Final Submittal

BROWNS FERRY EXAM
50-259, 50-260, &
50-296/2004-301

April 23 - 30, 2004

1. Final SRO Written Examination References

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One SLC subsystem inoperable.	A.1	Restore SLC subsystem to OPERABLE status.	7 days
B. Two SLC subsystems inoperable.	B.1	Restore one SLC subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.7.1	Verify available volume of sodium pentaborate solution (SPB) is ≥ 3007 gallons.	24 hours
SR 3.1.7.2	Verify continuity of explosive charge.	31 days
SR 3.1.7.3	Verify the SPB concentration is ≤ 9.2% by weight. OR Verify the concentration and temperature of boron in solution are within the limits of Figure 3.1.7-1.	31 days AND Once within 24 hours after water or boron is added to solution Once within 8 hours after discovery that SPB concentration is > 9.2% by weight AND 12 hours thereafter
SR 3.1.7.4	Verify the minimum quantity of Boron-10 in the SLC solution tank and available for injection is ≥ 186 pounds.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.7.5	Verify the SLC conditions satisfy the following equation: $\frac{(C)(Q)(E)}{(13\ \text{wt. \%})(86\ \text{gpm})(19.8\ \text{atom\%})} \geq 1$ where, C = sodium pentaborate solution concentration (weight percent) Q = pump flow rate (gpm) E = Boron-10 enrichment (atom percent Boron-10)	31 days AND Once within 24 hours after water or boron is added to the solution
SR 3.1.7.6	Verify each pump develops a flow rate ≥ 39 gpm at a discharge pressure ≥ 1325 psig.	24 months
SR 3.1.7.7	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	24 months on a STAGGERED TEST BASIS
SR 3.1.7.8	Verify all piping between storage tank and pump suction is unblocked.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.7.9	Verify sodium pentaborate enrichment is within the limits established by SR 3.1.7.5 by calculating within 24 hours and verifying by analysis within 30 days.	24 months AND After addition to SLC tank
SR 3.1.7.10	Verify each SLC subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position, or can be aligned to the correct position.	31 days

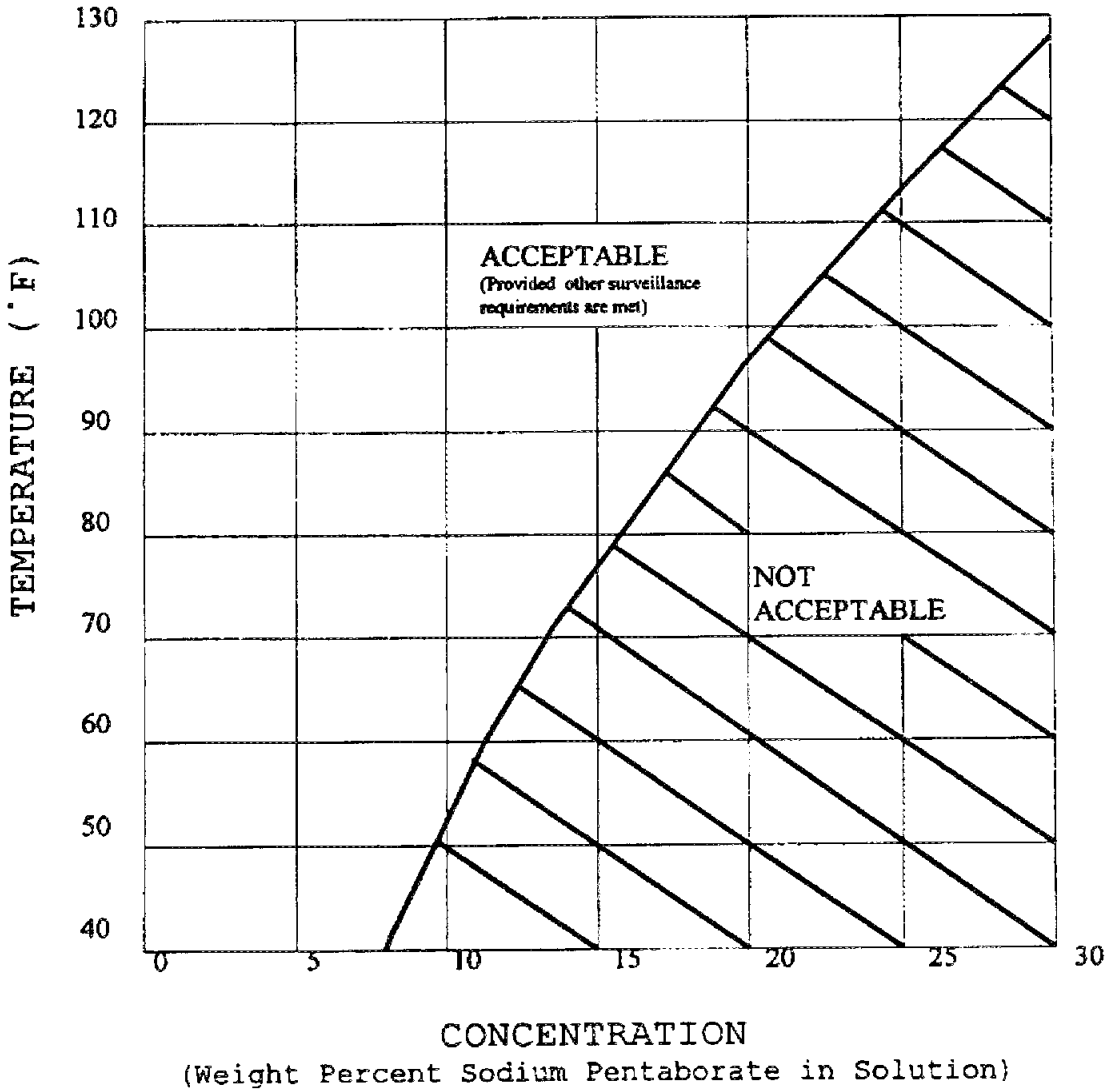


Figure 3.1.7-1
Sodium Pentaborate Solution Temperature Versus Concentration Requirements

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

SURVEILLANCE PROCEDURE

2-SR-3.3.2.1.1

ROD BLOCK MONITOR (RBM) FUNCTIONAL TEST

REVISION 3

QUALITY RELATED

PREPARED BY: EDDIE EVANS

RESPONSIBLE ORGANIZATION: INSTRUMENT MAINTENANCE

APPROVED BY: BARRY MOUSER

EFFECTIVE DATE: 02/02/2000

VALIDATION DATE: _____

LEVEL OF USE: **CONTINUOUS USE**

PAGES AFFECTED: 14,15,27,28,33,36,42,55,56,61,63.

REVISION DESCRIPTION: MANAGEMENT CHANGE REQUEST

IC-005 This revision incorporates comments from performance of unit 3 RBM functional test as observed by a NRC inspector. Comments included combining the two steps where an I.M. would enter the password and then press ENTER, splitting several individual steps into two steps where two actions were contained and renumbered all steps thereafter.

1.0 INTRODUCTION

1.1 Purpose

This RBM functional test is performed to determine the operability of the RBM functions of the Control Rod Block Instrumentation in the Neutron Monitoring System (NMS) and the Reactor Manual Control System (RMCS) in conformance with the requirements specified in Technical Specifications (TS) Section 3.3.2.1 and Table 3.3.2.1-1 and Technical Requirements Manual (TRM) Section TR 3.3.4 and Table 3.3.4-1.

1.2 Scope

This procedure fully satisfies Surveillance Requirement (SR) 3.3.2.1.1 for Rod Block Monitor Channel Functional Test. When Channel Calibration is required, 2-SR-3.3.2.1.4(A) and (B) are performed and together also satisfy the Channel Functional Test requirement. This SR also partially satisfies Technical Surveillance Requirement (TSR) 3.3.4.9 relating to RBM Channel Functional Test.

1.3 Frequency

Once per 184 days.

1.4 Applicability

The following RBM functions are required to be operable in Mode 1 with the indicated condition:

Tech Spec Table 3.3.1.1-1 Function	Required Operable When
1a - Low Power Range - Upscale	RTP $\geq$27% and $\leq$62% and MCPR less than the value specified in COLR
1b - Intermediate Power Range - Upscale	RTP $\geq$62% and $\leq$82% and MCPR less than the value specified in COLR
1c - High Power Range - Upscale	RTP >82% and MCPR less than the value specified in COLR
1d - Inop	RTP $\geq$27% and MCPR less than the value specified in COLR
1e - Downscale	RTP $\geq$27% and MCPR less than the value specified in COLR

2.0 REFERENCES

2.1 BFN Technical Specifications

Section 3.3.2.1, Control Rod Block Instrumentation.

2.2 BFN Technical Requirements Manual

Section TR 3.3.4, Control Rod Block Instrumentation

2.3 BFN Updated Final Safety Analysis Report (FSAR)

Section 7.5, Neutron Monitoring System.

Section 7.7, Reactor Manual Control.

2.4 Plant Instructions

SPP-8.1, Conduct of Testing.

TVAN Writers Manual

SPP-9.5, Temporary Alterations.

SPP-10.3, Verification Program.

2.5 GE Drawings

105E1622 Sheets 1 - 10, Rod Block Monitor System

107E5784 Sheets 1 - 26, Power Range Neutron Monitoring System

2-730E321 Sheets 1-7 and 10-18, Reactor Manual Control System.

2.6 Vendor Manuals

CVM-3184, GEK 103936, Volume V, Power Range Neutron Monitoring System - Rod Block Monitor.

CVM-3184, GEK 103936, Volume VI, Power Range Neutron Monitoring System - Rod Block Monitor Operator Display Assembly.

CVM-3184, GEK 103936, Volume VIII, Power Range Neutron Monitoring System - Quadruple Low Voltage Power Supply Chassis.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 This procedure will sequentially cause RBM A and RBM B to be inoperable. Operability of the opposite channel will not be affected during testing of each RBM channel. All trips are to be reset and the channel returned to fully operable status before starting the next channel.

3.2 When RBMs are required to be operable, both RBM channels must be operable to meet minimum operable channel requirements of TS Table 3.3.2.1-1. Per Surveillance Requirements Note 2 of TS Section 3.3.2.1, when an RBM 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 associated Function maintains control rod block capability.

3.3 Both RBM channels are bypassed when reactor power is ≤ 25 percent (Technical Specification limit of ≤ 27 percent), or when a peripheral control rod is selected.

3.4 If APRM indicated reactor power is below the Low Power setpoint such that the RBMs are in Auto-Bypass, the Low Power setpoint may be reduced to its minimum value of 15%. Reactor Power as indicated on the APRMs must be above the Low Power Auto-Bypass setpoint.

3.5 The following annunciators may alarm during the performance of this procedure:

RBM HIGH/INOP (2-XA-55-5A, Window 24).

RBM DOWNSCALE (2-XA-55-5A, Window 31).

CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7).

3.6 This test provides trip signals to the Reactor Manual Control System (RMCS) for RBM Downscale, High and Inop conditions.

3.7 If maintenance other than what is provided in the Surveillance Procedure is required a Work Order (WO) should be generated.

3.8 If during performance of this procedure it becomes necessary to change test equipment, the identification number and calibration due date for the new test equipment, along with step numbers for which it was used, should be noted in the remarks section of the Surveillance Procedure Review Form. Recalculating the Accuracy Ratio shall be necessary only if the replacement test equipment is a different manufacturer/model.

Date _____

INITIALS

3.0 PRECAUTIONS AND LIMITATIONS (Continued)

3.9 As necessary, when obtaining verification of functions by an operator or another IM, place that person's initials in the blank first and then the initials of the IM receiving the verification following the word "by" or a slash (/).

Examples: OP or IM by IM
OP or IM/IM

3.10 Test deficiencies shall be handled in accordance with SPP-8.1.

4.0 PREREQUISITES

4.1 This copy of 2-SR-3.3.2.1.1 is verified the most current revision. _____

4.2 Reactor power as indicated on APRMs is greater than 15%. _____

5.0 SPECIAL TOOLS AND EQUIPMENT RECOMMENDED

5.1 2 Volt Ohm Meters (VOM), to monitor contact movement.

5.2 Keys for the RBM A and B INOP/OPER keylock switches.

6.0 ACCEPTANCE CRITERIA

6.1 Functions and responses which fail to meet the acceptance criteria stated in Section 6.1 shall constitute unsatisfactory surveillance procedure results and requires immediate notification of Unit Supervisor at time of failure.

NOTE:

Setpoints are software controlled and are stored in the RBM computer memory. Therefore, only the trip outputs are verified during the RBM functional test. In the case where different setpoints actuate the same output relays (i.e., LTSP, ITSP and HTSP), it is not necessary to verify the trip outputs at each setpoint.

