to be performed consistent with 10CFR50.55a and within the frequency allowed by ASME Code Section XI. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change eliminates an administrative requirement associated with the CTS to perform a surveillance on a conditional based frequency. This change does not alter any accident precursors or initiators and thereby does not involve a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial assumptions of any accident analysis, or alter the design assumptions of any system or component relied upon to function in the event of an accident. Therefore, this change does not involve a significant increase in the consequence 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change eliminates the requirement to perform a CTS surveillance after every time the plant has been placed in the Refueling Shutdown Condition. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to perform a leakage test on PIVs every time the plant is placed in the Refueling Shutdown Condition. Rather, testing is performed every 18 months. This change does not affect established safety limits, operating limits, or design assumptions. No accident or transient analysis are affected by this change. The proposed change continues to ensure that the PIVs are tested at an adequate frequency to ensure they will function as required. Therefore, this change does not involve a significant reduction in a margin of safety.

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.1 RCS Pressure, Temperature, and Flow (Departure from Nucleate Boiling (DNB)) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, cold leg temperature, and RCS total flow rate shall be within the limits specified below:

a. Pressurizer pressure ≥ [2025] psia and ≤ [2275] psia;

b. RCS cold leg temperature ($T_c$) ≥ [535]°F and ≤ [558]°F for < [70]% RTP, or ≥ [544]°F and ≤ [558]°F for ≥ [70]% RTP; and

c. RCS total flow rate ≥ [148 E6] lb/hour and ≤ [177.6 E6] lb/hour.

APPLICABILITY: MODE 1.

---NOTE---
Pressurizer pressure limit does not apply during:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step > 10% RTP.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Pressurizer pressure or RCS flow rate not within limits. | A.1 Restore parameter(s) to within limit. | 2 hours |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 2. | 6 hours |

(continued)



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CTS 4.15 ① TSTF-105 ⑨ ⑯ ⑩

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.1.3 (4) | ------NOTE------ Not required to be performed until [24] hours after ≥ [90]% RTP. ------------------- Verify by precision heat balance that RCS total flow rate within limits specified in the COLR. is ≥ 352,000 gpm. | [18] months AND After each plugging of 10 or more steam generator tubes |



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(6)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| D. Required containment atmosphere radioactivity monitor inoperable. <br> AND <br> Required containment air cooler condensate flow rate monitor inoperable. | D.1 <br> OR <br> D.2 | Restore required containment atmosphere radioactivity monitor to OPERABLE status. <br> Restore required containment air cooler condensate flow rate monitor to OPERABLE status. | 30 days <br> 30 days |
| CTS 3.17.6.2.1 (10) B E. Required Action and associated Completion Time not met. | B E.1 <br> AND <br> B E.2 | Be in MODE 3. <br> Be in MODE 5. | 6 ~~days~~ hours <br> 36 ~~days~~ hours |
| (2) CTS 3.17.6.21 C F. All required ~~monitors~~ Channels inoperable. | C F.1 | Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| CTS TBL 4.17.6 #7 b, Col. 1 (2) SR 3.4.15.~~1~~ 2 Perform CHANNEL CHECK of the required containment atmosphere ~~radio~~ gaseous activity monitor. | [12] hours |

(continued)



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BASES

APPLICABLE SAFETY ANALYSES (continued)

distribution is within the limits of [LCO 3.1.7, "Regulating CEA Insertion Limits"; LCO 3.1.8, "Part Length CEA Insertion Limits"; LCO 3.2.3, "AZIMUTHAL POWER TILT ($T_q$)"; and LCO 3.2.5, "AXIAL SHAPE INDEX (ASI) (Digital)]"; [LCO 3.1.0, 6 "Regulating Rod Insertion Limits"; LCO 3.2.4, 3 "AZIMUTHAL POWER TILT ($T_q$)"; and LCO 3.2.5, 4 "AXIAL SHAPE INDEX (Analog)"]. The safety analyses are performed over the following range of initial values: RCS pressure [1785-2400] psig, core inlet temperature [500-580] °F, and reactor vessel inlet coolant flow rate [95-116]% ≥ 352,000 gpm.

(Group Position; Quadrant Power Tilt; 1700-2300 psia; 5 TSTF-129; 16)

The RCS DNB limits satisfy Criterion 2 of the NRC Policy Statement. 10 CFR 50.36(c)(2).

