Industry/TSTF Standard Technical Specification Change Traveler

Consolidate Specification 3.1.5 Actions to Restore Misaligned CEAs

Priority/Classification 3) Improve Specifications

NUREGs Affected: ☑ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Description:

Specification 3.1.5 Actions A (regulating CEA), B (shutdown CEAs), and C (Digital only - part length CEAs) requirements to restore the misaligned CEAs to within 7 inches of its group or to restore the group to within 7 inches of the misaligned CEA (Actions A and C only) were consolidated into one Action to restore CEA alignment. Actions A, B, and C (digital only) were also combined into one Action. The Condition will be for one or more CEAs trippable..., instead of each Action referring to each type of CEA. All the Action numbers were changed in conjunction with the above changes.

Justification:

The current TS contains details on how to restore alignment that are not required in the Actions. This information is already contained in the Bases which state that within 2 hours the misaligned CEA(s) must be restored to within 7 inches of its group or the misaligned CEA's group must be aligned to within 7 inches of the misaligned CEA. The Bases will clarify that aligning a shutdown CEA's group to within 7 inches of the misaligned CEA is not permitted. The Actions and Action times are not changed, as CEA alignment must still be restored within 2 hours, but the Actions will not provide instructions on how to perform the task.

This change in the composition of the Actions made Actions A, B, and C (digital only) the same which allows them to be consolidated into one Action. This change is consistent with the NUREG philosophy which moves details on how to accomplish a requirement into the Bases.

Revision History

OG Revision 0 **Revision Status: Active** **Next Action:**

Revision Proposed by: Calvert Cliffs

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 29-May-96

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 04-Jun-96

TSTF Review Information

TSTF Received Date: 01-Jul-96 Date Distributed for Review 31-Jul-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

BWOG - Portions are applicable (relocating specifics on restoring compliance), BWOG accepts
WOG - Not applicable, WOG accepts
BWROG - Not applicable, BWROG accepts

TSTF Resolution: Approved Date: 10-Oct-96

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NRC Review Information

NRC Received Date: 23-Jan-97 NRC Reviewer: Tjader, R.

NRC Comments:

3/14/97 - NRC approves

Final Resolution: NRC Approves Final Resolution Date: 14-Mar-97

Incorporation Into the NUREGs

File to BBS/LAN Date: TSTF Informed Date: TSTF Approved Date:

NUREG Rev Incorporated:

Affected Technical Specifications

Action 3.1.4.A	Control Rod Group Alignment Limits	NUREG(s)- 1430 Only
Action 3.1.6.A	APSR Alignment Limits	NUREG(s)- 1430 Only
Action 3.1.5.A	CEA Alignment (Analog)	NUREG(s)- 1432 Only
Action 3.1.5.A	CEA Alignment (Digital)	NUREG(s)- 1432 Only
Action 3.1.5.A Bases	CEA Alignment (Analog)	NUREG(s)- 1432 Only
Action 3.1.5.A Bases	CEA Alignment (Digital)	NUREG(s)- 1432 Only
Action 3.1.5.B	CEA Alignment (Analog) Change Description: Deleted	NUREG(s)- 1432 Only
Action 3.1.5.B	CEA Alignment (Digital) Change Description: Deleted	NUREG(s)- 1432 Only
Action 3.1.5.B Bases	CEA Alignment (Analog)	NUREG(s)- 1432 Only
Action 3.1.5.B Bases	CEA Alignment (Digital) Change Description: Deleted	NUREG(s)- 1432 Only
Action 3.1.5.C	CEA Alignment (Analog) Change Description: Rename to B	NUREG(s)- 1432 Only
Action 3.1.5.C	CEA Alignment (Digital) Change Description: Deleted	NUREG(s)- 1432 Only
Action 3.1.5.C Bases	CEA Alignment (Analog) Change Description: Rename to B	NUREG(s)- 1432 Only
Action 3.1.5.C Bases	CEA Alignment (Digital) Change Description: Deleted	NUREG(s)- 1432 Only
Action 3.1.5.D	CEA Alignment (Analog) Change Description: Rename to C	NUREG(s)- 1432 Only

