Industry/TSTF Standard Technical Specification Change Traveler

Delete LCO 3.9.1, part b

Priority/Classification 2) Consistency/Standardization

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

Description:

Delete LCO 3.9.1 part b, Boron concentration shall not be reduced unless reactor coolant is circulating.

Justification:

1) This requirement is inherent in the requirements for LCO 3.9.4, DHR and Coolant Circulation - High Water Level and LCO 3.9.5, DHR and Coolant Circulation - Low Water Level,
2) This requirement is not supported by any Required Action or Surveillance Requirement in Specification 3.9.1,
3) The Bases for both LCO 3.9.4 and 3.9.5 explicitly establish, as one of the purposes of those LCOs, that the intent of those LCOs are to provide for mixing of reactor coolant during boron dilution, and
4) The Required Action to suspend operations involving a reduction in boron concentration when reactor coolant is not in circulation are already provided in NUREG-1430, Required Actions for LCOs 3.9.4 and 3.9.5.
This change also establishes consistency with NUREG-1431 for Westinghouse plants and NUREG-1432 for CE plants.

Revision History

OG Revision 0 Revision Status: Active Next Action:

Revision Proposed by: Oconee

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 06-Nov-97

Owners Group Comments
ONS-008

Owners Group Resolution: Approved Date: 06-Nov-97

TSTF Review Information

TSTF Received Date: 06-Nov-97 Date Distributed for Review 15-Dec-97

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

TSTF Comments:
NA BWRs. Makes BWOG consistent with CE and W.

TSTF Resolution: Approved Date: 05-Feb-98

NRC Review Information

NRC Received Date: 10-Mar-98 NRC Reviewer:

NRC Comments:
(No Comments)

Final Resolution: NRC Approves Final Resolution Date: 20-Apr-98

Incorporation Into the NUREGs

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

NUREG Rev Incorporated:

Affected Technical Specifications

LCO 3.9.1	Boron Concentration
LCO 3.9.1 Bases	Boron Concentration

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3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

LCO 3.9.1

a. Boron concentrations of the Reactor Coolant System, the refueling canal, and the refueling cavity shall be maintained within the limit specified in the COLR.

b. Boron concentration shall not be reduced unless reactor coolant is circulating.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Boron concentration not within limit.	A.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2 Suspend positive reactivity additions.	Immediately
	AND	
	A.3 Initiate action to restore boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Verify boron concentration is within the limit specified in the COLR.	72 hours

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BASES

BACKGROUND (continued)

LCO 3.9.4, "DHR and Coolant Circulation—High Water Level," and LCO 3.9.5, "DHR and Coolant Circulation—Low Water Level") to provide forced circulation in the RCS and assist in maintaining the boron concentrations in the RCS, the refueling canal, and the refueling cavity above the COLR limit.

APPLICABLE SAFETY ANALYSES

During refueling operations, the reactivity condition of the core is consistent with the initial conditions assumed for the boron dilution accident in the accident analysis and is conservative for MODE 6. The boron concentration limit specified in the COLR is based on the core reactivity at the beginning of each fuel cycle (the end of refueling) and includes an uncertainty allowance.

The required boron concentration and the unit refueling procedures that demonstrate the correct fuel loading plan (including full core mapping) ensure the k_{eff} of the core will remain ≤ 0.95 during the refueling operation. Hence, at least a 5% $\Delta k/k$ margin of safety is established during refueling.

During refueling, the water volume in the spent fuel pool, the transfer canal, the refueling canal, the refueling cavity, and the reactor vessel form a single mass. As a result, the soluble boron concentration is relatively the same in each of these volumes.

The RCS boron concentration satisfies Criterion 2 of the NRC Policy Statement.

LCO

The LCO requires that a minimum boron concentration be maintained in the RCS, the refueling canal, and the refueling cavity while in MODE 6. The boron concentration limit specified in the COLR ensures a core k_{eff} of ≤ 0.95 is maintained during fuel handling operations.

This LCO also requires that coolant be circulated during any boron dilution. Providing forced coolant circulation during changes in boron concentration ensures mixing of the coolant, eliminating the potential for pockets of diluted, unmixed coolant, which may cause loss of required SDM.

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BASES

LCO (continued)

Adequate mixing prevents stratification to ensure that dilution induced reactivity changes are gradual, as well as recognizable and controllable by the operator. Forced circulation will also ensure that the boron concentration determined by chemical analysis is representative of the entire coolant volume.

Violation of the LCO could lead to an inadvertent criticality during MODE 6.

APPLICABILITY

This LCO is applicable in MODE 6 to ensure that the fuel in the reactor vessel will remain subcritical. The required boron concentration ensures a $k_{eff} \leq 0.95$. Above MODE 6, LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," and LCO 3.1.2, "Reactivity Balance," ensure that an adequate amount of negative reactivity is available to shut down the reactor and to maintain it subcritical.

ACTIONS

A.1 and A.2

Continuation of CORE ALTERATIONS or positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant volume in the RCS, the refueling canal, or the refueling cavity is less than its limit, all operations involving CORE ALTERATIONS or positive reactivity additions must be suspended immediately.

Suspension of CORE ALTERATIONS and positive reactivity additions shall not preclude moving a component to a safe position.

A.3

In addition to immediately suspending CORE ALTERATIONS or positive reactivity additions, action to restore the concentration must be initiated immediately.

In determining the required combination of boration flow rate and concentration, there is no unique Design Basis

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