LCO

This LCO specifies limits on the monitored process variables, RCS pressurizer pressure, RCS cold leg temperature, and RCS total flow rate, to ensure that the core operates within the limits assumed for the plant safety analyses. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient.

(11 — of the calculated value of; and)

The LCO numerical values for pressure, temperature, and flow rate are given for the measurement location but have not been adjusted for instrument error. Plant specific limits of instrument error are established by the plant staff to meet the operational requirements of this LCO. Instrument errors and the RCS flow rate measurement error are applied to the LCO numerical values in the safety analysis.

(6) INSERT (4)

APPLICABILITY

In MODE 1, the limits on RCS pressurizer pressure, RCS cold leg temperature, and RCS flow rate must be maintained during steady state operation in order to ensure that DNBR criteria will be met in the event of an unplanned loss of forced coolant flow or other DNB limited transient. In all other MODES, the power level is low enough so that DNBR is not a concern.

(12)

A Note has been added to indicate the limit on pressurizer pressure may be exceeded during short term operational transients such as a THERMAL POWER ramp increase of > 5% RTP per minute or a THERMAL POWER step increase of > 10% RTP. These conditions represent short term perturbations where actions to control pressure variations might be

(continued)



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| Change | Discussion |
|---|---|

12. The Applicability Note in the ISTS which states that the pressurizer pressure limit does not apply during Thermal Power ramps > 5% RTP per minute, or Thermal Power steps >10% RTP, has not been incorporated in the ITS due to the limited application of the Note. For fuel performance considerations, plant procedures establish the maximum recommended power escalation rate. Between 50% and 92% RTP the rate is currently limited to 6%/hr (0.1%/min). Between 92% and 100% RTP the rate is currently limited to 4.5%/hr (0.5%/min). Below 50% RTP fuel performance is not a limiting factor in the power escalation rate. However, power escalation is influenced by various plant evolutions commonly associated with a plant startup (e.g., turbine startup, system alignments, instrument calibrations, chemistry holds etc.) which limit plant maneuvering in this operating region. Down power maneuvers are procedurally limited to 30%/hr (0.5%/min) for normal shutdowns, and 300%/hr (5%/min) for emergency shutdowns.

    For transient induced power changes, the PCS and its associated controls are designed to accommodate plant step load changes of ± 10% RTP per minute and ramp changes of ± 5%RTP per minute without a reactor trip. However, transients which result in step load changes >10% RTP per minute, or ramp changes > 5% RTP per minute, are considered Moderate Frequency events (i.e., less than once per year). In such an event, a two hour Completion Time for the restoration of pressurizer pressure is deemed appropriate. Therefore, due to the unusual circumstances in which the Applicability Note of ISTS 3.4.1 could be applied, the Note can be excluded from the ITS without causing excessive or unnecessary entries into the Required Action for pressurizer pressure.

13. The information related to the Safety Limits discussed in the Applicability has been moved to the Background section of the Bases to provide a more concise discussion of the relationship of the DNB parameters required by Specification 3.4.1 and the Safety Limits provided in Section 2.1. Placement of this information in the Background section is more appropriate than having it in the Applicability since this information does not pertain to the Applicability of Specification 3.4.1 and is better suited for the discussion presented in the Background section. Additions information was extracted from the Section 2.1 and included in the Background section of Specification 3.4.1 to enhance the overall discussion.

| Change | Discussion |
|---|---|

14. The Bases for ISTS SR 3.4.1.1 and SR 3.4.1.2 have been revised to be consistent with other types of Bases discussion for surveillance requirements. The ISTS implies the SR Frequencies are based, in part, on the Completion Time of Required Action A.1. Specifically, the ISTS states that since Required Action A.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency is sufficient to ensure that the out of limit parameter (pressurizer pressure, or cold leg temperature) can be restored following load changes and other expected transient operations. Throughout the ISTS, SR Frequencies are mutually exclusive to Completion Times for Required Actions and are determined on other factors such as operating practice, instrument drift, diverse indication and alarms, plant conditions, etc. Therefore in the ITS, the Bases for SR 3.4.1.1 and SR 3.4.1.2 have been consolidated and the discussion on Completion Times for Required Actions replaced by a discussion which clarifies that the Surveillance is performed using installed instrumentation which has been shown by operating practice to be sufficient to regularly assess for potential degradation and verify operation is within safety analysis assumptions.