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Action 3.1.5.D	CEA Alignment (Digital) Change Description: Rename to B	NUREG(s)- 1432 Only
Action 3.1.5.D Bases	CEA Alignment (Analog) Change Description: Rename to C	NUREG(s)- 1432 Only
Action 3.1.5.D Bases	CEA Alignment (Digital) Change Description: Rename to B	NUREG(s)- 1432 Only
Action 3.1.5.E	CEA Alignment (Analog) Change Description: Rename to D	NUREG(s)- 1432 Only
Action 3.1.5.E Bases	CEA Alignment (Analog) Change Description: Rename to D	NUREG(s)- 1432 Only

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3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 CONTROL ROD Group Alignment Limits

LCO 3.1.4 Each CONTROL ROD shall be OPERABLE and aligned to within [6.5]% of its group average height.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One trippable CONTROL ROD inoperable, or not aligned to within [6.5]% of its group average height, or both.	A.1 ~~Align all CONTROL RODS in the group to within [6.5]% of the group average height, while maintaining the rod insertion, group sequence, and group overlap limits in accordance with LCO 3.2.1, "Regulating Rod Insertion Limits."~~ Restore CONTROL ROD alignment.	1 hour
	OR	
	A.2.1.1 Verify SDM is ≥ [1]% Δk/k.	1 hour AND Once per 12 hours thereafter
	OR	
	A.2.1.2 Initiate boration to restore SDM to within limit.	1 hour
	AND	
		(continued)

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3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 AXIAL POWER SHAPING ROD (APSR) Alignment Limits

LCO 3.1.6 Each APSR shall be OPERABLE and aligned within [6.5]% of its group average height.

APPLICABILITY: MODES 1 and 2, when the APSRs are not fully withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One APSR inoperable, not aligned within its limits, or both.	A.1 ~~Align the APSR group to within [6.5]% of the inoperable or misaligned rod, while maintaining the APSR insertion limits in the COLR.~~ Restore APSR alignment.	2 hours
	AND	
	A.2 Prevent movement of the APSR group, while the rod remains inoperable or misaligned.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

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3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Control Element Assembly (CEA) Alignment (Analog)

LCO 3.1.5 All CEAs shall be OPERABLE and aligned to within [7] inches (indicated position) of their respective group [, and the CEA motion inhibit and the CEA deviation circuit shall be OPERABLE].

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ~~regulating~~ CEAs trippable and misaligned from its group by > [7 inches] and ≤ [15 inches]. OR One ~~regulating~~ CEA trippable and misaligned from its group by > [15 inches].	A.1 Reduce THERMAL POWER to ≤ 70% RTP.	1 hour
	AND	
	A.2.1 Verify SDM is ≥ [4.5]% Δk/k.	1 hour
	OR	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	AND	
	A.~~3.1~~ 2 Restore ~~the misaligned CEA(s) to within [7 inches] (indicated position) of its group.~~ CEA Alignment	2 hours
	OR	
		(continued)

proposed to be deleted in TSTF-20

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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.2 Align the remainder of the CEAs in the group to within [7 inches] (indicated position) of the misaligned CEA(s) while maintaining the insertion limit of LCO 3.1.7, "Regulating Control Element Assembly (CEA) Insertion Limits."	2 hours
B. One or more shutdown CEAs trippable and misaligned from its group by > [7 inches] and ≤ [15 inches]. OR One shutdown CEA trippable and misaligned from its group by > [15 inches].	B.1 Reduce THERMAL POWER to ≤ 70% RTP. AND B.2.1 Verify SDM is ≥ [4.5]% Δk/k. OR B.2.2 Initiate boration to restore SDM to within limit. AND B.3 Restore the misaligned CEA(s) to within [7 inches] (indicated position) of its group.	1 hour 1 hour 1 hour 2 hours

(continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B ~~C~~. CEA motion inhibit inoperable.	B ~~C~~.1	Perform SR 3.1.5.1.	1 hour AND Every 4 hours thereafter
	AND		
	B ~~C~~.2.1	Restore CEA motion inhibit to OPERABLE status.	6 hours
	OR		
	B ~~C~~.2.2	--------NOTE-------- Performance of Required Action B ~~C~~.2.2 is allowed only when not in conflict with Required Action A.1, ~~A.3.1, A.3.2, B.1, B.3,~~ or ~~D~~ C.1. ---------- Place and maintain the CEA drive switch in either the "off" or "manual" position [, and fully withdraw all CEAs in groups 3 and 4 and withdraw all CEAs in group 5 to < 5% insertion].	A.2 6 hours
C ~~D~~. CEA deviation circuit inoperable.	C ~~D~~.1	Perform SR 3.1.5.1.	1 hour AND Every 4 hours thereafter

(continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D ~~E~~. Required Action and associated Completion Time not met. OR One or more CEAs untrippable. OR Two or more CEAs misaligned by > [15 inches].	D ~~E~~.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify the indicated position of each CEA to be within [7 inches] of all other CEAs in its group.	12 hours
SR 3.1.5.2	Verify that, for each CEA, the OPERABLE CEA position indicator channels, reed switch, and plant computer CEA position indication indicate within [5 inches] of each other.	12 hours
SR 3.1.5.3	Verify the CEA motion inhibit is OPERABLE.	31 days

(continued)

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BASES

LCO (continued)

SDMS, all of which may constitute initial conditions inconsistent with the safety analysis.

APPLICABILITY

The requirements on CEA OPERABILITY and alignment are applicable in MODES 1 and 2 because these are the only MODES in which neutron (or fission) power is generated, and the OPERABILITY (e.g., trippability) and alignment of CEAs have the potential to affect the safety of the plant. In MODES 3, 4, 5, and 6, the alignment limits do not apply because the CEAs are bottomed, and the reactor is shut down and not producing fission power. In the shutdown Modes, the OPERABILITY of the shutdown and regulating CEAs has the potential to affect the required SDM, but this effect can be compensated for by an increase in the boron concentration of the RCS. See LCO 3.1.1, "SHUTDOWN MARGIN (SDM)—T_{avg} > 200°F," for SDM in MODES 3, 4, and 5, and LCO 3.9.1, "Boron Concentration," for boron concentration requirements during refueling.

ACTIONS

A.1, ~~A.2.1, A.2.2, A.3.1,~~ and ~~A.3.2~~ A.2

A CEA may become misaligned, yet remain trippable. In this condition, the CEA can still perform its required function of adding negative reactivity should a reactor trip be necessary.

If one or more ~~regulating~~ CEAs (regulating or shutdown) are misaligned by > [7 inches] and ≤ [15 inches] but trippable, or one ~~regulating~~ CEA is misaligned by > [15 inches] but trippable, continued operation in MODES 1 and 2 may continue, provided, within 1 hour, the power is reduced to ≤ 70% RTP and SDM is ≥ [5.0]% Δk/k, and within 2 hours ~~the misaligned CEA(s) is aligned within [7 inches] of its group, or the misaligned CEA's group is aligned within [7 inches] of the misaligned CEA(s).~~

CEA alignment is restored

INSERT B3.1.5 Action A

Xenon redistribution in the core starts to occur as soon as a CEA becomes misaligned. Reducing THERMAL POWER in accordance with Figure 3.1.5-1 (in the associated LCO) ensures acceptable power distributions are maintained (Ref. 6). For small misalignments (< [15 inches]) of the CEAs, there is:

(continued)

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INSERT B 3.1.5 ACTION A (ANALOG)

Regulating CEA alignment can be restored by either aligning the misaligned CEA(s) to within [7 inches] of its group or aligning the misaligned CEA's group to within [7 inches] of the misaligned CEA. Shutdown CEA alignment can be restore by aligning the misaligned CEA(s) to within [7 inches] of its group.

d

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.3.1, and A.3.2 (continued)

a. A small effect on the time dependent long term power distributions relative to those used in generating LCOs and limiting safety system settings (LSSS) setpoints;

b. A small effect on the available SDM; and

c. A small effect on the ejected CEA worth used in the accident analysis.

