

Peter E. Katz
Vice President
Calvert Cliffs Nuclear Power Plant
Constellation Generation Group, LLC

1650 Calvert Cliffs Parkway
Lusby, Maryland 20657
410 495-4455
410 495-3500 Fax



April 17, 2003

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
License Amendment Request: Improvement to the Definition of Operations
Involving Positive Reactivity Changes

REFERENCE: (a) Industry/TSTF Standard Technical Specification Change Traveler
TSTF-286, Revision 2, Define "Operations Involving Positive Reactivity
Changes"

Pursuant to 10 CFR 50.90, Calvert Cliffs Nuclear Power Plant (Calvert Cliffs) hereby requests an amendment to Renewed Operating License Nos. DPR-53 and DPR-69 to incorporate the change described below into the Technical Specifications for Calvert Cliffs Unit Nos. 1 and 2.

DESCRIPTION

The proposed amendment will revise Technical Specification actions requiring suspension of operations involving positive reactivity addition and revise various notes precluding reduction in boron concentration. The proposed revisions will allow only those positive reactivity additions that do not adversely affect shutdown margin (SDM) or refueling boron concentration. This requested change is consistent with Technical Specification Change Traveler (TSTF)-286, Revision 2. Changes to the Technical Specification Bases consistent with this TSTF will be made once this request is approved.

JUSTIFICATION

As currently written, certain Technical Specifications applicable in shutdown Modes categorically prohibit the addition of positive reactivity to the shutdown reactor. This prohibition poses operational difficulties. For example, additions of water to the Reactor Coolant System (RCS) are routinely required. If the makeup source is at a boron concentration lower than the boron concentration of the RCS, the makeup operation will introduce positive reactivity. In addition, water in the Refueling Water Tank at the same boron concentration as the RCS or refueling pool may appear to be at a slightly lower boron concentration due to chemistry sampling uncertainties. Nevertheless, makeup to the RCS under these circumstances is an entirely safe operation provided the makeup boron concentration is greater than the concentration required to preserve the required shutdown margin. The requested change clarifies that

A001

such operations are permissible. Calvert Cliffs normally maintains boron concentration in the RCS that is well above the shutdown margin required by Technical Specifications. Plant procedures and systems, which are already in place, properly monitor the overall effect on core reactivity and the required SDM, and maintain the required refueling boron concentration.

Reduction of boron in the RCS can lead to a boron dilution event, which is a Updated Final Safety Analysis Report, Chapter 14 design basis event. However, the analysis of the event assumes boron concentration at the beginning of the event is exactly the amount needed to maintain shutdown margin. Since the proposed changes to these Technical Specifications restrict boron additions to those that do not adversely impact shutdown margin, the Boron Dilution Event analysis is not affected by this change. Therefore, the actions allowed by TSTF-286, Revision 2 remain bounded by the Updated Final Safety Analysis Report accident analyses.

In addition to boron concentration, temperature changes in the RCS impose reactivity changes by means of the moderator temperature coefficient of reactivity. Small, controlled changes in RCS temperature being unavoidable, the requested change clarifies that such changes are permissible so long as the required shutdown margin is maintained.

TECHNICAL SPECIFICATION CHANGES

The proposed change would make 19 specific changes to the Calvert Cliffs Technical Specifications as shown in the markup (Attachment 1) and as also described in the following table. These changes were developed in accordance with TSTF-286, Revision 2 with one deviation. The Note for Change No. 1 has been modified because the TSTF note does not allow for plant temperature increases when moderator temperature coefficient is positive. The revised wording is taken from the Bases for Limiting Condition for Operation 3.3.13 mark-up for TSTF-286, Revision 2.

		TITLE	EXISTING WORDING	PROPOSED WORDING
1	3.3.12 A.1	Wide Range Logarithmic Neutron Flux Monitor Channels	None	NOTE Limited plant control operations are allowed provided the change is accounted for in the calculated SDM
2	3.4.5 NOTE 1.a	RCS Loops - MODE 3	No operations are permitted that would cause reduction of RCS boron concentration; and	No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
3	3.4.5 C.1	RCS Loops - MODE 3	Suspend all operations involving a reduction of RCS boron concentration.	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1
4	3.4.6 NOTE 1.a	RCS Loops - MODE 4	No operations are permitted that would cause reduction of RCS boron concentration; and	No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