15. To reflect the incorporation of TSTF-136 which consolidates ISTS 3.1.1 and ISTS 3.1.2, the specification number for ISTS 3.1.7, "Regulating Rod Insertion Limits" has been changed to ITS 3.1.6. This changes is consistent with NUREG-1432 as modified by TSTF-136.

16. This change reflects the current licensing basis/technical specifications. The Palisades plant design does not include installed PCS flow rate instrumentation. Initially for the first several fuel cycles, PCP differential pressure was used to derive the PCS (reactor vessel) flow rate using PCP flow curves which were generated at hot zero power (532°F) conditions. In recent years, the reactor vessel flow rate has been determined using a calorimetric heat balance solving the equation $Q = \dot{m}_{cp} \Delta T$ for $\dot{m}$. The change from a requirement expressed in mass flow rate (i.e, lb/hr) to one expressed in volumetric flow rate (i.e., gpm) eliminates the need to correct for specific PCS operating conditions.

| Change | Discussion |
|---|---|
| 7. | A new sentence has been added to the Bases of SR 3.4.3.1 to clarify that calculation of the average hourly cooldown rate must consider evolutions which affect the reactor vessel inlet temperature. These evolutions include the initiation of shutdown cooling, starting a primary coolant pump with a temperature difference between the steam generator and PCS, or by stopping a primary coolant pump with shutdown cooling in service. The addition of this information does not alter the intent of the SR, but simply informs the operator of evolutions which may impact the hourly calculation. |
| 8. | ISTS SR 3.4.3.1 contains a Note which states that the SR is "only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing." The portion of this same Note which states "and RCS inservice leak and hydrostatic testing" has not been adopted in the ITS and, a similar requirement does not exist in the CTS. Inservice leak and hydrostatic testing of the PCS is conducted at the normal operating pressure and normal operating temperature of the system. During testing, process control instrumentation is used to maintain pressure and temperature within a specified band. At a constant PCS temperature (i.e., no heatup or cooldown in progress) the upper bound for PCS pressure is established by the lift settings of the pressurizer safety valves. As such, the requirement of proposed ITS SR 3.4.3.1 to verify PCS pressure and PCS temperature are within the (P/T) limits of the heatup and cooldown curves during inservice leak and hydrostatic testing of the PCS is not necessary since, using currently approved (NRC) testing methodology, PCS pressure can not exceed the limits of the pressurizer safety valves. |
| 9. | In the ISTS Bases Background discussion, the sentence which states "The criticality limit includes the Reference 2 requirement that the limit be no less than 40°F....." has been revised to read, "The minimum temperature at which the reactor can be made critical, as required by Reference 2, shall be at least 40°F....." This change was made because the Palisades plant heatup and cooldown curves do not contain a specific "criticality limit" and to clarify that the minimum temperature at which the reactor could be made critical is consistent with the requirements of 10 CFR 50, Appendix G. In addition, a reference was included to LCO 3.1.7, "Special Test Exceptions," since this LCO also establishes a limit on the minimum temperature at which the reactor can be made critical. |

| **Change** | **Discussion** |
| --- | --- |
| 9. | The Applicable Safety Analyses in the ISTS discusses the response time of the leakage detection instruments and references the FSAR as a source for these times. In the ITS Applicable Safety Analyses, this reference has been deleted since the Palisades plant FSAR does not provide this information. |
| 10. | The change in Completion Time for ISTS Required Action E from units of "days" to units of "hours" was made to establish consistency within the Improved Technical Specifications. That is, ISTS 3.4.15 uses units of "days" and the Bases for ISTS 3.4.15 uses units of "hours." To date, a generic change request (TSTF) has not been submitted based on agreement between the CEOG and OTSB that this change does not meet the threshold for a generic change and that the discrepancy is limited to NUREG-1432 only (i.e., the error does not exist in the other ISTS NUREGs). A markup of ISTS 3.4.15 showing the appropriate corrections has been forwarded via the CEOG for future incorporation in NUREG-1432. This method of correcting minor editorial changes alleviates the administrative burden of processing a TSTF and has been found acceptable by both the industry and NRC OTSB. |

