

applicable, but should include an uncertainty treatment that accounts for the number of failed sensors permitted by the TSs of the plant's applicant.

The licensee stated that the methodology as described in NEDO-32465-A was followed for the PBDA including the analysis of sensor failure in the OPRM system, the cycle-specific analysis for the applicability of the scram setpoints, and the OPRM system operability. This is acceptable because the procedures specified in the approved methodology are used.

- (c) Implementation of Option III will require that the selected bypass region outside of which the detect and suppress action is deactivated be defined in the TSs.

The licensee confirmed that this region is included in surveillance requirement (SR) 3.3.1.3.5. The exclusion region methodology (safety analyses contained in NEDO-31960) would define a curved region on the power to flow operating map cutting across the corner of the map near the intersection of the natural circulation line and the highest flow control line. The staff finds this acceptable because the proposed exclusion region in conjunction with SR 3.3.1.3.5 is consistent with the boundaries discussed in NEDO-32465-A, Section 2.2.

- (d) If the algorithms detect oscillations, an automatic protective action should be initiated. This action may be a full scram or a selected rod insert (SRI).

The licensee confirmed that the automatic protective action of the OPRMs at CPS will be a full reactor scram, rather than an SRI. The staff finds this acceptable because the action is in compliance with GDCs 10 and 12.

- (e) The LPRM groupings defined in NEDO-31960-A to provide input to Option III algorithms are acceptable for the intended oscillation detection function. These LPRM groupings are the oscillation power range monitor for Option III.

The licensee stated that the LPRM assignments in Appendix D of NEDO-32465-A are identified as examples of the expected LPRM assignments that a licensee may choose without identifying the configuration which is used at CPS. The staff has reviewed the licensee's description and finds it acceptable because the configuration chosen is provided as one of the examples in NEDO-32465-A and NEDO-31960-A. However, the final configuration should be documented.

The staff finds that the licensee has adequately demonstrated the applicability of the topical reports by addressing the actions identified in the staff's SERs approving the topical reports.

3. Provide a plant-specific TS for the OPRM functions consistent with CENPD-400-P, Appendix A.

In its submittal, the licensee stated that the proposed TS is consistent with CENPD-400-P, Appendix A, except for the following deviations:

- (a) A new TS for the OPRM instrumentation, which includes the limiting condition for operation (LCO), Applicability, Actions and SRs necessary to define the operability of the OPRM channels, and the actions that must be taken by the plant operators when the instruments become inoperable. TS Section 3.3.1.3 requires four channels of the OPRM instrumentation to be operable when reactor power is 21.6 percent RTP. In addition, a note was added in the ACTIONS section which states that "Separate Condition entry is allowed for each channel."
 - (b) LCOs A, B and C have been added which are consistent with the referenced topical reports.
 - (c) SRs 3.3.1.3.1 through 3.3.1.3.6 have been added. There are some deviations from the referenced topical reports which are addressed in Section 3.2 of this safety evaluation. A note is added which states that "When a channel is placed in an inoperable status solely for performance of required Surveillance, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the OPRM maintains trip capability." Also, a statement is added to SR 3.3.1.3.3 to state that the setpoints for the trip function are specified in the COLR.
 - (d) Pages B 3.3-39a through B 3.3-39k have been added to provide the Bases for TS Section 3.3.1.3.
- (2) Revise TS Section 3.4.1, "Recirculation Loop Operating"

The licensee proposed to delete Figure 3.4.1-1, "Power versus Flow," and associated references to the figure from the LCO 3.4.1, Actions B, C, D, and F, and SR 3.4.1.2, to revise/renumber Actions E and G, and to add new Condition C with associated Action C1.

The staff has reviewed the proposed changes and finds them acceptable because the manual operator actions specified in TS LCO 3.4.1 (and its associated Conditions B, C, D, and F; Actions B.1, C.1, D.1, F.1, G.1, and G.2; and SR 3.4.1.2) are no longer in use due to the automatic functions provided by the OPRM.

- (3) Revise TS Section 5.6.5, "Core Operating Limits Report (COLR)"

The licensee proposed to add: (1) a new TS 5.6.5.a.5 "Oscillation Power Range Monitor (OPRM) Instrumentation;" and (2) a reference was added in TS 5.6.5.b. which is NEDO 32465, "BWR Owners' Group Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications."

The staff has reviewed the proposed changes and finds them acceptable because NEDO-32465 is an approved licensing topical report to support the new proposed TS 3.3.1.3 for determining the setpoint values of the applicable operating limits for OPRMs in the COLR.

3.3 INSTRUMENTATION

3.3.1.3 Oscillation Power Range Monitor (OPRM) Instrumentation

LCO 3.3.1.3 Four channels of the OPRM instrumentation shall be OPERABLE within the limits specified in the COLR.

APPLICABILITY: THERMAL POWER \geq 21.6% RTP.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	30 days
	<u>OR</u>	
	A.2 Place associated RPS trip system in trip.	30 days
	<u>OR</u>	
	A.3 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations.	30 days
B. OPRM trip capability not maintained.	B.1 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations	12 hours
	<u>AND</u>	
	B.2 Restore OPRM trip capability.	120 days
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER < 21.6% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the OPRM maintains trip capability.

SURVEILLANCE	FREQUENCY
SR 3.3.1.3.1 Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.1.3.2 Calibrate the local power range monitors.	1000 MWD/T average core exposure
SR 3.3.1.3.3 -----NOTE----- Neutron detectors are excluded. ----- Perform CHANNEL CALIBRATION. The setpoints for the trip function shall be as specified in the COLR.	24 months
SR 3.3.1.3.4 Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months
SR 3.3.1.3.5 Verify OPRM is not bypassed when THERMAL POWER is \geq 25% RTP and recirculation drive flow is \leq the value corresponding to 60% of rated coreflow.	24 months
SR 3.3.1.3.6 -----NOTE----- Neutron detectors are excluded. ----- Verify the RPS RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR)

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:
 - 1. LCO 3.2.1, Average Planar Linear Heat Generation Rate (APLHGR),
 - 2. LCO 3.2.2, Minimum Critical Power Ratio (MCPR),
 - 3. LCO 3.2.3, Linear Heat Generation Rate (LHGR),
 - 4. LCO 3.3.1.1, RPS Instrumentation (SR 3.3.1.1.14), and
 - 5. LCO 3.3.1.3, Oscillation Power Range Monitor (OPRM) Instrumentation.
- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in
 - (1) General Electric Standard Application for Reactor Fuel (GESTAR), NEDE-24011-P-A, or
 - (2) NEDO-32465, "BWR Owners' Group Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology and Reload Applications."
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

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