		TITLE	EXISTING WORDING	PROPOSED WORDING
5	3.4.6 C.1	RCS Loops - MODE 4	Suspend all operations involving a reduction of RCS boron concentration.	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1
6	3.4.7 NOTE 1.a	RCS Loops - MODE 5, Loops Filled	No operations are permitted that would cause reduction of RCS boron concentration; and	No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
7	3.4.7 B.1	RCS Loops - MODE 5, Loops Filled	Suspend all operations involving a reduction of RCS boron concentration.	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1
8	3.4.8 NOTE 1.b	RCS Loops - MODE 5, Loops Not Filled	No operations are permitted that would cause reduction of RCS boron concentration; and	No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
9	3.4.8 B.1	RCS Loops - MODE 5, Loops Not Filled	Suspend all operations involving a reduction of RCS boron concentration.	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1
10	3.8.2 A.2.3	AC Sources - Shutdown	Initiate action to suspend operations involving positive reactivity additions	Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration
11	3.8.2 B.3	AC Sources - Shutdown	Initiate action to suspend operations involving positive reactivity additions	Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration
12	3.8.5 A.2.3	DC Sources - Shutdown	Initiate action to suspend operations involving positive reactivity additions	Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration
13	3.8.8 A.2.3	Inverters - Shutdown	Initiate action to suspend operations involving positive reactivity additions	Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration
14	3.8.10 A.2.3	Distribution Systems- Shutdown	Initiate action to suspend operations involving positive reactivity additions	Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration

		TITLE	EXISTING WORDING	PROPOSED WORDING
15	3.9.2 A.2	Nuclear Instrumentation	Suspend positive reactivity additions	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1
16	3.9.4 NOTE 1	SDC and Coolant Circulation-High Water Level	The required SDC Loop may be not in operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause reduction of the Reactor Coolant System boron concentration.	The required SDC Loop may be not in operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than that required to meet the minimum boron concentration of LCO 3.9.1
17	3.9.4 NOTE 2.a	SDC and Coolant Circulation-High Water Level	No operations are permitted that would cause reduction to reactor coolant boron concentration;	No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1;
18	3.9.4 A.2	SDC and Coolant Circulation-High Water Level	Suspend operations involving a reduction of reactor coolant boron concentration.	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1
19	3.9.5 B.1	SDC and Coolant Circulation-Low Water Level	Suspend operations involving a reduction of reactor coolant boron concentration.	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1

DETERMINATION OF SIGNIFICANT HAZARDS

The proposed amendment makes 19 changes to the Calvert Cliffs Nuclear Power Plant (Calvert Cliffs) Technical Specifications. These changes reflect the content of Technical Specification Change Traveler (TSTF)-286, Revision 2. Specifically, the requested change would allow additions of water and changes in the boron content of the Reactor Coolant system as long as the shutdown margin is maintained.

The proposed changes have been evaluated against the standards in 10 CFR 50.92 and have been determined not to involve a significant hazards consideration in that operation of the facility in accordance with the proposed amendment:

1. *Would not involve a significant increase in the probability or consequences of an accident previously evaluated.*

The intent of this change is to clarify those Technical Specifications involving positive reactivity additions to the shutdown reactor so that small, controlled, safe insertions of positive reactivity will be allowed where they are now categorically prohibited, posing operational difficulties. These

controlled activities could result in a slight change in the probability of an event occurring as Reactor Coolant System (RCS) manipulations that are currently prohibited would now be allowed. However, RCS manipulations are rigidly controlled to minimize the possibility of a significant reactivity increase. In addition, there is sufficient shutdown margin available in these conditions to allow for these slight reactivity changes without significantly increasing the probability of an accident previously evaluated.

The proposed change does not permit the shutdown margin required by the Technical Specifications to be reduced. While the proposed change will permit changes in the discretionary boron concentration above the technical specification requirements, this excess concentration is not credited in the Updated Final Safety Analysis Report safety analysis. Because the initial conditions assumed in the safety analysis are preserved, no increase in the consequence of an accident previously evaluated would occur. In addition, small temperature changes in the RCS impose reactivity changes by means of the moderator temperature coefficient of reactivity. These small changes are within the required shutdown margin, therefore, there is no increase in the consequence of an accident previously evaluated.

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

- 2. Would not create the possibility of a new or different kind of accident from any accident previously evaluated.*

This proposed amendment allows for minor plant operational adjustments without adversely impacting the safety analysis required shutdown margin. It does not involve any change to plant equipment or the shutdown margin requirements in the Technical Specifications.

Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

- 3. Would not involve a significant reduction in the margin of safety.*

The margin of safety in Modes 3, 4, 5, and 6 is preserved by the calculated shutdown margin which prevents a return to criticality. The proposed change will permit reductions in the discretionary shutdown margin beyond the Technical Specification requirements. However, the shutdown margin required by the Technical Specifications is not changed. The proposed change only affects Reactor Coolant System temperature and boron concentration above the calculated shutdown margin. By not impacting the shutdown margin, the margin of safety is not affected.