**ENCLOSURE 4**

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

**CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS**
**RESPONSE TO AUGUST 24, 1998 REQUEST FOR ADDITIONAL INFORMATION**

**REVISED PAGES FOR SECTION 3.9**

CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS
RESPONSE TO AUGUST 24, 1998 REQUEST FOR ADDITIONAL INFORMATION
REVISED PAGES FOR SECTION 3.9

## Page Change Instructions

Revise the Palisades submittal for conversion to Improved Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by date and contain vertical lines in the margin indicating the areas of change.

| REMOVE PAGES | INSERT PAGES | REV DATE | NRC COMMENT# |
|---|---|---|---|
| **ATTACHMENT 1 TO ITS CONVERSION SUBMITTAL** | | | |
| No page change | | | |
| **ATTACHMENT 2 TO ITS CONVERSION SUBMITTAL** | | | |
| ITS B 3.9.3-4 | ITS B 3.9.3-4 | 11/04/98 | N/A |
| **ATTACHMENT 3 TO ITS CONVERSION SUBMITTAL** | | | |
| CTS 3.9.4 pg 3-25j | CTS 3.9.4 pg 3-25j | 11/04/98 | RAI 3.9-2 |
| CTS 3.9.5 pg 3-25j | CTS 3.9.5 pg 3-25j | 11/04/98 | RAI 3.9-2 |
| DOC 3.9.4 pg 4 of 5 | DOC 3.9.4 pg 4 of 5 | 11/04/98 | RAI 3.9-2 |
| DOC 3.9.4 pg 5 of 5 | DOC 3.9.4 pg 5 of 5 | 11/04/98 | RAI 3.9-2 |
| DOC 3.9.5 pg 3 of 3 | DOC 3.9.5 pg 3 of 3 | 11/04/98 | RAI 3.9-2 |
| **ATTACHMENT 4 TO ITS CONVERSION SUBMITTAL** | | | |
| NSHC 3.9.4 pg 1 of 3 through NSHC 3.9.4 pg 3 of 3 | NSHC 3.9.4 pg 1 of 5 through NSHC 3.9.4 pg 5 of 5 | 11/04/98 | RAI 3.9-2 |
| NSHC 3.9.5 pg 1 of 1 | NSHC 3.9.5 pg 1 of 5 through NSHC 3.9.5 pg 5 of 5 | 11/04/98 | RAI 3.9-2 |
| **ATTACHMENT 5 TO ITS CONVERSION SUBMITTAL** | | | |
| NUREG B 3.9-10 insert | NUREG B 3.9-10 insert | 11/04/98 | N/A |
| **ATTACHMENT 6 TO ITS CONVERSION SUBMITTAL** | | | |
| No page change | | | |

BASES

APPLICABLE SAFETY ANALYSES

Containment penetration isolation is not required by the fuel handling accident to maintain offsite doses within the guidelines of 10 CFR 100, but operating experience indicates that containment isolation provides significant reduction of the resulting offsite doses. Therefore, the Containment Penetrations satisfy the requirements of Criterion 4 of 10 CFR 50.36(c)(2).

LCO

This LCO limits the consequences of a fuel handling accident in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires the equipment hatch, air locks and any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment penetrations.

For the OPERABLE containment penetrations, this LCO ensures that these penetrations are isolable by the Refueling Containment High Radiation instrumentation. The OPERABILITY requirements for this LCO do not assume a specific closure time for the valves in these penetrations since the accident analysis makes no specific assumptions about containment closure time after a fuel handling accident.

LCO 3.9.3.a is modified by a Note which allows the equipment hatch to be opened if the Fuel Handling Area Ventilation System is in compliance with LCO 3.7.12. LCO 3.9.3.b is modified by a Note which allows both doors of the personnel air lock to be simultaneously opened provided the equipment hatch is opened. In the event of a fuel handling accident inside containment with both doors in the personnel air lock open and the equipment hatch open, the Fuel Handling Area Ventilation System would be available to filter the fission products in the containment atmosphere prior their to being released to the environment and thereby significantly reducing the offsite dose.