6.1.1 When the RBM FLUX signal is decreased to the DOWNSCALE trip setpoint, the following occurs:

6.1.1.1 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) alarms or VOM shows contacts open. (TS & TRM)

6.1.1.2 RBM DNSCL indicating light on Panel 2-9-5 illuminates. (TS & TRM)

6.1.2 When RBM FLUX signal is increased to above the upscale trip setpoint (LTSP, ITSP or HTSP) for the current OLMCPR the following occurs:

6.1.2.1 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) alarms or VOM shows contacts open. (TS & TRM)

6.1.2.2 RBM High indicating light on Panel 2-9-5 illuminates. (TS & TRM)

6.1.3 When the RBM INOP/OPER keylock switch is not in OPER, the following occurs:

6.1.3.1 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) alarms or VOM shows contacts open. (TS & TRM)

6.1.3.2 RBM INOP indicating light on Panel 2-9-5 illuminates. (TS & TRM)

6.1.4 When an ALARM condition exists and the APRM X STP value is raised above the Low Power setpoint, the following occurs:

6.1.4.1 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) alarms or VOM shows contacts open. (TS & TRM)

6.1.4.2 RBM BYPASSED indicating light on Panel 2-9-5 is extinguished. (TS & TRM)

6.0 ACCEPTANCE CRITERIA (Continued)

6.1.5 The RBM Self-Test is functioning in the OPERATE mode so that a Self-Test detected critical fault or an RBM module unplugged would be detected. (TS & TRM)

6.1.6 When less than the required number of LPRMs are available (not bypassed) for the selected control rod, annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) alarms or VOM shows contacts open. (TS & TRM)

6.2 Steps which determine the above criteria are designated by (AC) next to the initial blank.

Date _____

INITIALS

7.0 PROCEDURE STEPS

7.1 **VERIFY** the following conditions are satisfied:

7.1.1 Precautions and Limitations listed in Section 3.0 have been reviewed. _____

7.1.2 Prerequisites listed in Section 4.0 are satisfied. _____

7.1.3 The following annunciators are reset:

7.1.3.1 CONTROL ROD WITHDRAWAL BLOCK 2-XA-55-5A, Window 7). **N/A** if sealed in. _____

7.1.3.2 RBM HIGH/INOP (2-XA-55-5A, Window 24). **N/A** if sealed in. _____

7.1.3.3 RBM DOWNSCALE (2-XA-55-5A, Window 31). **N/A** if sealed in. _____

7.2 Performance of this procedure will sequentially INOP RBM A and RBM B. [NRC/C] **OBTAIN** permission from the Unit Supervisor to perform this procedure. [LER 259/89023].

_____

Unit Supervisor

Date _____

INITIALS

7.0 PROCEDURE STEPS (Continued)

7.3 [NRC/C] **NOTIFY** the Unit Operator (UO) before commencing this procedure. [RPT 82-16, LER 259/82032] _____

7.4 **DISCUSS** with UO the effects of performing this procedure. **GIVE** a copy of Attachment 2, Control Room Components Affected by Surveillance Procedure Performance, and Attachment 3, Instrument Loop Status Sheet, to the UO as a reminder that this channel is in test. _____ UO

7.5 **PERFORM** the following:

7.5.1 **OBTAIN** the keys for the RBM INOP/OPER keylock switches. _____

7.5.2 **RECORD** date and time started, reason for test, plant conditions and any pre-test remarks on Attachment 1, Surveillance Procedure Review Form. **USE** additional sheets as necessary. _____

NOTES:

(1) Failure to satisfactorily complete any step(s) designated by (AC) requires immediate notification of the Unit Supervisor.

(2) Unless otherwise noted actions taken are at Panel 2-9-14 Bay 3.

(3) Indicating light bulbs on Panel 2-9-5 may be replaced as required.

(4) The APRM, LPRM and RBM NUMAC instrument front panel displays will automatically turn off after 15 minutes when in the OPERATE mode with no operator action, alarms, faults or trips. If this occurs during the performance of this procedure, the display may be restored by depressing any key.

(5) The APRM, LPRM and RBM NUMAC instrument front panel displays show active alarms and bypassed conditions in inverse video. Text displayed in normal video indicates a "past" alarm or bypassed condition being stored in memory. The "past" alarms or bypassed conditions may be reset at any time during this procedure by depressing the RESET MEMORY Softkey.

Date _____

INITIALS

NOTES: (Continued)

(6) If at any time during the performance of this procedure, an incorrect Softkey or push button is depressed, the incorrect display or mode may be exited by depressing the EXIT or STOP/RETURN Softkey as required to return to the next menu. The correct display or mode may then be entered by repeating the applicable steps in the procedure without affecting the outcome of the procedure.

(7) Sections 7.6 and 7.7 may be performed in either order. However, once begun, the section being performed must be completed in its entirety and all alarms reset and bypassed conditions restored prior to proceeding to the next channel.

7.6 RBM A Functional Test

NOTE:

The following steps will allow the use of a VOM to check contact action if annunciator CONTROL ROD WITHDRAWAL BLOCK cannot be reset. The appropriate VOM scale should be determined based on whether or not voltage is present.

WARNING

The contacts in the following step may be at a 120 Vac potential with ground.

7.6.1 **IF** annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) cannot be reset, **THEN**

PERFORM Steps 7.6.1.1 and 7.6.1.2. Otherwise, **N/A** the steps and **PROCEED** to Step 7.6.2. _____

7.6.1.1 **CONNECT** VOM #1 to TB3A-21 and TB3A-33 on Panel 2-9-14 Bay 3. _____

7.6.1.2 **CONNECT** VOM #2 to TB3A-29 and TB3A-31 on Panel 2-9-14 Bay 3. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.2 **VERIFY** that the self-test mode is functioning on RBM A by performing the following:

7.6.2.1 **EXIT** any existing display so that the main menu Soft keys are displayed. **N/A** if not required. _____

7.6.2.2 **VERIFY** that RBM A indicates OPERATE on the instrument front panel display. _____

7.6.2.3 **VERIFY** that RBM A indicates OK on the instrument front panel display. _____

7.6.2.4 **VERIFY** that the RBM A INOP indicating light at Panel 2-9-5 is extinguished. _____

7.6.2.5 On 2-RBM-92-5A, **DEPRESS** the ETC Softkey as required so that the SELF-TEST Softkey is displayed. **N/A** if not required. _____

7.6.2.6 On 2-RBM-92-5A, **DEPRESS** the SELF-TEST Soft key. _____

7.6.2.7 **VERIFY** after completing one complete SELF-TEST cycle that there are no faults and that all modules indicate "OK". _____ (AC)

7.6.2.8 On 2-RBM-92-5A, **DEPRESS** the EXIT Soft key to exit the SELF-TEST display. _____

7.6.3 **REQUEST** the UO select a non-peripheral (non-edge) Control Rod. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.4 **VERIFY** the following:

7.6.4.1 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

7.6.4.2 The blue ROD OUT PERMIT indicating light on 2-9-5 is illuminated or VOM #2 connected to TB3A-29 and 31 indicates contacts closed. _____

7.6.5 **INFORM** the Unit Operator of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

CAUTION

If 6 hours elapse between the start of Step 7.6.6 and the completion of Step 7.6.107, the Conditions and Required Actions of Technical Specification LCO 3.3.2.1 may apply. The Unit Supervisor shall be notified if it becomes apparent that the 6 hour time limit will be exceeded between the start of Step 7.6.6 and completion of Step 7.6.107.

7.6.6 On 2-RBM-92-5A, **PLACE** the INOP/OPER keylock switch to INOP.

_____ 1st

_____ 2nd

7.6.7 **RECORD** time that RBM A was removed from service.

_____ Time _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.8 **NOTIFY** the UO that RBM Channel A has been removed from service at _____ (time recorded in Step 7.6.7). _____

7.6.9 **RECORD** the time the UO was notified and the name of the UO (notification must be within 15 minutes of the time recorded in Step 7.6.7).

_____ _____
Time UO Name _____

7.6.10 **VERIFY** the following:

7.6.10.1 RBM A indicates ROD BLOCK, INOP-CAL on the 2-RBM-92-5A front panel display on Panel 2-9-14. _____

7.6.10.2 INOP indicating light for RBM A at Panel 2-9-5 is illuminated. _____ (AC)

7.6.10.3 The blue ROD OUT PERMIT indicating light on 2-9-5 is extinguished or VOM #2 connected to TB3A-29 and 31 indicates contacts open. _____

7.6.10.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) in alarm or VOM #1 connected at TB3A-21 and 33 indicates contacts open. _____ (AC)

7.6.10.5 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) in alarm. _____

7.6.10.6 Computer point RWM013 (ROD OUT BLOCK) indicates BLOCK. **N/A** if the computer is not operable. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.11 **IF** reactor power as indicated on the APRMs is below the Low Power Setpoint so that RBM A is in BYPASS-AUTO, **THEN**

PERFORM Steps 7.6.11.1 through 7.6.11.11. Otherwise, **N/A** Steps 7.6.11.1 through 7.6.11.11 and **PROCEED** to Step 7.6.12. _____

7.6.11.1 On 2-RBM-92-5A, **DEPRESS** the ETC Softkey as required so that the ENTER INOP-SET Softkey is displayed. **N/A** if not required. _____

NOTE:

If an incorrect password is entered, or if the display times out and returns to the RBM Bargraphs display, the following steps 7.6.11.2 and 7.6.11.3 may be repeated as needed to enter the INOP-SET Mode.

7.6.11.2 On 2-RBM-92-5A, **DEPRESS** the ENTER INOP-SET Softkey. _____

7.6.11.3 **ENTER** Password 1234 on the numeric keypad and **DEPRESS** ENT on the numeric keypad. _____

7.6.11.4 **DEPRESS** the cursor keys as required to select the RBM LOW POWER SETPOINTS display.

7.6.11.5 **DEPRESS** the SET PARAMETER Softkey. _____

7.6.11.6 **RECORD** the As Found LOW POWER SETPOINT and LOW TRIP SETPOINT.

_____ 1st

_____ 2nd

LOW POWER SETPOINT =	_____
LOW TRIP SETPOINT =	_____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.11.7 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the LOW POWER SETPOINT. _____

7.6.11.8 **DEPRESS** the UP/DOWN cursor keys as required so that 15.0 is entered as the desired value. _____

7.6.11.9 **DEPRESS** the ACCEPT Softkey. _____

7.6.11.10 **DEPRESS** the EXIT Softkey to return to the INOP-SET MODE OPTIONS display. _____

7.6.11.11 **DEPRESS** the EXIT INOP-SET Softkey. When prompted, **DEPRESS** the YES Softkey to confirm exiting the INOP-SET MODE. _____

7.6.12 On 2-RBM-92-5A, **DEPRESS** the ETC Soft key as required so that the TRIP CHECK Soft key is displayed. **N/A** if not required. _____

7.6.13 On 2-RBM-92-5A, **DEPRESS** the TRIP CHECK Soft key. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

NOTES:

(1) If a valid key is not depressed within 3 minutes, the RBM TRIP CHECK will terminate and return to the TRIP CHECK SELECTIONS display. If this occurs, the UO should be informed that the RBM TRIP CHECK is being restarted and the following steps repeated as required to return to the point in the procedure where the RBM TRIP CHECK was terminated.

(2) When the RBM TRIP CHECK is started, the RBM INOP is automatically bypassed and will remain bypassed as long as the RBM TRIP CHECK is enabled.

(3) The initial default settings in RBM Trip Check will initiate a Downscale Trip if a control rod is selected.

7.6.14 **NOTIFY** the UO of impending RBM DOWNSCALE (2-XA-55-5A, Window 31) annunciation. _____

7.6.15 On 2-RBM-92-5A, **DEPRESS** the START RBM CHECK Softkey. _____

7.6.16 **REQUEST** the UO reset affected annunciators. _____

7.6.17 **VERIFY** the following:

7.6.17.1 RBM A INOP indicating light on Panel 2-9-5 is extinguished. _____

7.6.17.2 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is reset. **N/A** if sealed in from the other channel. _____

7.6.18 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX parameter. _____

7.6.19 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX value is raised to approximately 100%. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.20 **REQUEST** UO reset affected annunciators. _____

7.6.21 **VERIFY** annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

7.6.22 **NOTIFY** UO of impending RBM HIGH/INOP (2-XA-55-5A, Window 24) and CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) annunciations. _____

NOTE:

A solid square will appear over the bargraph at the trip point when the trip setpoint is reached. When the trip is reset, the solid square will change to a hollow square and will remain on the display.