Therefore, the proposed change will not involve a significant reduction in the margin of safety.

ASSESSMENT AND REVIEW

We have determined that operation with the proposed amendment would not result in any significant change in the types, or significant increases in the amounts, of any effluents that may be released offsite, nor would it result in any significant increase in individual cumulative occupational exposure. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed amendment.

SAFETY COMMITTEE REVIEW

The Plant Operations and Safety Review Committee and Offsite Safety Review Committee have reviewed this proposed change and concur that operation with the proposed changes will not result in an undue risk to the health and safety of the public.

SCHEDULE

This change is requested to be approved and issued by March 1, 2004.

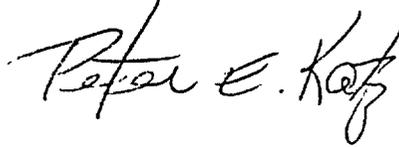
PRECEDENTS

The following plants have received approval for adopting TSTF-286:

- ◆ St. Lucie - November 19, 2001
- ◆ South Texas - August 13, 2001
- ◆ Robinson - March 14, 2001
- ◆ SONGS - December 20, 2000
- ◆ Callaway – May 1, 2002

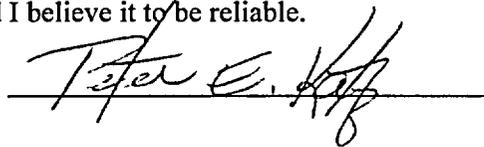
Should you have questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,



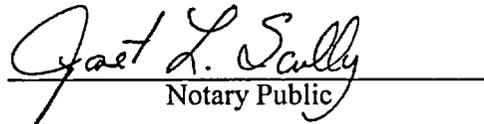
STATE OF MARYLAND :
: TO WIT:
COUNTY OF CALVERT :

I, Peter E. Katz, being duly sworn, state that I am Vice President - Calvert Cliffs Nuclear Power Plant, Inc. (CCNPP), and that I am duly authorized to execute and file this License Amendment Request on behalf of CCNPP. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other CCNPP employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.



Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of Saint Mary's, this 17th day of April, 2003.

WITNESS my Hand and Notarial Seal:


Notary Public

My Commission Expires:

March 25, 2007
Date

PEK/EMT/bjd

Attachment: (1) Technical Specification Markup

cc: J. Petro, Esquire
J. E. Silberg, Esquire
Director, Project Directorate I-1, NRC
G. S. Vissing, NRC
H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR

ATTACHMENT (1)

TECHNICAL SPECIFICATION MARKUP

3.3 INSTRUMENTATION

3.3.12 Wide Range Logarithmic Neutron Flux Monitor Channels

LCO 3.3.12 Two channels of wide range logarithmic neutron flux monitoring instrumentation shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5, with the reactor trip circuit breakers open or Control Element Assembly Drive System not capable of Control Element Assembly withdrawal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Suspend all operations involving positive reactivity additions.	Immediately
	<p style="text-align: center;"><u>AND</u></p> <td>A.2 Perform SDM verification in accordance with SR 3.1.1.1.</td> <td> 4 hours <u>AND</u> Once per 12 hours thereafter </td>	A.2 Perform SDM verification in accordance with SR 3.1.1.1.

Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.12.1 Perform CHANNEL CHECK.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE and one RCS loop shall be in operation.

----- NOTES-----

1. All reactor coolant pumps may be not in operation for ≤ 1 hour per 8 hour period and ≤ 2 hours per 8 hour period for low flow testing, provided:
 - a. ~~No operations are permitted that would cause reduction of the RCS boron concentration; and~~
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. No reactor coolant pump shall be started with any RCS cold leg temperature $\leq 365^{\circ}\text{F}$ (Unit 1), $\leq 301^{\circ}\text{F}$ (Unit 2) unless:
 - a. The pressurizer water level is ≤ 170 inches;
 - b. The pressurizer pressure is ≤ 300 psia (Unit 1), ≤ 320 psia (Unit 2); and
 - c. The secondary water temperature of each steam generator is $\leq 30^{\circ}\text{F}$ above the RCS temperature.

Insert 5

APPLICABILITY: MODE 3.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6

Two loops consisting of any combination of RCS loops and shutdown cooling (SDC) loops shall be OPERABLE and at least one loop shall be in operation.