3.9.4 SDC and Coolant Circulation - High Water Level ← (A.1)

3.9 SHUTDOWN COOLING (SDC)

Specification

SR 3.9.4.1

3.9.3 One SDC train shall be in operation providing ≥ 1000 gpm flow through the reactor core and at least two of the means of decay heat removal listed below shall be OPERABLE: (A.3)

LCO & APPLIC

1. SDC train A consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.
2. SDC train B consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan. (LA.1)
3. The refueling cavity with water level ≥ 647'.

Applicability — MODE 6 WITH — (A.3)

See 3.9.5 & 3.4 — Specification 3.1.9.3 applies when there is fuel in the reactor with PCS Temperature is < 200°F and the PCS loops NOT filled.

Exceptions — (A.1)

LCO-NOTE 1 → 1. All flow through the reactor core may be intentionally stopped for up to 1 hour provided: Per 8 hour Period (M.1)

a. No operations are permitted that would cause reduction of the PCS boron concentration or PCS inventory, and
b. Core outlet temperature stays ≤ 200°F, and (L.1)
c. Two SDC trains are OPERABLE.

LCO-NOTE 2 — 2. One or both required SDC trains may be intentionally rendered inoperable for testing or maintenance for up to 2 hours provided: Per 8 hour Period (M.1)

a. One SDC train is providing flow through the reactor core, and
b. Core outlet temperature stays ≤ 200°F, and

APPLIC — c. The refueling cavity water level is ≥ 647'.

Action

COND A — 1. With fewer OPERABLE means of decay heat removal than required:

RA A.3 — a. Immediately initiate corrective action to return a second train to OPERABLE status, and

b. Maintain PCS temperature as low as practical with available equipment. — (L.2)

COND A — 2. With less flow through the core than required:

RA A.1 — a. Immediately suspend all operations involving a reduction in PCS boron concentration, and

RA A.3 — b. Immediately initiate corrective action to return a train to operation providing flow through the core.

(M.2) — <ADD REQUIRED ACTION A.4>



Revised 11/04/98

Amendment No. ~~161~~, 173
October 10, 1996

3.9.5 SDC and Coolant Circulation - Low Water Level - (A.1)

3.1.9 **SHUTDOWN COOLING (SDC)**

**Specification**

SR 3.9.5.1

3.1.9.3 One SDC train shall be in operation providing ≥ 1000 gpm flow through the reactor core, and at least two of the means of decay heat removal listed below shall be OPERABLE:

LCO

1. SDC train A consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan. (LA.1)

2. SDC train B consisting of an OPERABLE SDC pump and an OPERABLE heat flow path to Lake Michigan.

3. The refueling cavity with water level ≥ 647'.

(See 3.9.4)

**Applicability** (A2) MODE 6 with the water level < 647' elevation

APPLIC

Specification 3.1.9.3 applies when there is fuel in the reactor, with PCS Temperature is < 200°F and the PCS loops NOT filled. <See also 3.4>

**Exceptions** (A.1)

1. All flow through the reactor core may be intentionally stopped for up to 1 hour provided: (M.2)

   a. No operations are permitted that would cause reduction of the PCS boron concentration or PCS inventory, and

   b. Core outlet temperature stays ≤ 200°F, and

   c. Two SDC trains are OPERABLE.

2. One or both required SDC trains may be intentionally rendered inoperable for testing or maintenance for up to 2 hours provided:

   (See 3.9.4)

   a. One SDC train is providing flow through the reactor core, and

   b. Core outlet temperature stays ≤ 200°F, and

   c. The refueling cavity water level is ≥ 647'.

**Action**

COND A 1. With fewer OPERABLE means of decay heat removal than required:

RA A.1 a. Immediately initiate corrective action to return a second train to OPERABLE status, and

b. Maintain PCS temperature as low as practical with available equipment. (L.1)

COND B 2. With less flow through the core than required:

RA B.1 a. Immediately suspend all operations involving a reduction in PCS boron concentration, and

RA B.2 b. Immediately initiate corrective action to return a train to operation providing flow through the core.

(A.3) <ADD REQUIRED ACTION A.2>

(M.1) <ADD REQUIRED ACTION B.3>



Revised 11/04/98

Amendment No. ~~161~~, 173
October 10, 1996

LA.2 Not used.