With a large CEA misalignment (≥ [15 inches]), however, this misalignment would cause distortion of the core power distribution. This distortion may, in turn, have a significant effect on:

a. The available SDM;

b. The time dependent, long term power distributions relative to those used in generating LCOs and LSSS setpoints; and

c. The ejected CEA worth used in the accident analysis.

Therefore, this condition is limited to a single CEA misalignment, while still allowing 2 hours for recovery.

In both cases, a 2 hour time period is sufficient to:

a. Identify cause of a misaligned CEA;

b. Take appropriate corrective action to realign the CEAs; and

c. Minimize the effects of xenon redistribution.

If a CEA is untrippable, it is not available for reactivity insertion during a reactor trip. With an untrippable CEA, meeting the insertion limits of LCO 3.1.6 and LCO 3.1.7 does not ensure that adequate SDM exists. In this condition, an additional allowance must be made for the worth of the affected CEA when calculating the available SDM. This is necessary, since the OPERABLE CEAs must still meet the single failure criterion. If additional negative reactivity is required to provide the necessary SDM, it must be

proposed to be deleted in TSTF-20

(continued)

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BASES

ACTIONS

A.1, A.2.1, A.2.2, A.3.1, and A.3.2 (continued)

provided by increasing the RCS boron concentration. One hour allows sufficient time to perform the SDM calculation and initiate any required boron adjustment to the RCS.

proposed to be deleted per TSTF-20

B.1, B.2.1, B.2.2., and B.3

If one or more shutdown CEAs are misaligned by > [7 inches] and ≤ [15 inches] but trippable, or one shutdown CEA is misaligned by > [15 inches] but trippable, continued operation in MODES 1 and 2 may continue, provided, within 1 hour, the power is reduced to ≤ 70% RTP and SDM is ≥ [5.0]% Δk/k, and within 2 hours the misaligned CEA(s) is aligned within [7 inches] of its group.

B

C.1, C.2.1, and C.2.2

The CEA motion inhibit permits CEA motion within the requirements of LCO 3.1.7, "Regulating Control Element Assembly (CEA) Insertion Limits," and prevents regulating CEAs from being misaligned from other CEAs in the group.

Performing SR 3.1.5.1 within 1 hour and every 4 hours thereafter, is considered acceptable in view of other information continuously available to the operator in the control room.

With the CEA motion inhibit inoperable, a Completion Time of 6 hours is allowed for restoring the CEA motion inhibit to OPERABLE status, or placing and maintaining the CEA drive switch in either the "off" or "manual" position, fully withdrawing the CEAs in groups 3 and 4, and withdrawing all CEAs in group 5 to < 5% insertion.

Placing the CEA drive switch in the "off" or "manual" position ensures the CEAs will not move in response to Reactor Regulating System automatic motion commands. Withdrawal of the CEAs to the positions required in the Required Action C.2.2 ensures that core perturbations in local burnup, perking factors, and SDM will not be more adverse than the Conditions assumed in the safety analyses and LCO setpoint determination (Ref. 6).

B

(continued)

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BASES

ACTIONS

B ~~D~~.1, ~~D~~2.1, and ~~D~~2.2 (continued)

The 6 hour Completion Time takes into account Required Action ~~C~~1, the protection afforded by the CEA deviation circuits, and other information continuously available to the operator in the control room, so that during actual CEA motion, deviations can be detected.

B

Required Action ~~D~~.2.2 is modified by a Note indicating that performing this Required Action is not required when in conflict with Required Actions A.1, ~~A.3.1, A.3.2, B.1, B.3~~, or ~~D~~.1.

