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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.

APPLICABILITY: THERMAL POWER  $\geq$  25% RTP.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each channel.  
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CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more 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

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. OPRM trip capability not maintained.</p>	<p>B.1 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations.</p>	<p>12 hours</p>
	<p><u>AND</u></p> <p>B.2 Restore OPRM trip capability.</p>	<p>120 days</p>
<p>C. Required Action and associated Completion Time not met.</p>	<p>C.1 Reduce THERMAL POWER &lt; 25% RTP.</p>	<p>4 hours</p>

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.  
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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 effective full power hours
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 $\geq 28.6\%$ RTP and recirculation drive flow is $< 60\%$ of rated recirculation drive flow.	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

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 Recirculation Loops Operating

LCO 3.4.1 Two recirculation loops with matched flows shall be in operation.

OR

One recirculation loop shall be in operation with the following limits applied when the associated LCO is applicable:

- a. LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," single loop operation limits specified in the COLR;
- b. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," single loop operation limits specified in the COLR;
- c. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)," single loop operation limits specified in the COLR;
- d. LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," Function 2.b (Average Power Range Monitors Flow Biased Simulated Thermal Power – Upscale), Allowable Value of Table 3.3.1.1-1 is reset for single loop operation; and
- e. LCO 3.3.2.1, "Control Rod Block Instrumentation," Function 1.a (Rod Block Monitor – Upscale), Allowable Value of Table 3.3.2.1-1, specified in the COLR, is reset for single loop operation.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. No recirculation loops in operation.	A.1 Be in MODE 3.	12 hours
B. Recirculation loop flow mismatch not within limits.	B.1 Declare the recirculation loop with lower flow to be "not in operation."	2 hours
C. Requirements of the LCO not met for reasons other than Condition A or B.	C.1 Satisfy the requirements of the LCO.	24 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.1.1 -----NOTE-----            Not required to be performed until 24 hours            after both recirculation loops are in            operation.            -----</p> <p>Verify recirculation loop jet pump flow            mismatch with both recirculation loops in            operation is:</p> <p>a. ≤ 10% of rated core flow when            operating at &lt; 70% of rated core flow;            and</p> <p>b. ≤ 5% of rated core flow when operating            at ≥ 70% of rated core flow.</p>	<p>24 hours</p>

5.6 Reporting Requirements

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5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

4. The Rod Block Monitor Upscale Instrumentation Setpoint for the Rod Block Monitor-Upscale Function Allowable Value for Specification 3.3.2.1.
  5. The OPRM setpoints for the trip function for SR 3.3.1.3.3.
- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:
1. ANF-1125(P)(A), "ANFB Critical Power Correlation."
  2. Letter, Ashok C. Thadani (NRC) to R.A. Copeland (SPC), "Acceptance for Referencing of ULTRAFLOW™ Spacer on 9x9-IX/X BWR Design," July 28, 1993.
  3. XN-NF-524(P)(A), "ANF Critical Power Methodology for Boiling Water Reactors."
  4. ANF-913(P)(A), "COTRANSA 2: A Computer Program for Boiling Water Reactor Transient Analysis."
  5. ANF-CC-33(P)(A), "HUXY: A Generalized Multirod Heatup Code with 10 CFR 50, Appendix K Heatup Option."
  6. XN-NF-80-19(P)(A), "Advanced Nuclear Fuel Methodology for Boiling Water Reactors."
  7. XN-NF-85-67(P)(A), "Generic Mechanical Design for Exxon Nuclear Jet Pump BWR Reload Fuel."
  8. ANF-89-014(P)(A), "ANF Corporation Generic Mechanical Design for ANF Corporation 9x9-IX and 9x9-9X BWR Reload Fuel."
  9. EMF-CC-074(P)(A), Volume 4 - "BWR Stability Analysis: Assessment of STAIF with input from MICROBURN-B2."
  10. XN-NF-81-58(P)(A), "RODEX2 Fuel Rod Thermal-Mechanical Response Evaluation Model."
  11. XN-NF-84-105(P)(A), "XCOBRA-T: A Computer Code for BWR Transient Thermal-Hydraulic Core Analysis."

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5.6 Reporting Requirements

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5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

12. ANF-91-048(P)(A), "ANF Corporation Methodology for Boiling Water Reactors EXEM BWR Evaluation Model."
13. EMF-2209(P)(A), "SPCB Critical Power Correlation."
14. ANF-89-98(P)(A), "Generic Mechanical Design Criteria for BWR Fuel Designs."
15. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel."
16. NFSR-0091, "Benchmark of CASMO/MICROBURN BWR Nuclear Design Methods."
17. EMF-1125(P)(A), "ANFB Critical Power Correlation Application for Co-Resident Fuel."
18. ANF-1125(P)(A), "ANFB Critical Power Correlation Determination of ATRIUM-9B Additive Constant Uncertainties."
19. EMF-85-74(P)(A), "RODEX2A (BWR) Fuel Rod Thermal-Mechanical Evaluation Model."
20. EMF-2158(P)(A), "Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2."
21. NEDC-32981P(A), "GEXL96 Correlation for Atrium-9B Fuel."
22. NEDC-33106P, "GEXL97 Correlation for Atrium-10 Fuel."
23. EMF-2245(P)(A), "Application of Siemens Power Corporation's Critical Power Correlations to Co-Resident Fuel."
24. EMF-2361(P)(A), "EXEM BWR-2000 ECCS Evaluation Model."
25. NEDO-32465-A, "BWR Owners' Group Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology and Reload Applications," August 1996.

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## 5.6 Reporting Requirements

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### 5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

The COLR will contain the complete identification for each of the TS referenced topical reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements).

- 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.

### 5.6.6 Post Accident Monitoring (PAM) Instrumentation Report

When a report is required by Condition B or F of LCO 3.3.3.1, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

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