LA.3 CTS 3.8.1f specifies, in part, that one (SDC) heat exchanger shall be in operation. ITS 3.9.4 specifies that one SDC train shall be Operable and in operation. In the ITS, the details of what constitutes an Operable SDC train are contained in the Bases. As such, the reference to the heat exchangers in CTS 3.8.1f has been moved to the Bases. This change is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

## LESS RESTRICTIVE CHANGES (L)

L.1 CTS 3.1.9.3 allows all flow through the reactor core to be intentionally stopped for up to 1 hour provided, in part, that the core outlet temperature stays ≤ 200°F and two SDC trains are Operable. Proposed ITS 3.9.4 does not contain these additional restrictions. While in MODE 6 with the refueling cavity water level ≥ 647' elevation, an increase in primary coolant system temperature above 200°F is not an immediate concern. The affects of elevated coolant temperatures at or above the boiling point would eventually challenge the integrity of the fuel cladding, which is a fission product barrier, and lead to a reduction in boron concentration due to boron plating out on components near the area of boiling. However, due to the relative short time flow is allowed to be suspended (up to 1 hour per 8 hour period), sufficient boiling would not occur such that it would result in a signification reduction in the boron concentration or present a challenge to the fission product barrier. Coolant temperatures above the saturation temperature with no forced circulation become an immediate concern only when the reactor vessel head is installed due to the potential of vapor formations in the primary coolant system loops. The additional restriction in the CTS to maintain two SDC trains Operable when all flow through the reactor core is intentionally stopped is excessively restrictive since two redundant heat removal methods are still available. That is, when flow is stopped, one SDC train is still required to be Operable and the refueling cavity water level is still required to be ≥ 647' elevation thus providing adequate and redundant heat removal capability. This change is consistent with NUREG-1432.

L.2 In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.4, a comparable condition exists when SDC train loop requirements are not met. However, ITS 3.9.4 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). When a loss of shutdown cooling exists, Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical. During a plant condition when the water level in the refueling cavity is ≥637' elevation, this volume of water provides an adequate available heat sink during the time corrective actions are taken to restore the alternate heat removal method. Therefore, CTS Action 1.b can be deleted from the ITS since it will not result in a significant impact on safety. This change is consistent with NUREG-1432.

**LESS RESTRICTIVE CHANGES -REMOVAL OF DETAILS TO LICENSEE CONTROLLED DOCUMENTS (LA)**

LA.1 In CTS 3.1.9.3, the details associated with SDC train Operability have been moved to the Bases of proposed ITS 3.9.5. The CTS states that an Operable SDC train consist of "an Operable SDC pump and an Operable SDC heat flow path to Lake Michigan." In the ITS, the details of what constitutes an Operable SDC train are contained in the Bases. As such, the reference to the SDC pumps and heat flow paths in CTS 3.1.9.3 have been moved to the Bases. This change is acceptable since this information provides details of design which are not directly pertinent to the actual requirement. Since these details are not necessary to adequately describe actual regulatory requirements, they can be moved to a license controlled document without a significant impact on safety. Placing these details in the Bases provides adequate assurance that they will be maintained since the Bases are controlled by the Bases Control Program in proposed ITS Chapter 5.0.

LA.2 Not used.

**LESS RESTRICTIVE CHANGES (L)**

L.1 In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.5, a comparable condition exists when SDC train loop requirements are not met. However, ITS 3.9.5 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). The loss of a single SDC train results in a loss of redundancy. For this case, cooling is still available from the Operable SDC train and the appropriate action is to restore the inoperable train. With two SDC trains inoperable, a loss of shutdown cooling exists and Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical as well as providing other compensatory measures and restoration actions. Since the actions of CTS 3.1.9.3 to maintain the PCS temperature as low as practical with available equipment is more appropriate in plant procedures, it can be deleted from the ITS with no impact on plant safety. This change is consistent with NUREG-1432.