7.6.23 On 2-RBM-92-5A, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX parameter. _____

7.6.24 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX value is raised until the High Power Trip Setpoint is reached. _____

7.6.25 **VERIFY** the following:

7.6.25.1 RBM A HIGH indicating light on Panel 2-9-5 is illuminated. _____ (AC)

7.6.25.2 ROD BLOCK is indicated on 2-MON-92-5A. _____

7.6.25.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is in alarm or VOM #1 connected at TB3A-21 and 33 indicates contacts open. _____ (AC)

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.25.4 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is in alarm. _____

7.6.25.5 Computer point RWM013 (ROD OUT BLOCK) indicates BLOCK. **N/A** if the computer is not operable. _____

7.6.26 On 2-RBM-92-5A, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX parameter. _____

7.6.27 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX value is lowered to approximately 100%. _____

7.6.28 **REQUEST** UO reset affected annunciators. _____

7.6.29 **VERIFY** annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

7.6.30 **NOTIFY** UO of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM DOWNSCALE (2-XA-55-5A, Window 31) annunciations. _____

7.6.31 On 2-RBM-92-5A, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX parameter. _____

7.6.32 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX value is lowered until the Downscale Rod Block Setpoint is reached. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.33 **VERIFY** the following:

7.6.33.1 RBM A DNSCL indicating light on Panel 2-9-5 is illuminated. _____ (AC)

7.6.33.2 ROD BLOCK is indicated on 2-MON-92-5A. _____

7.6.33.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is in alarm or VOM #1 connected at TB3A-21 and 33 indicates contacts open. _____ (AC)

7.6.33.4 Annunciator RBM DOWNSCALE (2-XA-55-5A, Window 31) in alarm. _____

7.6.33.5 Computer point RWM013 (ROD OUT BLOCK) indicates BLOCK. **N/A** if the computer is not operable. _____

7.6.34 On 2-RBM-92-5A, **DEPRESS** the NEXT BARGRAPH Softkey as required so that the ARPM X STP BARGRAPH is selected. _____

7.6.35 On 2-RBM-92-5A, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the APRM X STP parameter. _____

7.6.36 **DEPRESS** the UP/DOWN cursor keys as required so that the APRM X STP value is lowered below the Low Power Setpoint. _____

7.6.37 **REQUEST** UO reset affected annunciators. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.38 **VERIFY** the following:

7.6.38.1 RBM A BYPASSED indicating light on Panel 2-9-5 is illuminated. _____

7.6.38.2 RBM A DOWNSCALE indicating light on Panel 2-9-5 is extinguished. _____

7.6.38.3 RBM A BYPASSED-AUTO is indicated on 2-MON-92-5A. _____

7.6.38.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

7.6.38.5 Annunciator RBM DOWNSCALE (2-XA-55-5A, Window 31) is reset. **N/A** if sealed in from the other channel. _____

7.6.38.6 Computer point RWM013 (ROD OUT BLOCK) indicates NOBLOCK. **N/A** if the computer is not operable. _____

7.6.39 **NOTIFY** UO of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM DOWNSCALE (2-XA-55-5A, Window 31) annunciations. _____

7.6.40 On 2-RBM-92-5A, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the APRM X STP parameter. _____

7.6.41 **DEPRESS** the UP/DOWN cursor keys as required so that the APRM X STP value is raised until the Low Power Setpoint is just exceeded. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.42 **VERIFY** the following:

7.6.42.1 RBM A BYPASSED indicating light on Panel 2-9-5 is extinguished. _____ (AC)

7.6.42.2 RBM A DOWNSCALE indicating light on Panel 2-9-5 is illuminated. _____

7.6.42.3 RBM A BYPASSED-AUTO is not indicated on 2-MON-92-5A. _____

7.6.42.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is in alarm or VOM #1 connected at TB3A-21 and 33 indicates contacts open. _____ (AC)

7.6.42.5 Annunciator RBM DOWNSCALE (2-XA-55-5A, Window 31) is in alarm. **N/A** if sealed in from the other channel. _____

7.6.42.6 Computer point RWM013 (ROD OUT BLOCK) indicates BLOCK. **N/A** if the computer is not operable. _____

7.6.43 On 2-RBM-92-5A, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the APRM X STP parameter. _____

7.6.44 **DEPRESS** the UP/DOWN cursor keys as required so that the APRM X STP value is lowered below the Low Power Setpoint. _____

7.6.45 **REQUEST** UO reset affected annunciators. _____

7.6.46 **NOTIFY** UO of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

7.6.47 **DEPRESS** the STOP/RETURN Softkey. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.48 **DEPRESS** the EXIT Softkey. _____

7.6.49 **REQUEST** UO deselect the Control Rod and reset affected annunciators. _____

7.6.50 **VERIFY** the following:

7.6.50.1 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) in alarm or VOM #1 connected at TB3A-21 and 33 indicates contacts open _____

7.6.50.2 The blue ROD OUT PERMIT indicating light on Panel 2-9-5 is extinguished or VOM #2 connected to TB3A-29 and 31 indicates contacts open. _____

7.6.51 **REQUEST** UO select a peripheral (edge) Control Rod. _____

7.6.52 **REQUEST** UO reset affected annunciators. _____

7.6.53 **VERIFY** the following:

7.6.53.1 RBM A BYPASSED indicating light on Panel 2-9-5 is illuminated. _____

7.6.53.2 BYPASSED-AUTO is indicated on 2-MON-92-5A. _____

7.6.53.3 The blue ROD OUT PERMIT indicating light on 2-9-5 is illuminated or VOM #2 connected to TB3A-29 and 31 indicates contacts closed. _____

7.6.53.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.53.5 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is reset. **N/A** if sealed in from other channel. _____

7.6.53.6 Computer point RWM013 (ROD OUT BLOCK) indicates NOBLOCK. **N/A** if the computer is not operable. _____

7.6.54 **INFORM** the Unit Operator of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

7.6.55 **REQUEST** UO de-select the peripheral (edge) Control Rod. _____

7.6.56 On 2-RBM-92-5A, **DEPRESS** the ETC Softkey as required so that the ENTER INOP-SET Softkey is displayed. **N/A** if not required. _____

NOTE:

If an incorrect password is entered, or if the display times out and returns to the RBM Bargraphs display, the following steps 7.6.57 and 7.6.58 may be repeated as needed to enter the INOP-SET Mode.

7.6.57 On 2-RBM-92-5A, **DEPRESS** the ENTER INOP-SET Softkey. _____

7.6.58 **ENTER** Password 1234 on the numeric keypad and **DEPRESS** ENT on the numeric keypad. _____

7.6.59 On 2-RBM-92-5A, **DEPRESS** the cursor keys as required to select the RBM FLUX FILTER AND ROD BLOCK TIME DELAY display. _____

7.6.60 **DEPRESS** the SET PARAMETERS Softkey. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.61 **RECORD** the As Found RBM FLUX FILTER TIME CONSTANT and ROD BLOCK TIME DELAY. _____ 1st _____ 2nd

RBM FLUX FILTER TIME CONSTANT = _____

ROD BLOCK TIME DELAY = _____

7.6.62 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX FILTER parameter. _____

7.6.63 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX FILTER TIME CONSTANT is set to 0.5 sec. _____

7.6.64 **DEPRESS** the ACCEPT Softkey. _____

7.6.65 **DEPRESS** the EXIT Softkey to return to the INOP-SET MODE OPTIONS display. _____

7.6.66 **DEPRESS** the EXIT INOP-SET Softkey. When prompted, **DEPRESS** the YES Softkey to confirm exiting the INOP-SET MODE. _____

7.6.67 On 2-RBM-92-5A, **PLACE** the INOP/OPER keylock switch to OPER. _____ 1st _____ 2nd

7.6.68 **REQUEST** UO reset affected annunciators. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.69 **VERIFY** the following:

7.6.69.1 RBM A indicates OPERATE on the 2-RBM-92-5A front panel display on Panel 2-9-14. _____

7.6.69.2 INOP indicating light for RBM A at Panel 2-9-5 is extinguished. _____

7.6.69.3 The blue ROD OUT PERMIT indicating light on Panel 2-9-5 is extinguished or VOM #2 connected to TB3A-29 and 31 indicates contacts open. _____

7.6.69.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

7.6.69.5 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is reset. _____

7.6.69.6 Computer point RWM013 (ROD OUT BLOCK) indicates NOBLOCK. **N/A** if the computer is not operable. _____

NOTE:

An accurate measurement of the Null Initiate Time Delay in Step 7.6.71 is not required for satisfactory performance of the step.

7.6.70 While monitoring the blue ROD OUT PERMIT light on Panel 2-9-5 or VOM #2 connected to TB3A-29 and 31, **REQUEST** UO select a non-peripheral (non-edge) Control Rod. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.71 **VERIFY** that after approximately 5 sec the ROD OUT PERMIT indicating light on Panel 2-9-5 is illuminated or VOM #2 connected to TB3A-29 and 31 indicates that the contacts closed. _____

7.6.72 **REQUEST** UO deselect the Control Rod. _____

7.6.73 **INFORM** the Unit Operator of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

7.6.74 On 2-RBM-92-5A, **PLACE** the INOP/OPER keylock switch to INOP.

_____ 1st

_____ 2nd

7.6.75 On 2-RBM-92-5A, **DEPRESS** the ETC Softkey as required so that the ENTER INOP-SET Softkey is displayed. **N/A** if not required. _____

NOTE:

If an incorrect password is entered, or if the display times out and returns to the RBM Bargraphs display, the following steps 7.6.76 and 7.6.77 may be repeated as needed to enter the INOP-SET Mode.

7.6.76 On 2-RBM-92-5A, **DEPRESS** the ENTER INOP-SET Softkey. _____

7.6.77 **ENTER** Password 1234 on the numeric keypad and **DEPRESS** ENT on the numeric keypad. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.78 On 2-RBM-92-5A, **DEPRESS** the cursor keys as required to select the RBM FLUX FILTER AND ROD BLOCK TIME DELAY display. _____

7.6.79 **DEPRESS** the SET PARAMETERS Softkey. _____

7.6.80 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX FILTER parameter. _____

7.6.81 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX FILTER TIME CONSTANT is set to the As Found value recorded in Step 7.6.61. _____

7.6.82 **DEPRESS** the ACCEPT Softkey. _____

7.6.83 **VERIFY** that the RBM FLUX FILTER TIME CONSTANT and ROD BLOCK TIME DELAY values displayed on 2-RBM-92-5A match the As Found values recorded in Step 7.6.61. _____ IV

7.6.84 **DEPRESS** the EXIT Softkey to return to the INOP-SET MODE OPTIONS display. _____

7.6.85 **IF** the Low Power Setpoint was reduced in Step 7.6.11.7, **THEN**

RESTORE the Low Power Setpoint to its desired value by performing Steps 7.6.85.1 through 7.6.85.7. Otherwise, **N/A** Steps 7.6.85.1 through 7.6.85.7 and **PROCEED** to Step 7.6.86. _____

7.6.85.1 **DEPRESS** the cursor keys as required to select the RBM LOW POWER SETPOINTS display. _____

7.6.85.2 **DEPRESS** the SET PARAMETER Softkey. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.85.3 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the LOW POWER SETPOINT.

7.6.85.4 **DEPRESS** the UP/DOWN cursor keys as required so that the As Found value recorded in Step 7.6.11.6 is entered. _____

7.6.85.5 **DEPRESS** the ACCEPT Softkey. _____

7.6.85.6 **VERIFY** that the LOW POWER SETPOINT and LOW TRIP SETPOINT values displayed on 2-RBM-92-5A match the As Found values recorded in Step 7.6.11.6. _____ IV

7.6.85.7 **DEPRESS** the EXIT Softkey to return to the INOP-SET MODE OPTIONS display. _____

7.6.86 **DEPRESS** the EXIT INOP-SET Softkey. When prompted, **DEPRESS** the YES Softkey to confirm exiting the INOP-SET MODE. _____

7.6.87 **PLACE** the INOP/OPER keylock switch to OPER. _____ 1st

_____ 2nd

7.6.88 **REQUEST** UO reset affected annunciators. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.89 **VERIFY** the following:

7.6.89.1 RBM A indicates OPERATE on the 2-RBM-92-5A front panel display on Panel 2-9-14. _____

7.6.89.2 INOP indicating light for RBM A at Panel 2-9-5 is extinguished. _____

7.6.89.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

7.6.89.4 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is reset. **N/A** if sealed in from other channel. _____

7.6.90 **REQUEST** UO select a non-peripheral (non-edge) Control Rod. _____

7.6.91 From 2-RBM-92-5A RBM BARGRAPHS display, **RECORD** the following numbers:

LPRMS IN RBM AVERAGE = _____

MINIMUM LPRMS ALLOWED = _____ _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

NOTE:

The LPRMs assigned to RBM A are displayed on both RBM A and RBM B. The LPRM BARGRAPHS Display for both RBMs will have to be selected to display all of the LPRMs assigned to RBM A. Information for the A level detectors are shown on the LPRM BARGRAPHS display even though the A level detectors are not used in the RBM flux calculation.

7.6.92 **SELECT** the RBM A LPRM BARGRAPHS display by performing the following:

7.6.92.1 On 2-RBM-92-5A, **DEPRESS** the ETC Softkey as required so that the LPRM BARGRAPHS Softkey is displayed. _____

7.6.92.2 On 2-RBM-92-5A, **DEPRESS** the LPRM BARGRAPHS Softkey. _____

7.6.93 **SELECT** the RBM B LPRM BARGRAPHS display by performing the following:

7.6.93.1 On 2-RBM-92-5B, **DEPRESS** the ETC Softkey as required so that the LPRM BARGRAPHS Softkey is displayed. _____

7.6.93.2 On 2-RBM-92-5B, **DEPRESS** the LPRM BARGRAPHS Softkey. _____

NOTE:

The LPRMs assigned to RBM A are identified on the LPRM BARGRAPHS display by an "A" in the RBM column.