----- NOTES -----

1. All reactor coolant pumps and SDC pumps may be not in operation for ≤ 1 hour per 8 hour period, provided:

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

Insert 5

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

2. No reactor coolant pump shall be started with any RCS cold leg temperature $\leq 365^\circ\text{F}$ (Unit 1), $\leq 301^\circ\text{F}$ (Unit 2) unless:

a. Pressurizer water level is ≤ 170 inches;

b. Pressurizer pressure is ≤ 300 psia (Unit 1), ≤ 320 psia (Unit 2); and

c. Secondary side water temperature in each steam generator is $\leq 30^\circ\text{F}$ above the RCS temperature.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required RCS loop inoperable.</p> <p><u>AND</u></p> <p>Two SDC loops inoperable.</p>	<p>A.1 Initiate action to restore a second loop to OPERABLE status.</p>	<p>Immediately</p>
<p>B. One required SDC loop inoperable.</p> <p><u>AND</u></p> <p>Two required RCS loops inoperable.</p>	<p>B.1 Be in MODE 5.</p>	<p>24 hours</p>
<p>C. Required RCS or SDC loops inoperable.</p> <p><u>OR</u></p> <p>No RCS or SDC loops in operation.</p>	<p>C.1 <i>Suspend all operations involving reduction of RCS boron concentration.</i></p> <p><u>AND</u></p> <p>C.2 <i>Insert 3</i></p> <p>C.2 Initiate action to restore one loop to OPERABLE status and operation.</p>	<p>Immediately</p> <p>Immediately</p>



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

LCO 3.4.7 One shutdown cooling (SDC) loop shall be OPERABLE and in operation, and either:

- a. One additional SDC loop shall be OPERABLE; or
- b. The secondary side water level of each steam generator (SG) shall be ≥ -50 inches.

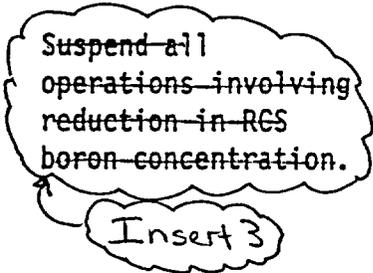
----- NOTES -----

1. The SDC pump of the loop in operation may be not in operation for ≤ 1 hour per 8 hour period provided:
 - a. ~~No operations are permitted that would cause reduction of the RCS boron concentration; and~~
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. One required SDC loop may be inoperable for up to 2 hours for surveillance testing provided that the other SDC loop is OPERABLE and in operation.
3. No reactor coolant pump shall be started with any RCS cold leg temperature $\leq 365^\circ\text{F}$ (Unit 1), $\leq 301^\circ\text{F}$ (Unit 2) unless:
 - a. The pressurizer water level is ≤ 170 inches;
 - b. Pressurizer pressure is ≤ 300 psia (Unit 1), ≤ 320 psia (Unit 2); and
 - c. The secondary side water temperature in each SG is $\leq 30^\circ\text{F}$ above the RCS temperature.
4. All SDC loops may be not in operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

Insert 5

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One SDC loop inoperable.</p> <p><u>AND</u></p> <p>Any SG with secondary side water level not within limit.</p>	<p>A.1 Initiate action to restore a second SDC loop to OPERABLE status.</p> <p><u>OR</u></p> <p>A.2 Initiate action to restore SG secondary side water levels to within limits.</p>	<p>Immediately</p> <p>Immediately</p>
<p>B. Required SDC loops inoperable.</p> <p><u>OR</u></p> <p>No SDC loop in operation.</p>	<p>B.1  <u>AND</u></p> <p>B.2 Initiate action to restore one SDC loop to OPERABLE status and operation.</p>	<p>Immediately</p> <p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR-3.4.7:1 Verify one SDC loop is in operation.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two shutdown cooling (SDC) loops shall be OPERABLE and one SDC loop shall be in operation.

----- NOTES-----

1. All SDC pumps may be not in operation for ≤ 15 minutes when switching from one loop to another provided:
 - a. The core outlet temperature is maintained at least 10°F below saturation temperature;
 - b. ~~No operations are permitted that would cause a reduction of the RCS boron concentration; and~~
 - c. No draining operations to further reduce the RCS water volume are permitted.

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

Insert 5 → ~~No operations are permitted that would cause a reduction of the RCS boron concentration; and~~

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SDC loop inoperable.	A.1 Initiate action to restore SDC loop to OPERABLE status.	Immediately

RCS Loops - MODE 5, Loops Not Filled
3.4.8

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required SDC loops inoperable. <u>OR</u> No SDC loop in operation.	B.1	Immediately
	<u>AND</u> B.2 Initiate action to restore one SDC loop to OPERABLE status and operation.	