A.2

C

~~B~~.1

When the CEA deviation circuit is inoperable, performing SR 3.1.5.1, within 1 hour and every 4 hours thereafter, ensures improper CEA alignments are identified before unacceptable flux distributions occur. The specified Completion Times take into account other information continuously available to the operator in the control room, so that during CEA movement, deviations can be detected, and the protection provided by the CEA inhibit and deviation circuit is not required.

D ~~E~~.1

or

If the Required Action or associated Completion Time of Condition A, Condition B, Condition C, ~~or Condition D~~ is not met, one or more regulating or shutdown CEAs are untrippable, or two or more CEAs are misaligned by > [15 inches], the unit is required to be brought to MODE 3. By being brought to MODE 3, the unit is brought outside its MODE of applicability. Continued operation is not allowed in the case of more than one CEA misaligned from any other CEA in its group by > [15 inches], or one or more CEAs untrippable. This is because these cases are indicative of a loss of SDM and power distribution, and a loss of safety function, respectively.

When a Required Action cannot be completed within the required Completion Time, a controlled shutdown should be commenced. The allowed Completion Time of 6 hours is reasonable, based on operating experience, for reaching

(continued)

BASES

ACTIONS

D.1 (continued)

MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.5.1

Verification that individual CEA positions are within [7 inches] (indicated reed switch positions) of all other CEAs in the group at a 12 hour Frequency allows the operator to detect a CEA that is beginning to deviate from its expected position. The specified Frequency takes into account other CEA position information that is continuously available to the operator in the control room, so that during CEA movement, deviations can be detected, and protection can be provided by the CEA motion inhibit and deviation circuits.

SR 3.1.5.2

OPERABILITY of at least two CEA position indicator channels is required to determine CEA positions, and thereby ensure compliance with the CEA alignment and insertion limits. The CEA "full in" and "full out" limits provide an additional independent means for determining the CEA positions when the CEAs are at either their fully inserted or fully withdrawn positions.

The 12 hour Frequency takes into consideration other information continuously available to the operator in the control room, so that during CEA movement, deviations can be detected, and protection can be provided by the CEA motion inhibit and deviation circuits.

SR 3.1.5.3

Demonstrating the CEA motion inhibit OPERABLE verifies that the CEA motion inhibit is functional, even if it is not regularly operated. The 31 day Frequency takes into account other information continuously available to the operator in the control room, so that during CEA movement, deviations

(continued)

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3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Control Element Assembly (CEA) Alignment (Digital)

LCO 3.1.5 All full length CEAs shall be OPERABLE, and all full and part length CEAs shall be aligned to within [7 inches] (indicated position) of their respective groups.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ~~regulating~~ CEAs trippable and misaligned from its group by > [7 inches] and ≤ [19 inches]. OR One ~~regulating~~ CEA trippable and misaligned from its group by > [19 inches].	A.1 Reduce THERMAL POWER in accordance with Figure 3.1.5-1.	1 hour
	AND	
	A.2.1 Verify SDM is ≥ [5.0]% Δk/k.	1 hour
	OR	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	AND	
	A.~~3.1~~ 2 Restore the misaligned CEA(s) to within [7 inches] (indicated position) of its group.	2 hours
	OR	

proposed to be deleted in TSTF-20

CEA Alignment

(continued)

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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.2 Align the remainder of the CEAs in the group to within [7 inches] (indicated position) of the misaligned CEA(s) while maintaining the insertion limit of LCO 3.1.7, "Regulating Control Element Assembly (CEA) Insertion Limits."	2 hours
B. One or more shutdown CEAs trippable and misaligned from its group by > [7 inches] and ≤ [19 inches]. OR One shutdown CEA trippable and misaligned from its group by > [19 inches].	B.1 Reduce THERMAL POWER in accordance with Figure 3.1.5-1.	1 hour
	AND	
	B.2.1 Verify SDM is ≥ [5.0]% Δk/k.	1 hour
	OR	
	B.2.2 Initiate boration to restore SDM to within limit.	1 hour
	AND	
	B.3 Restore the misaligned CEA(s) to within [7 inches] (indicated position) of its group.	2 hours

(continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more part length CEAs misaligned from its group by > [7 inches] and ≤ [19 inches]. OR One part length CEA misaligned from its group by > [19 inches].	C.1 Reduce THERMAL POWER in accordance with Figure 3.1.5-1.	1 hour
	AND	
	C.2.1 Restore the misaligned CEA(s) to within [7 inches] (indicated position) of its group.	2 hours
	OR	
	C.2.2 Align the remainder of the CEAs in the group to within [7 inches] (indicated position) of the misaligned CEA(s).	2 hours
B. Required Action and associated Completion Time ~~of condition A, B, or C~~ not met. OR One or more full length CEAs untrippable. OR Two or more CEAs misaligned by > [19 inches].	B.1 Be in MODE 3.	6 hours

BASES (continued)

ACTIONS

A.1, ~~A.2.1, A.2.2, A.3.1,~~ and ~~A.3.2~~ A.2

A CEA may become misaligned, yet remain trippable. In this condition, the CEA can still perform its required function of adding negative reactivity should a reactor trip be necessary.

If one or more ~~regulating~~ CEAs (regulating, shutdown or part length) are misaligned by [7 inches] and ≤ [19 inches] but trippable, or one ~~regulating~~ CEA misaligned by > [19 inches] but trippable, continued operation in MODES 1 and 2 may continue, provided, within 1 hour, the power is reduced in accordance with Figure 3.1.5-1, and SDM is ≥ [5.0]% Δk/k, and within 2 hours ~~the misaligned CEA(s) is aligned within [7 inches] of its group or the misaligned CEA's group is aligned within [7 inches] of the misaligned CEA(s).~~

CEA alignment is restored

INSERT B 3.1.5 ACTION A

Xenon redistribution in the core starts to occur as soon as a CEA becomes misaligned. Reducing THERMAL POWER in accordance with Figure 3.1.5-1 (in the accompanying LCO) ensures acceptable power distributions are maintained (Ref. 6). For small misalignments (< [19 inches]) of the CEAs, there is:

a. A small effect on the time dependent long term power distributions relative to those used in generating LCOs and limiting safety system settings (LSSS) setpoints;

b. A small effect on the available SDM; and

c. A small effect on the ejected CEA worth used in the accident analysis.

With a large CEA misalignment (≥ [19 inches]), however, this misalignment would cause distortion of the core power distribution. This distortion may, in turn, have a significant effect on:

a. The available SDM;

b. The time dependent, long term power distributions relative to those used in generating LCOs and LSSS setpoints; and

c. The ejected CEA worth used in the accident analysis.

(continued)

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INSERT B 3.1.5 ACTION A (DIGITAL)

Regulating and part length CEA alignment can be restored by either aligning the misaligned CEA(s) to within [7 inches] of its group or aligning the misaligned CEA's group to within [7 inches] of the misaligned CEA. Shutdown CEA alignment can be restore by aligning the misaligned CEA(s) to within [7 inches] of its group.

d

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BASES

ACTIONS

A.1, A.2.1, A.2.2, A.3.1, and A.3.2 (continued)

A.2

Therefore, this condition is limited to the single CEA misalignment, while still allowing 2 hours for recovery.

In both cases, a 2 hour time period is sufficient to:

a. Identify cause of a misaligned CEA;

b. Take appropriate corrective action to realign the CEAs; and

c. Minimize the effects of xenon redistribution.

In this condition, an additional allowance must be made for the worth of the affected CEA when calculating the available SDM. With one or more misaligned CEAs, SDM must be verified for CEAs at the existing nonaligned positions. SDM is calculated by performing a reactivity balance calculation according to procedure, considering the listed effects in SR 3.1.1.1. This is necessary since the OPERABLE CEAs must still meet the single failure criterion. If additional negative reactivity is required to provide the necessary SDM, it must be provided by increasing the RCS boron concentration. One hour allows sufficient time to perform the SDM calculation and make any required boron adjustment to the RCS.