7.6.94 **RECORD** the LPRM numbers assigned to RBM A (from both 2-RBM-92-5A and 5B) in Table 7-6-1. _____

Date ______________

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.95 From Illustration 2, **DETERMINE** the APRM or LPRM chassis to which each LPRM (recorded in Step 7.6.94) is assigned and **RECORD** the APRM or LPRM chassis number in Table 7-6-1. ______

NOTE:

In Table 7-6-1, the term BYPASSED is inclusive of all LPRM BYPASSED states (i.e. BYP/INOP, BYP/HV ON, BYP/HV OFF, etc.).

7.6.96 **RECORD** the As Found LPRM status (OPERATE or BYPASSED) in Table 7-6-1. ______

Table 7-6-1					
LPRMs for SELECTED ROD ASSIGNED TO RBM A	ASSIGNED TO APRM/LPRM CHASSIS	AS FOUND		AS LEFT	
		STATUS	Verified by 1ST/2ND	STATUS	Verified by 1ST/2ND
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.97 **INFORM** the Unit Supervisor that Section 7.6.99 will place the LPRMs listed in Table 7-6-1 in BYPASS until a low LPRM count Rod Block is received from RBM A. This will require entering the BYPASS SELECTIONS display on each of the APRM/LPRM chassis listed in Table 7-6-1. The potential exists to cause an APRM INOP condition depending on the number of assigned LPRM detectors currently in BYPASS.
OBTAIN permission from the Unit Supervisor to perform Section 7.6.99 and to continue with this procedure.

_____
Unit Supervisor

7.6.98 **NOTIFY** the UO of impending CONTROL ROD WITHDRAWL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

NOTE:

The APRM or LPRM chassis to which each LPRM detector is assigned is listed in Illustration 2. The LPRM detectors assigned to RBM A will be bypassed at the APRM or LPRM chassis for that detector.

CAUTION

When bypassing LPRMs for the following check, careful attention must be paid to the corresponding APRM voter chassis to ensure that no INOP Trips are registered. In the event that any APRM chassis registers a trip, this procedure must be immediately stopped and an Instrument Foreman or responsible engineer notified prior to performing any other actions.

7.6.99 **REDUCE** the number of operable LPRMs assigned to RBM A to less than the minimum number required (recorded in Step 7.6.91) by performing the following:

7.6.99.1 On the desired APRM or LPRM chassis listed in Table 7-6-1, **DEPRESS** ETC Softkey as required so that the BYPASS SELECTIONS Softkey is displayed.

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

NOTE:

If an incorrect password is entered, or if the display times out and returns to the APRM (or LPRM) Bargraphs display, the following steps 7.6.99.2 and 7.6.99.3 may be repeated as needed to enter BYPASS SELECTIONS.

7.6.99.2 On the desired APRM or LPRM chassis, **DEPRESS** the BYPASS SELECTIONS Softkey.

7.6.99.3 **ENTER** Password 1234 on the numeric keypad and **DEPRESS** ENT on the numeric keypad.

7.6.99.4 On the desired APRM or LPRM chassis, **PLACE** the operating LPRM in BYPASS by using the left and right cursor keys to SELECT the LPRM.

7.6.99.5 **DEPRESS** the BYPASS/HV ON Softkey.

7.6.99.6 On 2-RBM-92-5A or 5B, **VERIFY** that the LPRM STATUS changes from OPERATE to BYP/HV ON.

7.6.99.7 **REPEAT** Steps 7.6.99.1 through 7.6.99.6 until less than the minimum number of LPRMs are in OPERATE. _____

7.6.100 **VERIFY** the following:

7.6.100.1 RBM A INOP indicating light on Panel 2-9-5 is illuminated. _____

7.6.100.2 ROD BLOCK is indicated on 2-MON-92-5A. _____

7.6.100.3 ROD OUT PERMIT indicating light on Panel 2-9-5 is extinguished or VOM #2 connected to TB3A-29 and 31 indicates contacts open. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.100.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is in alarm or VOM #1 connected at TB3A-21 and 33 indicates contacts open. _____ (AC)

7.6.100.5 Annunciator RBM HIGH/INOP(2-XA-55-5A, Window 24) is in alarm. _____

7.6.101 **REQUEST** UO deselect the control rod and reset affected annunciators. _____

7.6.102 **VERIFY** the following:

7.6.102.1 RBM A INOP indicating light on Panel 2-9-5 is extinguished. _____

7.6.102.2 ROD BLOCK indication on 2-MON-92-5A is reset. _____

7.6.102.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

7.6.102.4 Annunciator RBM HIGH/INOP(2-XA-55-5A, Window 24) is reset unless sealed in from the other channel. _____

7.6.102.5 Computer point RWM013 (ROD OUT BLOCK) indicates NOBLOCK. **N/A** if the computer is not operable. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.103 **RESTORE** the LPRMs assigned to RBM A to their As Found status recorded in Table 7-6-1 by performing the following:

7.6.103.1 On the desired APRM or LPRM chassis, **PLACE** the LPRM in OPERATE by using the left and right cursor keys to SELECT the LPRM.

7.6.103.2 **DEPRESS** the OPERATE Softkey

7.6.103.3 On the APRM or LPRM BYPASS SELECTIONS Display, **VERIFY** that the LPRM STATUS changes from BYP/HV ON to OPERATE.

7.6.103.4 **REPEAT** Steps 7.6.103.1 through 7.6.103.3 until all of the affected LPRMs have been restored to their As Found status. _____

7.6.103.4 **RECORD** the LPRM As Left status in Table 7-6-1. _____

7.6.103.5 On the APRM, LPRM and RBM chassis affected by this step, **DEPRESS** the EXIT Softkey. _____

7.6.103.6 **VERIFY** that the BYPASS SELECTIONS Display has been exited on each APRM or LPRM affected by this section. _____ 1st

_____ 2nd

7.6.104 **REQUEST** the UO reset affected annunciators and to select TRIP STATUS on 2-MON-92-5A and 5B and reset the Trip Memory. _____

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.105 On 2-RBM-92-5A, **PERFORM** the following:

7.6.105.1 **DEPRESS** the ETC Softkey as required so that the TRIP STATUS Softkey is displayed. **N/A** if not required. _____

7.6.105.2 **DEPRESS** the TRIP STATUS Softkey. _____

7.6.105.3 **DEPRESS** the RESET MEMORY Softkey. _____

7.6.105.4 **DEPRESS** the EXIT Softkey. _____

7.6.106 On 2-RBM-92-5B, **PERFORM** the following:

7.6.106.1 **DEPRESS** the ETC Softkey as required so that the TRIP STATUS Softkey is displayed. **N/A** if not required. _____

7.6.106.2 **DEPRESS** the TRIP STATUS Softkey. _____

7.6.106.3 **DEPRESS** the RESET MEMORY Softkey. _____

7.6.106.4 **DEPRESS** the EXIT Softkey. _____

7.6.107 **REMOVE** or **VERIFY** that the key has been removed from the INOP/OPER keylock switch on 2-RBM-92-5A.

_____ 1st

_____ 2nd

Date _____

INITIALS

7.6 RBM A Functional Test (Continued)

7.6.108 **RECORD** time channel returned to service.

_____
Time _____

7.6.109 **NOTIFY** the UO that RBM Channel A has been returned to service at _____(time recorded in Step 7.6.108).

_____
UO Name _____

7.6.110 **REMOVE** VOM #1 from TB3A-21 and 33, and VOM #2 from TB3A-29 and 31 if installed in Step 7.6.1. Otherwise, **N/A** this step. _____

Date _____

INITIALS

7.7 RBM B Functional Test

The following steps will allow the use of a VOM to check contact action if annunciator CONTROL ROD WITHDRAWAL BLOCK cannot be reset. The appropriate VOM scale should be determined based on whether or not voltage is present.

WARNING

The contacts in the following step may be at a 120 Vac potential with ground.

7.7.1 **IF** annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) cannot be reset, **THEN**

PERFORM Steps 7.7.1.1 and 7.7.1.2. Otherwise, **N/A** the steps and **PROCEED** to Step 7.7.2. _____

7.7.1.1 **CONNECT** VOM #1 to TB3B-21 and TB3B-33 on Panel 2-9-14 Bay 3. _____

7.7.1.2 **CONNECT** VOM #2 to TB3B-29 and TB3B-31 on Panel 2-9-14 Bay 3. _____

7.7.2 **VERIFY** that the self-test mode is functioning on RBM B by performing the following:

7.7.2.1 **EXIT** any existing display so that the main menu Soft keys are displayed. **N/A** if not required. _____

7.7.2.2 **VERIFY** that RBM B indicates OPERATE on the instrument front panel display. _____

7.7.2.3 **VERIFY** that RBM B indicates OK on the instrument front panel display. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.2.4 **VERIFY** that the RBM B INOP indicating light at Panel 2-9-5 is extinguished. _____

7.7.2.5 On 2-RBM-92-5B, **DEPRESS** the ETC Softkey as required so that the SELF-TEST Softkey is displayed. **N/A** if not required. _____

7.7.2.6 On 2-RBM-92-5B, **DEPRESS** the SELF-TEST Soft key. _____

7.7.2.7 **VERIFY** after completing one complete SELF-TEST cycle that there are no faults and that all modules indicate "OK". _____ (AC)

7.7.2.8 On 2-RBM-92-5B, **DEPRESS** the EXIT Soft key to exit the SELF-TEST display. _____

7.7.3 **REQUEST** the UO select a non-peripheral (non-edge) Control Rod. _____

7.7.4 **VERIFY** the following:

7.7.4.1 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3B-21 and 33 indicates contacts closed. _____

7.7.4.2 The blue ROD OUT PERMIT indicating light on 2-9-5 is illuminated or VOM #2 connected to TB3B-29 and 31 indicates contacts closed. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.5 **INFORM** the Unit Operator of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

CAUTION

If 6 hours elapse between the start of Step 7.7.6 and the completion of Step 7.7.107, the Conditions and Required Actions of Technical Specification LCO 3.3.2.1 may apply. The Unit Supervisor shall be notified if it becomes apparent that the 6 hour time limit will be exceeded between the start of Step 7.7.6 and completion of Step 7.7.107.

7.7.6 On 2-RBM-92-5B, **PLACE** the INOP/OPER keylock switch to INOP.

_____ 1st

_____ 2nd

7.7.7 **RECORD** time that RBM B was removed from service.

_____
Time _____

7.7.8 **NOTIFY** the UO that RBM Channel B has been removed from service at _____ (time recorded in Step 7.7.7). _____

7.7.9 **RECORD** the time the UO was notified and the name of the UO (notification must be within 15 minutes of the time recorded in Step 7.7.7).

_____ _____
Time UO Name _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.10 **VERIFY** the following:

7.7.10.1 RBM B indicates ROD BLOCK, INOP-CAL on the 2-RBM-92-5B front panel display on Panel 2-9-14. _____

7.7.10.2 INOP indicating light for RBM B at Panel 2-9-5 is illuminated. _____ (AC)

7.7.10.3 The blue ROD OUT PERMIT indicating light on 2-9-5 is extinguished or VOM #2 connected to TB3B-29 and 31 indicates contacts open. _____

7.7.10.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) in alarm or VOM #1 connected at TB3B-21 and 33 indicates contacts open. _____ (AC)

7.7.10.5 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) in alarm. _____

7.7.10.6 Computer point RWM013 (ROD OUT BLOCK) indicates BLOCK. **N/A** if the computer is not operable. _____

7.7.11 **IF** reactor power as indicated on the APRMs is below the Low Power Setpoint so that RBM B is in BYPASS-AUTO, **THEN**

PERFORM Steps 7.7.11.1 through 7.7.11.11. Otherwise, **N/A** Steps 7.7.11.1 through 7.7.11.11 and **PROCEED** to Step 7.7.12. _____

7.7.11.1 On 2-RBM-92-5B, **DEPRESS** the ETC Softkey as required so that the ENTER INOP-SET Softkey is displayed. **N/A** if not required. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

NOTE:

If an incorrect password is entered, or if the display times out and returns to the RBM Bargraphs display, the following steps 7.7.11.2 and 7.7.11.3 may be repeated as needed to enter the INOP-SET Mode.

7.7.11.2 On 2-RBM-92-5B, **DEPRESS** the ENTER INOP-SET Softkey. _____

7.7.11.3 **ENTER** Password 1234 on the numeric keypad and **DEPRESS** ENT on the numeric keypad. _____

7.7.11.4 **DEPRESS** the cursor keys as required to select the RBM LOW POWER SETPOINTS display. _____

7.7.11.5 **DEPRESS** the SET PARAMETER Softkey. _____

7.7.11.6 **RECORD** the As Found LOW POWER SETPOINT and LOW TRIP SETPOINT.