SURVEILLANCE REQUIREMENTS

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (Continued)</p>	<p>A.2.3 Initiate action to suspend operations involving positive reactivity additions.</p>	<p>Immediately</p>
	<p><u>AND</u></p> <p>A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status.</p>	<p>Immediately</p>
<p>B. One required DG inoperable.</p>	<p>B.1 Suspend CORE ALTERATIONS.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>B.2 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>
	<p><u>AND</u></p>	
	<p>B.3 Initiate action to suspend operations involving positive reactivity additions.</p>	<p>Immediately</p>
	<p><u>AND</u></p> <p>B.4 Initiate action to restore required DG to OPERABLE status.</p>	<p>Immediately</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately

Initiate action to suspend operations involving positive reactivity additions.

AND

Insert 8

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

Initiate action to suspend operations involving positive reactivity additions.

AND

Insert 8

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.8.1 Verify correct inverter voltage and alignment to required AC vital buses.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
	A.2.4 Initiate actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status.	Immediately
<u>AND</u>		
A.2.5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately	

Initiate action to suspend operations involving positive reactivity additions.

Insert 8

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SRM inoperable.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<p><u>AND</u></p> <p>A.2 Suspend positive reactivity additions.</p>	<p>Immediately</p> <p>Insert 4</p>
B. Two required SRMs inoperable.	B.1 Initiate action to restore one SRM to OPERABLE status.	Immediately
	<p><u>AND</u></p> <p>B.2 Perform SR 3.9.1.1.</p>	Once per 12 hours

3.9 REFUELING OPERATIONS

3.9.4 Shutdown Cooling (SDC) and Coolant Circulation-High Water Level

LCO 3.9.4 One SDC loop shall be OPERABLE and in operation.

NOTES

1. The required SDC loop may be not in operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause ~~reduction of~~ the Reactor Coolant System boron concentration.
Introduction into coolant with *Insert 7* *Introduction into*
2. The shutdown cooling pumps may be removed from operation during the time required for local leak rate testing of containment penetration number 41 pursuant to the requirements of SR 3.6.1.1 or to permit maintenance on valves located in the common SDC suction line, provided:
 - a. no operations are permitted that would cause ~~a~~ ~~reduction to~~ Reactor Coolant System boron concentration.
Introduction into the *Insert 7* *coolant with*
 - b. CORE ALTERATIONS are suspended, and
 - c. all containment penetrations are in the status described in LCO 3.9.3.

APPLICABILITY: MODE 6 with the water level ≥ 23 ft above the top of the irradiated fuel assemblies seated in the reactor vessel.

SDC and Coolant Circulation-High Water Level
3.9.4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SDC loop inoperable or not in operation.	A.1 Initiate action to restore SDC loop to OPERABLE status and operation.	Immediately
	<u>AND</u>	
	A.2 Suspend operations involving a reduction in reactor coolant boron concentration.	Immediately
	<u>AND</u>	
	A.3 Suspend loading of irradiated fuel assemblies in the core.	Immediately
	<u>AND</u>	
	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

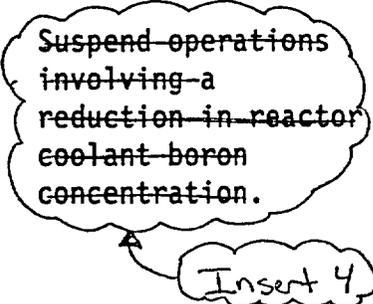
Suspend operations involving a reduction in reactor coolant boron concentration.

↑

Insert 4

SDC and Coolant Circulation-Low Water Level
3.9.5

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No SDC loop OPERABLE or in operation.	B.1  Suspend operations involving a reduction in reactor coolant boron concentration.	Immediately
	<u>AND</u>	
	B.2 Initiate action to restore one SDC loop to OPERABLE status and to operation.	Immediately
	<u>AND</u>	
	B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.5.1 Verify required SDC loops are OPERABLE and one SDC loop is in operation.	12 hours
SR 3.9.5.2 Verify SDC loop in operation is circulating reactor coolant at a flow rate of ≥ 1500 gpm.	12 hours

Insert 1

NOTE

Limited plant control operations are allowed provided the change is accounted for in the calculated SDM

Insert 3

Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1

Insert 4

Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1

Insert 5

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

Insert 7

less than that required to meet the minimum boron concentration of LCO 3.9.1.

Insert 8

Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.