## LESS RESTRICTIVE CHANGE L.1

CTS 3.1.9.3 allows all flow through the reactor core to be intentionally stopped for up to 1 hour provided, in part, that the core outlet temperature stays ≤ 200°F and two SDC trains are Operable. Proposed ITS 3.9.4 does not contain these additional restrictions. While in MODE 6 with the refueling cavity water level ≥647' elevation, an increase in primary coolant system temperature above 200°F is not an immediate concern. The affects of elevated coolant temperatures at or above the boiling point would eventually challenge the integrity of the fuel cladding, which is a fission product barrier, and lead to a reduction in boron concentration due to boron plating out on components near the area of boiling. However, due to the relative short time flow is allowed to be suspended (up to 1 hour per 8 hour period), sufficient boiling would not occur such that it would result in a signification reduction in the boron concentration or present a challenge to the fission product barrier. Coolant temperatures above the saturation temperature with no forced circulation become an immediate concern only when the reactor vessel head is installed due to the potential of vapor formations in the primary coolant system loops. The additional restriction in the CTS to maintain two SDC trains Operable when all flow through the reactor core is intentionally stopped is excessively restrictive since two redundant heat removal methods are still available. That is, when flow is stopped, one SDC train is still required to be Operable and the refueling cavity water level is still required to be ≥647' elevation thus providing adequate and redundant heat removal capability. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. Ensuring the core outlet temperature stays ≤200°F and that two trains of shutdown cooling (SDC) are Operable when all flow through the reactor core is intentionally stopped, is not assumed to be an initiator or precursor of any analyzed event. Ensuring core outlet temperature remains below a specified limit and SDC trains are Operable does not impact the integrity of any plant structure, system or component. As such, deletion of the current requirement will not impact the integrity of any plant structure, system or component. Therefore, the probability of an accident previously evaluated is not significantly increased.

**LESS RESTRICTIVE CHANGE L.1** (continued)

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. Deletion of the requirement to verify core outlet temperature stays ≤200°F when flow through the reactor core is temporarily suspended does not alter the assumption of any analyzed event postulated to occur while the plant is in MODE 6 and the refueling cavity water level is ≥647' elevation. In addition, the availability and functionality of the equipment and systems used in analyzed event during this plant condition have not been altered. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. There is no alteration to the parameters within which the plant is normally operated or in the setpoints which initiate protective or mitigative actions. No change is being proposed to the procedures governing normal plant operation or those procedures relied upon to mitigate a design basis event. Relaxing the requirement to verify core outlet temperature and SDC train Operability does not have a detrimental impact on the manner in which plant equipment operates or responds to an actuation signal. As such, no new failure modes are being introduced. In addition, the change does not alter assumptions made in the safety analysis and licensing basis. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change eliminates the requirement to maintain core outlet temperature ≤200°F and to have two Operable SDC trains during the period when all flow through the reactor core is intentionally stopped. Relaxing this requirement does not impact factors that are related to the margin of safety since no changes have been made to plant design, plant equipment or the way in which the plant is operated. Prolong elevated temperatures in the primary coolant system in excess of 212°F would eventually result in fuel assembly damage. However, the technical specification continue to limit the duration in which all flow through the reactor core is allowed to be stopped to 1 hour in a 8 hour period. In addition, the technical specifications also require two redundant heat removal method to be available, they are; a refueling cavity water level ≥647' elevation and one Operable SDC train. As such, the likelihood of fuel damage as a result of elevated temperature is very unlikely. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

## LESS RESTRICTIVE CHANGE L.2

In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.4, a comparable condition exists when SDC train loop requirements are not met. However, ITS 3.9.4 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). When a loss of shutdown cooling exists, Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical. During a plant condition when the water level in the refueling cavity is ≥637' elevation, this volume of water provides an adequate available heat sink during the time corrective actions are taken to restore the alternate heat removal method. Therefore, CTS Action 1.b can be deleted from the ITS since it will not result in a significant impact on safety. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Deletion of a required action is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a redundant heat removal means. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the requirement to maintain the PCS temperature as low as practical upon the loss of a heat removal means since this condition is appropriately addressed by plant procedures, and because the refueling cavity contains a sufficient volume of water to provide an adequate heat sink by natural circulation. The proposed change does not affect any accident or transient analysis. Adequate compensatory actions are established in the Technical Specifications to restore the inoperable decay heat removal means as soon as possible and to preclude loading irradiated fuel assemblies in the core. Therefore, this change does not involve a significant reduction in a margin of safety.