Proposed to be deleted per TSTF-20

B.1, B.2.1, B.2.2, and B.3

If one or more shutdown CEAs are misaligned by > [7 inches] and ≤ [19 inches] but trippable, or one shutdown CEA misaligned by > [19 inches] but trippable, continued operation in MODES 1 and 2 may continue, provided, within 1 hour, the power is reduced in accordance with Figure 3.1.5-1, and SDM is ≥ [5.0]% Δk/k, and within 2 hours the misaligned CEA(s) is aligned within [7 inches] of its group.

C.1, C.2.1, and C.2.2

If one or more part length CEAs are misaligned by > [7 inches] and ≤ [19 inches] or one part length CEA misaligned by > [19 inches], continued operation in MODES 1

(continued)

BASES

ACTIONS

C.1, C.2.1, and C.2.2 (continued)

and 2 may continue, provided power is reduced in accordance with the appropriate figure within 1 hour, and within 2 hours the misaligned CEA(s) is restored to within [7 inches] of its group, or the misaligned CEA's group is aligned within [7 inches] of the misaligned CEA.

Although a part length CEA has less of an effect on core flux than a full length CEA, a misaligned part length CEA will still result in xenon redistribution and affect core power distribution. Requiring realignment within 2 hours minimizes these effects and ensures acceptable power distribution is maintained.

B ~~D~~.1

If a Required Action or associated Completion Time of Condition A, Condition B, or Condition C is not met, one or more regulating or shutdown CEAs are untrippable, or two or more CEAs are misaligned by > [19 inches], the unit is required to be brought to MODE 3. By being brought to MODE 3, the unit is brought outside its MODE of applicability.

When a Required Action cannot be completed within the required Completion Time, a controlled shutdown should be commenced. The allowed Completion Time of 6 hours is reasonable, based on operating experience, for reaching MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

If a CEA is untrippable, it is not available for reactivity insertion during a reactor trip. With an untrippable CEA, meeting the insertion limits of LCO 3.1.6, "Shutdown Control Element Assembly (CEA) Insertion Limits," and LCO 3.1.7, "Regulating Control Element Assembly (CEA) Insertion Limits," does not ensure that adequate SDM exists. Therefore, the plant must be shut down in order to evaluate the SDM required boron concentration and power level for critical operation.

Continued operation is not allowed in the case of more than one CEA(s) misaligned from any other CEA in its group by > [19 inches], or with one or more full length CEAs

(continued)

BASES

ACTIONS

B.1 (continued)

untrippable. This is because these cases are indicative of a loss of SDM and power distribution, and a loss of safety function, respectively.

SURVEILLANCE REQUIREMENTS

SR 3.1.5.1

Verification that individual CEA positions are within [7 inches] (indicated reed switch positions) of all other CEAs in the group at a 12 hour Frequency allows the operator to detect a CEA that is beginning to deviate from its expected position. The specified Frequency takes into account other CEA position information that is continuously available to the operator in the control room, so that during actual CEA motion, deviations can immediately be detected.

SR 3.1.5.2

OPERABILITY of at least two CEA position indicator channels is required to determine CEA positions, and thereby ensure compliance with the CEA alignment and insertion limits. The CEA full in and full out limits provide an additional independent means for determining the CEA positions when the CEAs are at either their fully inserted or fully withdrawn positions.

SR 3.1.5.3

Verifying each full length CEA is trippable would require that each CEA be tripped. In MODES 1 and 2 tripping each full length CEA would result in radial or axial power tilts, or oscillations. Therefore individual full length CEAs are exercised every 92 days to provide increased confidence that all full length CEAs continue to be trippable, even if they are not regularly tripped. A movement of [5 inches] is adequate to demonstrate motion without exceeding the alignment limit when only one full length CEA is being moved. The 92 day Frequency takes into consideration other information available to the operator in the control room and other surveillances being performed more frequently,

(continued)