

INSTRUMENTATION

3/4.3.6 CONTROL ROD BLOCK INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.6 The control rod block instrumentation channels shown in Table 3.3.6-1 shall be OPERABLE, with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.6-2.

APPLICABILITY: As shown in Table 3.3.6-1.

ACTION:

- a. With a control rod block instrumentation channel trip setpoint less conservative than the value shown in the Allowable Value column of Table 3.3.6-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, take the ACTION required by Table 3.3.6-1.

SURVEILLANCE REQUIREMENTS

4.3.6.1 Each of the above required control rod block trip systems and instrumentation channels shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.6-1.

4.3.6.2 The provisions of Specification 4.0.4 are not applicable to the Intermediate Range Monitor and Source Range Monitor Surveillance Requirements for entry into OPERATIONAL CONDITION 2 from OPERATIONAL CONDITION 1, provided the surveillances are performed within 12 hours after entering OPERATIONAL CONDITION 2,

and 2#, respectively,

and 2#, respectively.

# With IRMs on range 2 or below.

TABLE 3.3.6-1  
CONTROL ROD BLOCK INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION <sup>(e)</sup>	APPLICABLE OPERATIONAL CONDITIONS	ACTION
1. <u>ROD PATTERN CONTROL SYSTEM</u>			
a. Low Power Setpoint	2	1, 2	60
b. RWL High Power Setpoint	2	1	60
2. <u>APRM</u>			
a. Flow Biased Neutron Flux - Upscale	3	1	61
b. Inoperative	3	1, 2, 5	61
c. Downscale	3	1	61
d. Neutron Flux - Upscale, Startup	3	2, 5	61
3. <u>SOURCE RANGE MONITORS</u>			
a. Detector not full in <sup>(a)</sup>	3	2#	61
	2**	5	62
b. Upscale <sup>(b)</sup>	3	3#	61
	2**	5	62
c. Inoperative <sup>(b)</sup>	3	2#	61
	2**	5	62
d. Downscale <sup>(c)</sup>	3	2#	61
	2**	5	62
4. <u>INTERMEDIATE RANGE MONITORS</u>			
a. Detector not full in	6	2, 5	61
b. Upscale	6	2, 5	61
c. Inoperative	6	2, 5	61
d. Downscale <sup>(d)</sup>	6	2, 5	61
5. <u>SCRAM DISCHARGE VOLUME</u>			
a. Water Level-High	2	1, 2, 5*	62
6. <u>REACTOR COOLANT SYSTEM RECIRCULATION FLOW</u>			
a. Upscale	3	1	62
7. <u>REACTOR MODE SWITCH</u>			
a. Shutdown Mode	2	3, 4	63
b. Refuel Mode	2	5	63

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# With IRMs on range 2 or below.

TABLE 3.3.6-1 (Continued)  
CONTROL ROD BLOCK INSTRUMENTATION

TABLE NOTATIONS

- \* With more than one control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.
  - \*\* OPERABLE channels must be associated with IRMs required OPERABLE per Specification 3.9.2.
- (a) This function shall be automatically bypassed if detector count rate is > 100 cps or the IRM channels are on range 3 or higher.
- (b) This function shall be automatically bypassed when the associated IRM channels are on range 8 or higher.
- (c) This function shall be automatically bypassed when the IRM channels are on range 3 or higher.
- (d) This function shall be automatically bypassed when the IRM channels are on range 1.
- (e) A channel may be placed in an inoperable status for up to 2 hours for required surveillance provided at least one other OPERABLE channel in the same trip function is monitoring that parameter.

ACTION

- ACTION 60 - Declare the RPCS inoperable and take the ACTION required by Specification 3.1.4.2.
- ACTION 61 - With the number of OPERABLE Channels:
- a. One less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 7 days or place the inoperable channel in the tripped condition within the next hour.
  - b. Two or more less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within 1 hour.
- ACTION 62 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within 1 hour.
- ACTION 63 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, initiate a rod block.