**LESS RESTRICTIVE CHANGE L.1**

In CTS 3.1.9.3 when there are fewer Operable means of decay heat removal than required, Action 1.b states that the primary coolant system temperature should be maintained as low as practical with available equipment. In ITS 3.9.5, a comparable condition exists when SDC train loop requirements are not met. However, ITS 3.9.5 does not contain explicit instructions to maintain the primary coolant system as low as practical with available equipment since this action is beyond the scope of the LCO (i.e., restore compliance with the LCO). The loss of a single SDC train results in a loss of redundancy. For this case, cooling is still available from the Operable SDC train and the appropriate action is to restore the inoperable train. With two SDC trains inoperable, a loss of shutdown cooling exists and Off Normal procedures are used to address alternate ways to maintain the primary coolant system temperature as low as practical as well as providing other compensatory measures and restoration actions. Since the actions of CTS 3.1.9.3 to maintain the PCS temperature as low as practical with available equipment is more appropriate in plant procedures, it can be deleted from the ITS with no impact on plant safety. This change is consistent with NUREG-1432.

1. **Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?**

   Analyzed events are assumed to be initiated by the failure of plant structures, systems or components. The proposed change deletes the CTS requirement to "maintain the PCS temperature as low as practical with available equipment" whenever fewer means of decay heat removal contained in the accompanying specification are Operable. Deletion of a required action is not assumed to be an initiator of any evaluated accident. Therefore, the proposed change does not result in a significant increase in the probability of an accident previously evaluated.

   The consequences of a previously analyzed event are dependent on the initial conditions assumed for the analysis, and the availability and successful functioning of the equipment assumed to operate in response to the analyzed event, and the setpoints at which these actions are initiated. The proposed change does not alter the initial conditions for any analysis, or impact the availability or function of any plant equipment assumed to operate in response to an analyzed event. Therefore, the proposed change does not involve a significant increase in the 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 a physical alteration of the plant. No new equipment is being introduced, and no installed equipment is being operated in a new or different manner. The proposed change deletes the CTS requirement to "maintain the PCS temperature as low as practical with available equipment" whenever fewer means of decay heat removal contained in the accompanying specification are Operable. Therefore, the 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 margin of safety is determined by the design and qualification of the plant equipment, the operation of the plant within analyzed limits, and the point at which protective or mitigative actions are initiated. The proposed change deletes the CTS requirement to "maintain the PCS temperature as low as practical with available equipment" whenever fewer means of decay heat removal contained in the accompanying specification are Operable. In the event of a total loss of decay heat removal, plant procedures provide the appropriate actions to restore the inoperable decay heat removal mechanism to service in the most efficient and safe manner practical using the necessary available plant equipment. The proposed change does not affect any accident or transient analysis. Since adequate compensatory actions are established in plant procedures to restore the inoperable decay heat removal means as soon as possible, deleting this requirement from the CTS will have no affect on the margin of safety. Therefore, this change does not involve a significant reduction in a margin of safety.

# SECTION 3.9

## INSERT 1

Containment penetrations "that provide direct access from containment atmosphere to outside atmosphere" are those which would allow passage of air containing radioactive particulates to migrate from inside the containment to the atmosphere outside the containment even though no measurable differential pressure existed. Specifically, they do not include penetrations which are filtered, or penetrations whose piping is filled with liquid.

## INSERT 2

Containment penetration isolation is not required by the fuel handling accident to maintain offsite doses within the guidelines of 10 CFR 100, but operating experience indicates that containment isolation provides significant reduction of the resulting offsite doses. Therefore, the Containment Penetrations satisfy the requirements of Criterion 4 of 10 CFR 50.36(c)(2).

## INSERT 3

do not assume a specific closure time for the valves in these penetrations since the accident analysis makes no specific assumptions about containment closure time after a fuel handling accident.

## INSERT 4

LCO 3.9.3.a is modified by a Note which allows the equipment hatch to be opened if the Fuel Handling Area Ventilation System is in compliance with LCO 3.7.12. LCO 3.9.3.b is modified by a Note which allows both doors of the personnel air lock to be simultaneously opened provided the equipment hatch is opened. In the event of a fuel handling accident inside containment with both doors in the personnel air lock open and the equipment hatch open, the Fuel Handling Area Ventilation System would be available to filter the fission products in the containment atmosphere prior to being released to the environment and thereby significantly reducing the offsite dose.