_____ 1st

_____ 2nd

LOW POWER SETPOINT =	_____
LOW TRIP SETPOINT =	_____

7.7.11.7 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the LOW POWER SETPOINT. _____

7.7.11.8 **DEPRESS** the UP/DOWN cursor keys as required so that 15.0 is entered as the desired value. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.11.9 **DEPRESS** the ACCEPT Softkey. _____

7.7.11.10 **DEPRESS** the EXIT Softkey to return to the INOP-SET MODE OPTIONS display. _____

7.7.11.11 **DEPRESS** the EXIT INOP-SET Softkey. When prompted, **DEPRESS** the YES Softkey to confirm exiting the INOP-SET MODE. _____

7.7.12 On 2-RBM-92-5B, **DEPRESS** the ETC Soft key as required so that the TRIP CHECK Soft key is displayed. **N/A** if not required. _____

7.7.13 On 2-RBM-92-5B, **DEPRESS** the TRIP CHECK Soft key. _____

NOTES:

(1) If a valid key is not depressed within 3 minutes, the RBM TRIP CHECK will terminate and return to the TRIP CHECK SELECTIONS display. If this occurs, the UO should be informed that the RBM TRIP CHECK is being restarted and the following steps repeated as required to return to the point in the procedure where the RBM TRIP CHECK was terminated.

(2) When the RBM TRIP CHECK is started, the RBM INOP is automatically bypassed and will remain bypassed as long as the RBM TRIP CHECK is enabled.

(3) The initial default settings in RBM Trip Check will initiate a Downscale Trip if a control rod is selected.

7.7.14 **NOTIFY** the UO of impending RBM DOWNSCALE (2-XA-55-5A, Window 31) annunciation. _____

7.7.15 On 2-RBM-92-5B, **DEPRESS** the START RBM CHECK Softkey. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.16 **REQUEST** the UO reset affected annunciators. _____

7.7.17 **VERIFY** the following:

7.7.17.1 RBM B INOP indicating light on Panel 2-9-5 is extinguished. _____

7.7.17.2 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is reset. **N/A** if sealed in from the other channel. _____

7.7.18 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX parameter. _____

7.7.19 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX value is raised to approximately 100%. _____

7.7.20 **REQUEST** UO reset affected annunciators. _____

7.7.21 **VERIFY** annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3B-21 and 33 indicates contacts closed. _____

7.7.22 **NOTIFY** UO of impending RBM HIGH/INOP (2-XA-55-5A, Window 24) and CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) annunciations. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

NOTE:

A solid square will appear over the bargraph at the trip point when the trip setpoint is reached. When the trip is reset, the solid square will change to a hollow square and will remain on the display.

7.7.23 On 2-RBM-92-5B, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX parameter. _____

7.7.24 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX value is raised until the High Power Trip Setpoint is reached. _____

7.7.25 **VERIFY** the following:

7.7.25.1 RBM B HIGH indicating light on Panel 2-9-5 is illuminated. _____ (AC)

7.7.25.2 ROD BLOCK is indicated on 2-MON-92-5B. _____

7.7.25.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is in alarm or VOM #1 connected at TB3B-21 and 33 indicates contacts open. _____ (AC)

7.7.25.4 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is in alarm. _____

7.7.25.5 Computer point RWM013 (ROD OUT BLOCK) indicates BLOCK. **N/A** if the computer is not operable. _____

7.7.26 On 2-RBM-92-5B, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX parameter. _____

7.7.27 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX value is lowered to approximately 100%. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.28 **REQUEST** UO reset affected annunciators. _____

7.7.29 **VERIFY** annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3B-21 and 33 indicates contacts closed. _____

7.7.30 **NOTIFY** UO of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM DOWNSCALE (2-XA-55-5A, Window 31) annunciations. _____

7.7.31 On 2-RBM-92-5B, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX parameter. _____

7.7.32 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX value is lowered until the Downscale Rod Block Setpoint is reached. _____

7.7.33 **VERIFY** the following:

7.7.33.1 RBM B DNSCL indicating light on Panel 2-9-5 is illuminated. _____ (AC)

7.7.33.2 ROD BLOCK is indicated on 2-MON-92-5B. _____

7.7.33.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is in alarm or VOM #1 connected at TB3B-21 and 33 indicates contacts open. _____ (AC)

7.7.33.4 Annunciator RBM DOWNSCALE (2-XA-55-5A, Window 31) in alarm. _____

7.7.33.5 Computer point RWM013 (ROD OUT BLOCK) indicates BLOCK. **N/A** if the computer is not operable. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.34 On 2-RBM-92-5B, **DEPRESS** the NEXT BARGRAPH Softkey as required so that the ARPM X STP BARGRAPH is selected. _____

7.7.35 On 2-RBM-92-5B, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the APRM X STP parameter. _____

7.7.36 **DEPRESS** the UP/DOWN cursor keys as required so that the APRM X STP value is lowered below the Low Power Setpoint. _____

7.7.37 **REQUEST** UO reset affected annunciators. _____

7.7.38 **VERIFY** the following:

7.7.38.1 RBM B BYPASSED indicating light on Panel 2-9-5 is illuminated. _____

7.7.38.2 RBM B DOWNSCALE indicating light on Panel 2-9-5 is extinguished. _____

7.7.38.3 RBM B BYPASSED-AUTO is indicated on 2-MON-92-5A. _____

7.7.38.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3B-21 and 33 indicates contacts closed. _____

7.7.38.5 Annunciator RBM DOWNSCALE (2-XA-55-5A, Window 31) is reset. **N/A** if sealed in from the other channel. _____

7.7.38.6 Computer point RWM013 (ROD OUT BLOCK) indicates NOBLOCK. **N/A** if the computer is not operable. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.39 **NOTIFY** UO of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM DOWNSCALE (2-XA-55-5A, Window 31) annunciations. _____

7.7.40 On 2-RBM-92-5B, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the APRM X STP parameter. _____

7.7.41 **DEPRESS** the UP/DOWN cursor keys as required so that the APRM X STP value is raised until the Low Power Setpoint is just exceeded. _____

7.7.42 **VERIFY** the following:

7.7.42.1 RBM B BYPASSED indicating light on Panel 2-9-5 is extinguished. _____ (AC)

7.7.42.2 RBM B DOWNSCALE indicating light on Panel 2-9-5 is illuminated. _____

7.7.42.3 RBM B BYPASSED-AUTO is not indicated on 2-MON-92-5B. _____

7.7.42.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is in alarm or VOM #1 connected at TB3B-21 and 33 indicates contacts open. _____ (AC)

7.7.42.5 Annunciator RBM DOWNSCALE (2-XA-55-5A, Window 31) is in alarm. **N/A** if sealed in from the other channel. _____

7.7.42.6 Computer point RWM013 (ROD OUT BLOCK) indicates BLOCK. **N/A** if the computer is not operable. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.43 On 2-RBM-92-5B, **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the APRM X STP parameter. _____

7.7.44 **DEPRESS** the UP/DOWN cursor keys as required so that the APRM X STP value is lowered below the Low Power Setpoint. _____

7.7.45 **REQUEST** UO reset affected annunciators. _____

7.7.46 **NOTIFY** UO of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

7.7.47 **DEPRESS** the STOP/RETURN Softkey. _____

7.7.48 **DEPRESS** the EXIT Softkey. _____

7.7.49 **REQUEST** UO deselect the Control Rod and reset affected annunciators. _____

7.7.50 **VERIFY** the following:

7.7.50.1 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) in alarm or VOM #1 connected at TB3B-21 and 33 indicates contacts open _____

7.7.50.2 The blue ROD OUT PERMIT indicating light on Panel 2-9-5 is extinguished or VOM #2 connected to TB3B-29 and 31 indicates contacts open. _____

7.7.51 **REQUEST** UO select a peripheral (edge) Control Rod. _____

7.7.52 **REQUEST** UO reset affected annunciators. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.53 **VERIFY** the following:

7.7.53.1 RBM B BYPASSED indicating light on Panel 2-9-5 is illuminated. _____

7.7.53.2 BYPASSED-AUTO is indicated on 2-MON-92-5B. _____

7.7.53.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3A-21 and 33 indicates contacts closed. _____

7.7.53.4 The blue ROD OUT PERMIT indicating light on 2-9-5 is illuminated or VOM #2 connected to TB3B-29 and 31 indicates contacts closed. _____

7.7.53.5 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is reset. **N/A** if sealed in from other channel. _____

7.7.53.6 Computer point RWM013 (ROD OUT BLOCK) indicates NOBLOCK. **N/A** if the computer is not operable. _____

7.7.54 **INFORM** the Unit Operator of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

7.7.55 **REQUEST** UO de-select the peripheral (edge) Control Rod. _____

7.7.56 On 2-RBM-92-5B, **DEPRESS** the ETC Softkey as required so that the ENTER INOP-SET Softkey is displayed. **N/A** if not required. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

NOTE:

If an incorrect password is entered, or if the display times out and returns to the RBM Bargraphs display, the following steps 7.7.57 and 7.7.58 may be repeated as needed to enter the INOP-SET Mode.

7.7.57 On 2-RBM-92-5B, **DEPRESS** the ENTER INOP-SET Softkey. _____

7.7.58 **ENTER** Password 1234 on the numeric keypad and **DEPRESS** ENT on the numeric keypad. _____

7.7.59 On 2-RBM-92-5B, **DEPRESS** the cursor keys as required to select the RBM FLUX FILTER AND ROD BLOCK TIME DELAY display. _____

7.7.60 **DEPRESS** the SET PARAMETERS Softkey. _____

7.7.61 **RECORD** the As Found RBM FLUX FILTER TIME CONSTANT and ROD BLOCK TIME DELAY. _____ 1st

_____ 2nd

RBM FLUX FILTER TIME CONSTANT = _____

ROD BLOCK TIME DELAY = _____

7.7.62 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX FILTER parameter. _____

7.7.63 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX FILTER TIME CONSTANT is set to 0.5 sec. _____

7.7.64 **DEPRESS** the ACCEPT Softkey. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.65 **DEPRESS** the EXIT Softkey to return to the INOP-SET MODE OPTIONS display. _____

7.7.66 **DEPRESS** the EXIT INOP-SET Softkey. When prompted, **DEPRESS** the YES Softkey to confirm exiting the INOP-SET MODE. _____

7.7.67 On 2-RBM-92-5B, **PLACE** the INOP/OPER keylock switch to OPER.

_____ 1st

_____ 2nd

7.7.68 **REQUEST** UO reset affected annunciators. _____

7.7.69 **VERIFY** the following:

7.7.69.1 RBM B indicates OPERATE on the 2-RBM-92-5B front panel display on Panel 2-9-14. _____

7.7.69.2 INOP indicating light for RBM B at Panel 2-9-5 is extinguished. _____

7.7.69.3 The blue ROD OUT PERMIT indicating light on Panel 2-9-5 is extinguished or VOM #2 connected to TB3B-29 and 31 indicates contacts open. _____

7.7.69.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3B-21 and 33 indicates contacts closed. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.69.5 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is reset. _____

7.7.69.6 Computer point RWM013 (ROD OUT BLOCK) indicates NOBLOCK. **N/A** if the computer is not operable. _____

NOTE:

An accurate measurement of the Null Initiate Time Delay in Step 7.7.71 is not required for satisfactory performance of the step.

7.7.70 While monitoring the blue ROD OUT PERMIT light on Panel 2-9-5 or VOM #2 connected to TB3B-29 and 31, **REQUEST** UO select a non-peripheral (non-edge) Control Rod. _____

7.7.71 **VERIFY** that after approximately 5 sec the ROD OUT PERMIT indicating light on Panel 2-9-5 is illuminated or VOM #2 connected to TB3B-29 and 31 indicates that the contacts closed. _____

7.7.72 **REQUEST** UO deselect the Control Rod. _____

7.7.73 **INFORM** the Unit Operator of impending CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

7.7.74 On 2-RBM-92-5B, **PLACE** the INOP/OPER keylock switch to INOP.

_____ 1st

_____ 2nd

7.7.75 On 2-RBM-92-5B, **DEPRESS** the ETC Softkey as required so that the ENTER INOP-SET Softkey is displayed. **N/A** if not required. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

NOTE:

If an incorrect password is entered, or if the display times out and returns to the RBM Bargraphs display, the following steps 7.7.76 and 7.7.77 may be repeated as needed to enter the INOP-SET Mode.