TABLE 4.3.6-1

## CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION (a)	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
1. ROD PATTERN CONTROL SYSTEM				
a. Low Power Setpoint	NA	S/U(b)(a) <del>S/U(c), M(d)(a)</del>	R(f)	1, 2
b. RWL High Power Setpoint	NA	S/U(b)(a) <del>S/U(c), M(d)(a)</del>	R(f)	1
2. APRM				
a. Flow Biased Neutron Flux - Upscale	NA	S/U(b), M	SA	1
b. Inoperative	NA	S/U(b), M	NA	1, 2, 5
c. Downscale	NA	S/U(b), M	SA	1
d. Neutron Flux - Upscale, Startup	NA	S/U(b), M	SA	2, 5
3. SOURCE RANGE MONITORS				
a. Detector not full in	NA	<del>S/U(b), W</del>	NA	2, 5
b. Upscale	NA	<del>S/U(b), W</del>	<del>SA R</del>	2, 5
c. Inoperative	NA	<del>S/U(b), W</del>	NA	2, 5
d. Downscale	NA	<del>S/U(b), W</del>	<del>SA R</del>	2, 5
4. INTERMEDIATE RANGE MONITORS				
a. Detector not full in	NA	<del>S/U(b), W</del>	NA	2, 5
b. Upscale	NA	<del>S/U(b), W</del>	<del>SA R</del>	2, 5
c. Inoperative	NA	<del>S/U(b), W</del>	NA	2, 5
d. Downscale	NA	<del>S/U(b), W</del>	<del>SA R</del>	2, 5
5. SCRAM DISCHARGE VOLUME				
a. Water Level-High	S	M	R(f)	1, 2, 5*
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW				
a. Upscale	NA	S/U(b), M	SA	1
7. REACTOR MODE SWITCH				
a. Shutdown Mode	NA	R	NA	3, 4
b. Refuel Mode	NA	R	NA	5

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TABLE 4.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATIONS

- (a) Neutron detectors may be excluded from CHANNEL CALIBRATION.
  - (b) ~~Within 24 hours prior to startup, if not performed within the previous 7 days.~~ 7 days
  - (c) ~~Within one hour prior to control rod movement, unless performed within the previous 24 hours, and as each power range above the RPSS low power setpoint is entered for the first time during any 24-hour period during power increase or decrease. [DELETED]~~
  - (d) ~~At least once per 31 days while operation continues within a given power range above the RPSS low power setpoint. [DELETED]~~
  - (e) ~~Includes reactor manual control multiplexing system input. [DELETED]~~
  - (f) Calibrate the analog trip module at least once per 31 days.
- \* With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

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\* \* With IRMs on range 2 or below.

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SOURCE RANGE MONITORS

LIMITING CONDITION FOR OPERATION

- 3.3.7.6 At least the following source range monitor channels shall be OPERABLE:
- a. In OPERATIONAL CONDITION 2\*, three.
  - b. In OPERATIONAL CONDITIONS 3 and 4, two.

APPLICABILITY: OPERATIONAL CONDITIONS 2\*, 3 and 4.

ACTION:

- a. In OPERATIONAL CONDITION 2\* with one of the above required source range monitor channels inoperable, restore at least three source range monitor channels to OPERABLE status within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours.
- b. In OPERATIONAL CONDITION 3 or 4 with one or more of the above required source range monitor channels inoperable, verify all insertable control rods to be fully inserted in the core and lock the reactor mode switch in the Shutdown position within 1 hour.

SURVEILLANCE REQUIREMENTS

4.3.7.6 Each of the above required source range monitor channels shall be demonstrated OPERABLE by:

- a. Performance of a:
  - 1. CHANNEL CHECK at least once per:
    - a) 12 hours in OPERATIONAL CONDITION 2\* and
    - b) 24 hours in OPERATIONAL CONDITION 3 or 4.
  - 2. CHANNEL CALIBRATION\*\* at least once per 18 months.
- b. Performance of a CHANNEL FUNCTIONAL TEST:
  - 1. Within ~~24 hours~~ 7 days prior to moving the reactor mode switch from the Shutdown position, ~~if not performed within the previous 7 days~~ and
  - 2. At least once per 31 days.
- c. Verifying, prior to withdrawal of control rods, that the SRM count rate is at least 3 cps\*\*\* with the detector fully inserted.

\*With IRMs on range 2 or below.

\*\*Neutron detectors may be excluded from CHANNEL CALIBRATION.

\*\*\*For the initial core loading, the count rate may be reduced to 0.7 cps provided signal to noise ratio is  $\geq 20$ .

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The provisions of Specification 4.0.4 are not applicable for entry into OPERATIONAL CONDITION 2\* or 3 from OPERATIONAL CONDITION 1, provided the surveillance is performed within 12 hours after entering OPERATIONAL CONDITION 2\* or 3.