7.7.76 On 2-RBM-92-5B, **DEPRESS** the ENTER INOP-SET Softkey. _____

7.7.77 **ENTER** Password 1234 on the numeric keypad and **DEPRESS** ENT on the numeric keypad. _____

7.7.78 On 2-RBM-92-5B, **DEPRESS** the cursor keys as required to select the RBM FLUX FILTER AND ROD BLOCK TIME DELAY display. _____

7.7.79 **DEPRESS** the SET PARAMETERS Softkey. _____

7.7.80 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the RBM FLUX FILTER parameter. _____

7.7.81 **DEPRESS** the UP/DOWN cursor keys as required so that the RBM FLUX FILTER TIME CONSTANT is set to the As Found value recorded in Step 7.7.61. _____

7.7.82 **DEPRESS** the ACCEPT Softkey. _____

7.7.83 **VERIFY** that the RBM FLUX FILTER TIME CONSTANT and ROD BLOCK TIME DELAY values displayed on 2-RBM-92-5B match the As Found values recorded in Step 7.7.61. _____ IV

7.7.84 **DEPRESS** the EXIT Softkey to return to the INOP-SET MODE OPTIONS display. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.85 **IF** the Low Power Setpoint was reduced in Step 7.7.11.7, **THEN**

RESTORE the Low Power Setpoint to its desired value by performing Steps 7.7.85.1 through 7.7.85.7. Otherwise, **N/A** Steps 7.7.85.1 through 7.7.85.7 and **PROCEED** to Step 7.7.86. _____

7.7.85.1 **DEPRESS** the cursor keys as required to select the RBM LOW POWER SETPOINTS display. _____

7.7.85.2 **DEPRESS** the SET PARAMETER Softkey. _____

7.7.85.3 **DEPRESS** the LEFT/RIGHT cursor keys as required to select the desired digit of the LOW POWER SETPOINT. _____

7.7.85.4 **DEPRESS** the UP/DOWN cursor keys as required so that the As Found value recorded in Step 7.7.11.6 is entered. _____

7.7.85.5 **DEPRESS** the ACCEPT Softkey. _____

7.7.85.6 **VERIFY** that the LOW POWER SETPOINT and LOW TRIP SETPOINT values displayed on 2-RBM-92-5B match the As Found values recorded in Step 7.7.11.6. _____ IV

7.7.85.7 **DEPRESS** the EXIT Softkey to return to the INOP-SET MODE OPTIONS display. _____

7.7.86 **DEPRESS** the EXIT INOP-SET Softkey. When prompted, **DEPRESS** the YES Softkey to confirm exiting the INOP-SET MODE. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.87 On 2-RBM-92-5B, **PLACE** the INOP/OPER keylock switch to OPER. _____ 1st _____ 2nd

7.7.88 **REQUEST** UO reset affected annunciators. _____

7.7.89 **VERIFY** the following:

7.7.89.1 RBM B indicates OPERATE on the 2-RBM-92-5B front panel display on Panel 2-9-14. _____

7.7.89.2 INOP indicating light for RBM B at Panel 2-9-5 is extinguished. _____

7.7.89.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3B-21 and 33 indicates contacts closed. _____

7.7.89.4 Annunciator RBM HIGH/INOP (2-XA-55-5A, Window 24) is reset. **N/A** if sealed in from other channel. _____

7.7.90 **REQUEST** UO select a non-peripheral (non-edge) Control Rod. _____

7.7.91 From 2-RBM-92-5B RBM BARGRAPHS display, **RECORD** the following numbers:

LPRMS IN RBM AVERAGE = _____

MINIMUM LPRMS ALLOWED = _____ _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

NOTE:

The LPRMs assigned to RBM B are displayed on both RBM A and RBM B. The LPRM BARGRAPHS Display for both RBMs will have to be selected to display all of the LPRMs assigned to RBM B. Information for the A level detectors are shown on the LPRM BARGRAPHS display even though the A level detectors are not used in the RBM flux calculation.

7.7.92 **SELECT** the RBM A LPRM BARGRAPHS display by performing the following:

7.7.92.1 On 2-RBM-92-5A, **DEPRESS** the ETC Softkey as required so that the LPRM BARGRAPHS Softkey is displayed. _____

7.7.92.2 On 2-RBM-92-5A, **DEPRESS** the LPRM BARGRAPHS Softkey. _____

7.7.93 **SELECT** the RBM B LPRM BARGRAPHS display by performing the following:

7.7.93.1 On 2-RBM-92-5B, **DEPRESS** the ETC Softkey as required so that the LPRM BARGRAPHS Softkey is displayed. _____

7.7.93.2 On 2-RBM-92-5B, **DEPRESS** the LPRM BARGRAPHS Softkey. _____

NOTE:

The LPRMs assigned to RBM B are identified on the LPRM BARGRAPHS display by an "B" in the RBM column.

7.7.94 **RECORD** the LPRM numbers assigned to RBM B (from both 2-RBM-92-5A and 5B) in Table 7-7-1. _____

Date ________

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.95 From Illustration 2, **DETERMINE** the APRM or LPRM chassis to which each LPRM (recorded in Step 7.7.94) is assigned and **RECORD** the APRM or LPRM chassis number in Table 7-7-1. ________

NOTE:

In Table 7-7-1, the term BYPASSED is inclusive of all LPRM BYPASSED states (i.e. BYP/INOP, BYP/HV ON, BYP/HV OFF, etc.).

7.7.96 **RECORD** the As Found LPRM status (OPERATE or BYPASSED) in Table 7-7-1. ________

Table 7-7-1

LPRMs for SELECTED ROD ASSIGNED TO RBM B	ASSIGNED TO APRM/LPRM CHASSIS	AS FOUND		AS LEFT	
		STATUS	Verified by 1ST/2ND	STATUS	Verified by 1ST/2ND
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____
______ (LPRM NO.)		OPERATE BYPASSED	____/____	OPERATE BYPASSED	____/____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.97 **INFORM** the Unit Supervisor that Section 7.7.99 will place the LPRMs listed in Table 7-7-1 in BYPASS until a low LPRM count Rod Block is received from RBM B. This will require entering the BYPASS SELECTIONS display on each of the APRM/LPRM chassis listed in Table 7-7-1. The potential exists to cause an APRM INOP condition depending on the number of assigned LPRM detectors currently in BYPASS.
OBTAIN permission from the Unit Supervisor to perform Section 7.7.99 and to continue with this procedure.

_____
Unit Supervisor

7.7.98 **NOTIFY** the UO of impending CONTROL ROD WITHDRAWL BLOCK (2-XA-55-5A, Window 7) and RBM HIGH/INOP (2-XA-55-5A, Window 24) annunciations. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

NOTE:

The APRM or LPRM chassis to which each LPRM detector is assigned is listed in Illustration 2. The LPRM detectors assigned to RBM B will be bypassed at the APRM or LPRM chassis for that detector.

CAUTION

When bypassing LPRMs for the following check, careful attention must be paid to the corresponding APRM voter chassis to ensure that no INOP Trips are registered. In the event that any APRM chassis registers a trip, this procedure must be immediately stopped and an Instrument Foreman or responsible engineer notified prior to performing any other actions.

7.7.99 **REDUCE** the number of operable LPRMs assigned to RBM B to less than the minimum number required (recorded in Step 7.7.91) by performing the following:

7.7.99.1 On the desired APRM or LPRM chassis listed in Table 7-7-1, **DEPRESS** ETC Softkey as required so that the BYPASS SELECTIONS Softkey is displayed.

NOTE:

If an incorrect password is entered, or if the display times out and returns to the APRM (or LPRM) Bargraphs display, the following steps 7.7.99.2 and 7.7.99.3 may be repeated as needed to enter BYPASS SELECTIONS.

7.7.99.2 On the desired APRM or LPRM chassis, **DEPRESS** the BYPASS SELECTIONS Softkey.

7.7.99.3 **ENTER** Password 1234 on the numeric keypad and **DEPRESS** ENT on the numeric keypad.

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.99.4 On the desired APRM or LPRM chassis, **PLACE** the operating LPRM in BYPASS by using the left and right cursor keys to SELECT the LPRM, and **DEPRESS** the BYPASS/HV ON Softkey.

7.7.99.5 On 2-RBM-92-5A or 5B, **VERIFY** that the LPRM STATUS changes from OPERATE to BYP/HV ON.

7.7.99.6 **REPEAT** Steps 7.7.99.1 through 7.7.99.5 until less than the minimum number of LPRMs are in OPERATE. _____

7.7.100 **VERIFY** the following:

7.7.100.1 RBM B INOP indicating light on Panel 2-9-5 is illuminated. _____

7.7.100.2 ROD BLOCK is indicated on 2-MON-92-5B. _____

7.7.100.3 ROD OUT PERMIT indicating light on Panel 2-9-5 is extinguished or VOM #2 connected to TB3B-29 and 31 indicates contacts open. _____

7.7.100.4 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is in alarm or VOM #1 connected at TB3B-21 and 33 indicates contacts open. _____ (AC)

7.7.100.5 Annunciator RBM HIGH/INOP(2-XA-55-5A, Window 24) is in alarm. _____

7.7.101 **REQUEST** UO deselect the control rod and reset affected annunciators. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.102 **VERIFY** the following:

7.7.102.1 RBM B INOP indicating light on Panel 2-9-5 is extinguished. _____

7.7.102.2 ROD BLOCK indication on 2-MON-92-5B is reset. _____

7.7.102.3 Annunciator CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7) is reset or VOM #1 connected at TB3B-21 and 33 indicates contacts closed. _____

7.7.102.4 Annunciator RBM HIGH/INOP(2-XA-55-5A, Window 24) is reset unless sealed in from the other channel. _____

7.7.102.5 Computer point RWM013 (ROD OUT BLOCK) indicates NOBLOCK. **N/A** if the computer is not operable. _____

7.7.103 **RESTORE** the LPRMs assigned to RBM B to their As Found status recorded in Table 7-7-1 by performing the following:

7.7.103.1 On the desired APRM or LPRM chassis, **PLACE** the LPRM in OPERATE by using the left and right cursor keys to SELECT the LPRM.

7.7.103.2 **DEPRESS** the OPERATE Softkey

7.7.103.3 On the APRM or LPRM BYPASS SELECTIONS Display, **VERIFY** that the LPRM STATUS changes from BYP/HV ON to OPERATE.

7.7.103.4 **REPEAT** Steps 7.7.103.1 through 7.7.103.3 until all of the affected LPRMs have been restored to their As Found status. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.103.4 **RECORD** the LPRM As Left status in Table 7-7-1. _____

7.7.103.5 On the APRM, LPRM and RBM chassis affected by this step, **DEPRESS** the EXIT Softkey. _____

7.7.103.6 **VERIFY** that the BYPASS SELECTIONS Display has been exited on each APRM or LPRM affected by this section. _____ 1st

_____ 2nd

7.7.104 **REQUEST** the UO reset affected annunciators and to select TRIP STATUS on 2-MON-92-5A and 5B and reset the Trip Memory. _____

7.7.105 On 2-RBM-92-5A, **PERFORM** the following:

7.7.105.1 **DEPRESS** the ETC Softkey as required so that the TRIP STATUS Softkey is displayed. **N/A** if not required. _____

7.7.105.2 **DEPRESS** the TRIP STATUS Softkey. _____

7.7.105.3 **DEPRESS** the RESET MEMORY Softkey. _____

7.7.105.4 **DEPRESS** the EXIT Softkey. _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.106 On 2-RBM-92-5B, **PERFORM** the following:

7.7.106.1 **DEPRESS** the ETC Softkey as required so that the TRIP STATUS Softkey is displayed. **N/A** if not required. _____

7.7.106.2 **DEPRESS** the TRIP STATUS Softkey. _____

7.7.106.3 **DEPRESS** the RESET MEMORY Softkey. _____

7.7.106.4 **DEPRESS** the EXIT Softkey. _____

7.7.107 **REMOVE** or **VERIFY** that the key has been removed from the INOP/OPER keylock switch on 2-RBM-92-5B.

_____ 1st

_____ 2nd

7.7.108 **RECORD** time channel returned to service.

_____
Time _____

7.7.109 **NOTIFY** the UO that RBM Channel B has been returned to service at _____(time recorded in Step 7.7.108).

_____
UO Name _____

Date _____

INITIALS

7.7 RBM B Functional Test (Continued)

7.7.110 **REMOVE** VOM #1 from TB3B-21 and 33, and VOM #2 from TB3B-29 and 31 if installed in Step 7.7.1. Otherwise, **N/A** this step. _____

7.8 **CLEAN** the area of any debris caused by performance of this Surveillance Procedure. _____

7.9 **NOTIFY** UO that 2-SR-3.3.2.1.1 is complete. _____

7.10 **COMPLETE** Attachment 1, Surveillance Procedure Review Form, up to Unit Supervisor Review. _____

7.11 **NOTIFY** Unit Supervisor that 2-SR-3.3.2.1.1 is complete. _____

8.0 ILLUSTRATIONS/ATTACHMENTS

8.1 Illustration 1 - Panel 2-9-14 Layout

8.2 Illustration 2 - LPRM Assignments

8.3 Attachment 1 - Surveillance Procedure Review Form

8.4 Attachment 2 - Control Room Components Affected By Surveillance Procedure Performance

8.5 Attachment 3 - Instrument Loop Status Sheet

END OF TEXT

ILLUSTRATION 1
(Page 1 of 1)

PANEL 2-9-14 LAYOUT

BAY 1	BAY 2	BAY 3	BAY 4	BAY 5
		2-RBMX-92-5A (RBM A INTERFACE MODULE)		
2-APRM-92-2 (APRM 2)	**2-APRM-92-4** (APRM 4)	**2-RBM-92-5A** (RBM A)	**2-APRM-92-3** (APRM 3)	**2-APRM-92-1** (APRM 1)
2-LPRM-92-2 (LPRM 2)	**2-LPRM-92-4** (LPRM 4)	**2-RBM-92-5B** (RBM B)	**2-LPRM-92-3** (LPRM 3)	**2-LPRM-92-1** (LPRM 1)
2-LGC-92-2 (2-OUT-OF-4 VOTER)	**2-LGC-92-4** (2-OUT-OF-4 VOTER)	**2-RBMX-92-5B** (RBM B INTERFACE MODULE)	**2-LGC-92-3** (2-OUT-OF-4 VOTER)	**2-LGC-92-1** (2-OUT-OF-4 VOTER)
2-PX-92-2 QLVPS	**2-PX-92-4** QLVPS	**2-PX-92-5** QLVPS	**2-PX-92-3** QLVPS	**2-PX-92-1** QLVPS

ILLUSTRATION 2
(Page 1 of 2)

LPRM ASSIGNMENTS

LPRM STRING	DETECTOR A	DETECTOR B	DETECTOR C	DETECTOR D
08-17	APRM-1	APRM-2	APRM-4	APRM-3
08-25	LPRM-1	LPRM-2	LPRM-4	LPRM-3
08-33	APRM-4	APRM-3	APRM-1	APRM-2
08-41	LPRM-4	LPRM-3	LPRM-1	LPRM-2
08-49	APRM-1	APRM-2	APRM-4	APRM-3
16-09	APRM-2	APRM-4	APRM-3	APRM-1
16-17	LPRM-3	LPRM-1	LPRM-2	LPRM-4
16-25	APRM-3	APRM-1	APRM-2	APRM-4
16-33	LPRM-2	LPRM-4	LPRM-3	LPRM-1
16-41	APRM-2	APRM-4	APRM-3	APRM-1
16-49	LPRM-3	LPRM-1	LPRM-2	LPRM-4
16-57	APRM-3	APRM-1	APRM-2	APRM-4
24-09	LPRM-1	LPRM-2	LPRM-4	LPRM-3
24-17	APRM-4	APRM-3	APRM-1	APRM-2
24-25	LPRM-4	LPRM-3	LPRM-1	LPRM-2
24-33	APRM-1	APRM-2	APRM-4	APRM-3
24-41	LPRM-1	LPRM-2	LPRM-4	LPRM-3
24-49	APRM-4	APRM-3	APRM-1	APRM-2
24-57	LPRM-4	LPRM-3	LPRM-1	LPRM-2
32-09	APRM-3	APRM-1	APRM-2	APRM-4
32-17	LPRM-2	LPRM-4	LPRM-3	LPRM-1
32-25	APRM-2	APRM-4	APRM-3	APRM-1
32-33	LPRM-3	LPRM-1	LPRM-2	LPRM-4
32-41	APRM-3	APRM-1	APRM-2	APRM-4
32-49	LPRM-2	LPRM-4	LPRM-3	LPRM-1
32-57	APRM-2	APRM-4	APRM-3	APRM-1
40-09	LPRM-4	LPRM-3	LPRM-1	LPRM-2

ILLUSTRATION 2
(Page 2 of 2)

LPRM ASSIGNMENTS

LPRM STRING	DETECTOR A	DETECTOR B	DETECTOR C	DETECTOR D
40-17	APRM-1	APRM-2	APRM-4	APRM-3
40-25	LPRM-1	LPRM-2	LPRM-4	LPRM-3
40-33	APRM-4	APRM-3	APRM-1	APRM-2
40-41	LPRM-4	LPRM-3	LPRM-1	LPRM-2
40-49	APRM-1	APRM-2	APRM-4	APRM-3
40-57	LPRM-1	LPRM-2	LPRM-4	LPRM-3
48-09	APRM-2	APRM-4	APRM-3	APRM-1
48-17	LPRM-3	LPRM-1	LPRM-2	LPRM-4
48-25	APRM-3	APRM-1	APRM-2	APRM-4
48-33	LPRM-2	LPRM-4	LPRM-3	LPRM-1
48-41	APRM-2	APRM-4	APRM-3	APRM-1
48-49	LPRM-3	LPRM-1	LPRM-2	LPRM-4
56-17	APRM-4	APRM-3	APRM-1	APRM-2
56-25	LPRM-4	LPRM-3	LPRM-1	LPRM-2
56-33	APRM-1	APRM-2	APRM-4	APRM-3
56-41	LPRM-1	LPRM-2	LPRM-4	LPRM-3

ATTACHMENT 1
(Page 1 of 1)

SURVEILLANCE PROCEDURE REVIEW FORM

REASON FOR TEST:
_____Scheduled Surveillance
_____System Inoperable (Explain in Remarks)
_____Maintenance (WO No._____)
_____Other (Explain in Remarks)

DATE/TIME STARTED_____
DATE/TIME COMPLETED_____
PLANT CONDITIONS_____

PRE-TEST REMARKS:_____

PERFORMED BY:

Initials	Name (Print)	Name (Signature)
_____	_____ (Test Dir/Lead Perf)	_____
_____	_____ (Test Dir/Lead Perf)	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Delays or Problems (If yes, explain in POST-TEST REMARKS)? ____Yes ____No
Acceptance Criteria Satisfied? ____Yes ____No
If the above answer is no, the Unit Supervisor shall determine if an LCO exists.
LCO ____Yes ____No

UNIT SUPERVISOR_____ Date_____

INDEPENDENT QUALIFIED REVIEWER_____ Date_____

SCHEDULING COORDINATOR_____ Date_____

POST-TEST REMARKS:_____

ATTACHMENT 2
(Page 1 of 1)

CONTROL ROOM COMPONENTS AFFECTED BY SURVEILLANCE PROCEDURE PERFORMANCE

UNID	DESCRIPTION	LOCATION
2-XA-55-5A Window 7	Annunciator CONTROL ROD WITHDRAWAL BLOCK	Panel 2-9-5
2-XA-55-5A Window 24	Annunciator RBM HIGH/INOP	Panel 2-9-5
2-XA-55-5A Window 31	Annunciator RBM DOWNSCALE	Panel 2-9-5
2-MON-92-5A	RBM A Operator Display Assembly	Panel 2-9-5
2-MON-92-5B	RBM B Operator Display Assembly	Panel 2-9-5
	HIGH CHANNEL A RBM indicating light	Panel 2-9-5
	INOP CHANNEL A RBM indicating light	Panel 2-9-5
	DNSCL CHANNEL A RBM indicating light	Panel 2-9-5
	BYPASSED CHANNEL A RBM indicating light	Panel 2-9-5
	HIGH CHANNEL B RBM indicating light	Panel 2-9-5
	INOP CHANNEL B RBM indicating light	Panel 2-9-5
	DNSCL CHANNEL B RBM indicating light	Panel 2-9-5
	BYPASSED CHANNEL B RBM indicating light	Panel 2-9-5

The purpose of this sheet is to give the Unit Operator a log of the local alarms and indications in the main control room that will be affected by performance of this Surveillance Procedure. This sheet is for operator information only and the photocopy of this sheet given to Unit Operator should be discarded upon notification that the procedure is complete.

ATTACHMENT 3
(Page 1 of 1)

INSTRUMENT LOOP STATUS SHEET

Instrument Loop	Function	OUT OF SERVICE TIME	IN SERVICE TIME	TESTING DURATION LIMIT
2-RBM-92-5A	ROD BLOCK MONITOR CH A			6 HOURS
2-RBM-92-5B	ROD BLOCK MONITOR CH B			6 HOURS

A photocopy of this sheet is to be given to the Unit Operator who may use this sheet to track out of service times for the instrument loops affected by this procedure. The stated testing duration allowance is only applicable if the associated function maintains Control Rod Block capability.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 Safety/Relief Valves (S/RVs)

LCO 3.4.3 The safety function of 12 S/RVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required S/RVs inoperable.	A.1 Be in MODE 3.	12 hours
	AND	
	A.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify the safety function lift settings of the required 12 S/RVs are within ± 3% of the setpoint as follows: Number of S/RVs: 4, 4, 5 Setpoint (psig): 1135, 1145, 1155 Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program
SR 3.4.3.2	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- Verify each required S/RV opens when manually actuated.	24 months

TABLE 9.3.11.E
FIRE RATED DOORS

DOOR NO.	LOCATION	DETECTION PANEL	DOOR NO.	LOCATION	DETECTION PANEL
30	R7-N 519	NONE	500	R14-P 593	0-LPNL-25-555
31	R7-R 519	NONE	501	R14-T 593	2-LPNL-25-546
34	R8-R 519	2-LPNL-25-545	506	R16-T 593	3-LPNL-25-546
35	R8-N 519	2-LPNL-25-545	510	R21-P 593	0-LPNL-25-555
36	R14-N 519	2-LPNL-25-545	514	R21-R 593	0-LPNL-25-555
37	R14-R 519	2-LPNL-25-545	531	R2-N 606	0-LPNL-25-556
40	R15-R 519	NONE	539	R1-S 593	NONE
41	R15-N 519	NONE	541	R14-S 593	0-LPNL-25-555
42	R7-T 541	NONE	600	R2-N 617	0-LPNL-25-557
43	R8-T 541	2-LPNL-25-545	630	R1-P 621	0-LPNL-25-557
44	R14-T 541	2-LPNL-25-545	631	R1-S 621	NONE
45	R15-T 541	NONE	632	R2-S 621	NONE
221	R7-N 565	1-25-286	632A	R1-S 621	NONE
*235	R8-M 565	2-LPNL-25-545	635	R6-T 621	1-25-303
*237	R9-M-565	2-LPNL-25-545	637	R2-S 621	NONE
240	R8-T 565	2-LPNL-25-545	640	R8-T 621	2-LPNL-25-547
242	R14-T 565	2-LPNL-25-545	642	R13-P 621	0-LPNL-25-557
244	R14-N 565	2-LPNL-25-545	643	R13-S 621	0-LPNL-25-557
*248	R15-M 565	3-LPNL-25-545	644	R14-S 621	0-LPNL-25-557
*250	R16-N 565	3-LPNL-25-545	644A	R14-S 621	0-LPNL-25-557
298	R1-Q 583	0-LPNL-25-544	647	R15-T 621	2-LPNL-25-547
455	R2-N 593	0-LPNL-25-555	649	R13-S 621	0-LPNL-25-557
460	R3-N 593	0-LPNL-25-555	651	R16-T 621	3-LPNL-25-547
462	R4-N 593	0-LPNL-25-555	654	R21-P 621	0-LPNL-25-557
462A	R4-N 593	0-LPNL-25-555	655	R21-R 621	0-LPNL-25-557
466	R9-N 593	0-LPNL-25-555	656	R20-R 621	0-LPNL-25-557
466A	R10-N 593	0-LPNL-25-555	658	R20-R 621	0-LPNL-25-557
468	R10-N 593	0-LPNL-25-555	670	R6-T 639	NONE
476	R18-N 593	0-LPNL-25-555	672	R8-T 639	2-LPNL-25-547
476A	R19-N 593	0-LPNL-25-555	673	R14-T 639	2-LPNL-25-547
479	R19-N 593	0-LPNL-25-555	810	U3DGB 565	3-LPNL-25-543
482	R20-N 593	0-LPNL-25-555	811	U3DGB 565	3-LPNL-25-543
485	R1-P 593	0-LPNL-25-555	812	U3DGB 565	3-LPNL-25-543
490	R6-T 593	1-25-287	824	U3DGB 583	3-LPNL-25-543
497	R8-T 593	2-LPNL-25-546	825	U3DGB 583	3-LPNL-25-543
			827	R21-P 593	0-LPNL-25-555

[NRC/C] Fire doors and associated fire detection panels [NRC NCO 890198001]

The following list of doors must be breached simultaneously in order to have a fire protection assembly out of service requiring compensatory measures to be taken: Door(s) 30/35, 31/34, 36/41, 37/40, 42/43, 44/45.

NOTE: In accordance with SER-Appendix R Exemptions A02-881027-003, Section 3.1.2.1 fire doors of the main steam and feedwater piping tunnels, door nos. 220, 239 and 252 are exempt from surveillance, testing and the administrative control program.

In accordance with the Fire Hazard Analysis for Fire Areas 1 and 3, Fire Zone Doors 490, 635, and 670 are not required within Fire Area 1 when Unit 2 and/or Unit 3 is the only operating unit. Fire Zone Doors 506 and 651 are not required within Fire Area 3 when Unit 2 and/or Unit 1 is the only operating unit.

*Credit will be taken for detection capabilities within the Reactor Building due to lack of any combustibles within the air locks.

an alternate means of fire fighting than if the inoperable equipment is the primary means of fire suppression.

9.2 FIRE PROTECTION SYSTEMS/BASES (continued)

If in the event that all the high-pressure fire pumps become inoperable, an alternate backup pump or supply is available, such as using the additional fire pump which normally protects outlying areas and mobile fire apparatus to maintain the 2250 gpm water supply at a system head of 300 feet.

Fire protection water systems protecting areas containing redundant safe shutdown systems, as defined in BFNs Hazard Analysis, warrant more stringent compensatory measures (i.e., continuous fire watches) than areas containing only one division of safe shutdown systems or safety-related equipment not required for safe shutdown under fire conditions.

The surveillance requirements provide assurances that the minimum OPERABILITY requirements of the fire protection systems are met. All fire protection equipment surveillances required by this document can be performed when the unit is in any operating mode.

Flushing of the high-pressure fire protection system mains and building headers assures that sediment and marine growth is removed from the system to prevent obstruction. Subsequent chemical treatment reduces further marine organism growth. Individual hose stations and fire hydrants are not included in the overall flush requirements, but are flushed periodically during specific OPERABILITY verifications. Hydraulic performance of the water fire suppression system is tested in accordance with the 16th Edition of the Fire Protection Handbook, published by the National Fire Protection Association.

The functional integrity of the fire barrier assemblies and penetration sealing devices ensures that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. This design feature minimizes the possibility of a single fire from involving several areas of the facility prior to detection and extinguishment. The fire barrier penetrations are a passive element in the facility fire protection program and are subject to periodic inspections.

The barrier penetrations, including fire doors, fire dampers, and cable and pipe penetration seals, are considered functional when the visually observed condition indicates no significant degradation.

Fire protection suppression and detection systems in non-safety related areas provide equipment/property protection and meet insurance (NEIL) requirements.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS

OPERABILITY REQUIREMENT	SURVEILLANCE REQUIREMENTS
Applies to the operating status of the applicable fire suppression and/or detection systems and barriers for the reactor buildings, diesel generator buildings, control bay, intake pumping station, cable tunnel to the intake pumping station, and cable trays along the south wall of the turbine building EL 586.	Applies to the surveillance requirements of the applicable fire suppression and/or detection systems and fire barriers for the reactor building, diesel generator buildings, control bay, intake pumping station, and cable tunnel to the intake pumping station, and cable trays along the south wall of the turbine building, EL 586 when the corresponding limiting conditions for operation are in effect.
Objective	**Objective**
To ensure availability of the Fire Protection Systems.	To verify the OPERABILITY of the Fire Protection System.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.A FIRE DETECTION INSTRUMENTATION	**9.4.11.A FIRE DETECTION INSTRUMENTATION**
1. As a minimum, the fire detection local control panel shown in Table 9.3.11.A shall be OPERABLE whenever equipment protected by the fire detection Instrument is required to be OPERABLE.	1. Each of the required fire detection instruments shall be demonstrated OPERABLE at least annually by performance of a CHANNEL FUNCTIONAL TEST.
2. With one or more of the above required local control panels inoperable, within one hour establish a continuous fire watch for those areas specifically identified in Table 9.3.11.A; for other areas listed in Table 9.3.11.A, establish an hourly roving fire watch. a. The fire detection systems heat and smoke detectors for all protected areas shall be OPERABLE. b. If requirement 9.3.11.A.2.a cannot be met, a patrolling fire watch will be established (unless noted otherwise in Table 9.3.11.A) to ensure that each protected fire zone or area with inoperable detectors is checked at intervals no greater than once each hour. NOTE: A margin of fifteen (15) minutes is acceptable during shift turnover, to facilitate proper turnover with minimal plant impact.	2. The supervised circuits associated with alarms of each of the above required fire detection instruments shall be demonstrated OPERABLE at semiannually. 3. The non-supervised circuits associated with alarms of each of the above required instruments shall be Demonstrated OPERABLE at least monthly.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.B FIRE PUMPS AND WATER DISTRIBUTION MAINS	**9.4.11.B FIRE PUMPS AND WATER DISTRIBUTION MAINS**
1. The High-Pressure Fire Protection System shall be OPERABLE at all times with: a. Two high-pressure fire pumps, one electric and one diesel, each with a capacity of 2250 gpm, with their discharges aligned to the fire suppression Header. b. An OPERABLE flow path capable of taking suction from Wheeler Reservoir and transferring the water through distribution piping with OPERABLE sectionalizing control or isolation valves to the yard hydrant curb valves, the last valve ahead of the water flow alarm device on each sprinkler or hose standpipe and the last valve ahead of the system valve on each spray system required to be OPERABLE per requirements 9.3.11.C, 9.3.11.E, and 9.3.11.F.	1. The High-Pressure Fire Protection System shall be demonstrated OPERABLE: a. At least quarterly by starting each electric-motor-driven high-pressure fire pump and operating it for at least 15 minutes on recirculation flow. b. Intentionally left blank. c. At least semiannually by performance of a system flush. d. At least biannually, the system shall be chemically treated. e. At least yearly by cycling each testable valve in the flow path through at least one complete cycle of full travel. f. At least once per 18 months, by performing a system functional test which includes simulated actuation of the system throughout its operating sequence, and:
2.a. With only the diesel and no electric fire pumps OPERABLE, restore at least one electric fire pump to OPERABLE status within 7 days or provide an alternate backup pump or supply. b. With at least one electric fire pump and no diesel fire pump OPERABLE, restore the diesel fire pump to OPERABLE status within 7 days or provide an alternate backup pump or supply.	

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.B FIRE PUMPS AND WATER DISTRIBUTION MAINS (cont.)	9.4.11.B FIRE PUMPS AND WATER DISTRIBUTION MAINS (cont.)
3. With no high-pressure fire pumps OPERABLE, establish a backup fire water system within 24 hours or be in COLD SHUTDOWN CONDITION within the following 24 hours.	(1) Verifying that each automatic valve in the flow path actuates to its correct position, (2) Verifying that each electric high-pressure fire pump develops at least 2250 gpm at a system head of 300 feet. (3) Verifying the diesel-driven high-pressure fire pump develops at least 2250 gpm at a system head of 300 feet. (4) Verifying that after initial high-pressure fire pump actuation each subsequent high-pressure pump starts sequentially to maintain the High-Pressure Fire Protection System pressure greater than or equal to 120 psig. g. At least once per 3 years by performing a flow test of the system in accordance with the Fire Protection Handbook published by the National Fire Protection Association.
	2. The diesel-driven high-pressure fire pump shall be demonstrated OPERABLE: a. At least monthly by: (1) Verifying the fuel tank contains at least 150 gallons of fuel.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.B **FIRE PUMPS AND WATER DISTRIBUTION MAINS** (cont.)	9.4.11.B **FIRE PUMPS AND WATER DISTRIBUTION MAINS** (cont.)
	(2) Starting the pump from ambient conditions and operating for greater than or equal to 30 minutes on recirculation flow. (b) At least quarterly by verifying that a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM-D270-75, is within the acceptable limits specified in Table 1 of ASTM-D975-77 when checked for viscosity, water, and sediment. (c) At least once per 18 months, by subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service.
	3. The diesel-driven high-pressure fire pump starting 24-volt battery bank and charger shall be demonstrated OPERABLE: (a) At least weekly by verifying that: (1) The electrolyte level of each pilot cell is above the plates, (2a) The pilot cell specific gravity, corrected for temperature and electrolyte level, is greater than or equal to 1.200, or (verify within 24 hours) (2b) The specific gravity of each connected cell is not more than 0.020 below the average of all connected cells and the average of all connected cells is greater than or equal to 1.195. This condition is acceptable for a period of 31 days. Verification is required every 7 days.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.B FIRE PUMPS AND WATER DISTRIBUTION MAINS (cont.)	**9.4.11.B FIRE PUMPS AND WATER DISTRIBUTION MAINS** (cont.)
	(3a) The voltage of each connected cell is greater than or equal to 2.13 volts, or, (verify within 24 hours) (3b) The voltage of each connected cell is greater than or equal to 2.07 volts. This condition is acceptable for a period of 31 days. Verification is required every 7 days. (4) The overall battery voltage is greater than or equal to 24.9 volts. (b) At least quarterly by verifying: (1a) The specific gravity of each connected cell, corrected for temperature and electrolyte level, is greater than or equal to 1.200, or (1b) The specific gravity of each connected cell is not more than 0.020 below the average of all the connected cells and the average of all the connected cells is greater than or equal to 1.195. This condition is acceptable for a period of 31 days. Verification is required every 7 days. (2a) The voltage of each connected cell is greater than or equal to 2.13 volts, or (2b) The voltage of each connected cell is greater than or equal to 2.07 volts. This condition is acceptable for a period of 31 days. Verification is required every 7 days.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.B FIRE PUMPS AND WATER DISTRIBUTION MAINS (cont.)	9.4.11.B FIRE PUMPS AND WATER DISTRIBUTION MAINS (cont.)
	c. At least once per 18 months by verifying that: (1) The batteries, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration, and (2) Battery terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.
4. The raw service water storage tank level shall be maintained above level723'7" by the raw service water pumps.	4. Simulated automatic and manual actuation of raw service water pumps and operation of tank level switches will be conducted every three (3) years.
5. If requirement 9.3.11.B.4 cannot be met, a fire pump shall be started and run continuously until the raw service water pumps can maintain a raw service water storage tank level above 723'7".	5. The High-Pressure Fire Protection System pressure shall be logged daily.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.C SPRAY AND/OR SPRINKLER SYSTEMS	9.4.11.C SPRAY AND/OR SPRINKLER SYSTEMS
1. The spray and sprinkler systems in Table 9.3.11.B shall be OPERABLE whenever equipment protected by the spray and/or sprinkler systems is required to be OPERABLE. Sprinkler and/or spray systems are considered inoperable if their water supply is unavailable.	1. Each of the required spray and systems in Table 9.3.11.B shall be demonstrated OPERABLE: a. Intentionally left blank. b. At least yearly by cycling each testable valve in the flow path Through at least one complete cycle of full travel. c. At least once per 18 months: (1) By performing a system functional test which includes simulated automatic actuation of the system, verifying that the automatic valves in the flow path actuate to their correct positions on a fire alarm test signal. (2) By a visual inspection of the non-air supervised spray and sprinkler headers to verify their integrity. (3) By a visual inspection of each sprinkler or water spray nozzle's spray area to verify that the spray pattern is not obstructed. d. At least once per 3 years, by performing an air flow test through each open head spray header and verifying that each open head spray and sprinkler nozzle is unobstructed.
2. With one or more of the above required spray and/or sprinkler systems inoperable, within one hour establish a continuous fire watch for those areas specifically identified in Table 9.3.11.B; for other areas listed in Table 9.3.11.B, establish a roving hourly fire watch patrol. a. For sprinkler and/or spray systems, the asscciated sprinkler/spray nozzles for all protected areas shall be OPERABLE. b. If requirement 9.3.11.C.2.a cannot be met, a roving hourly fire watch patrol will be established(unless noted otherwise in Table 9.3.11.B), to ensure that each protected area with inoperable sprinkler/spray nozzles is checked at intervals no greater than once each hour. NOTE: A margin of fifteen (15) minutes is acceptable during shift turnover, to facilitate proper turnover with minimal plant impact.	

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.D CO_2 SYSTEMS	**9.4.11.D CO_2 SYSTEMS**
1. The low pressure CO_2 systems protecting the following areas shall be OPERABLE whenever equipment protected by the CO_2 systems is required to be OPERABLE. a. Unit 1 and 2 Diesel Generator Rooms, Auxiliary Board Rooms, Fuel Transfer Pump Rooms b. Unit 3 Diesel Generator Rooms, Auxiliary Board Rooms, and Fuel Transfer Pump Rooms c. Computer Rooms 1, 2, and 3 EL 593, Control Building d. Auxiliary Instrument Rooms 1, 2, and 3 2. With one or more of the above CO_2 systems inoperable, within 1 hour establish an hourly fire watch patrol. NOTE: A margin of fifteen (15) minutes is acceptable during shift turnover, to facilitate proper turnover with minimal plant impact.	1. Each of the required CO_2 systems shall be demonstrated OPERABLE. a. At least weekly by verifying the CO2 storage tank level to be greater than 8.5 tons for Units 1 and 2 and 3 tons for Unit 3 and pressure to be greater than 275 psig, and b. At least once per 18 months by verifying: 1. The system, including associated ventilation system fire dampers and fire door release mechanisms, actuates manually and automatically upon receipt of a simulated actuation signal, and 2. Flow from each nozzle during a "Puff Test".
9.3.11.E FIRE HOSE STATIONS	**9.4.11.E FIRE HOSE STATIONS**
1. The fire hose stations shown in Table 9.3.11.C shall be OPERABLE whenever equipment in the areas protected by the fire hose stations is required to be OPERABLE. With one or more of the fire stations shown in Table 9.3.11.C inoperable, provide one of the following alternate suppression capabilities:	1. Each of the fire hose stations shown in Table 9.3.11.C shall be demonstrated OPERABLE: a. At least once per year by (1) A visual inspection to assure all required equipment is at the station.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.E FIRE HOSE STATIONS (contd.)	**9.4.11.E FIRE HOSE STATIONS** (contd.)
(i) Gated wye(s) on the nearest or best strategic OPERABLE hose station(s). One outlet of the wye shall be connected to the standard length of hose provided for the hose station. The second outlet of the wye shall be connected to a length of hose sufficient to provide coverage for the area left unprotected by the inoperable hose station. Where it can be demonstrated that the physical routing of the fire hose would best result in a recognizable hazard to operating technicians, plant equipment or the hose itself, the fire hose shall be stored in a roll at the outlet of the OPERABLE hose station. Signs shall be mounted above the gated wye(s) to identify the proper hose to use. (ii) Sufficient fire hose on mobile apparatus for areas(i.e. intake pump station, etc.) where water supply to be utilized would be fire hydrant instead of fire hose station. (iii) Wheeled fire extinguisher (when alternate hose station fire hydrants or mobile apparatus are not practical applications).	(2) Removing the hose for inspection and re-racking, and (3) Inspection of all gaskets and replacing any degraded gaskets in the couplings. b. At least once per 3 years by: (1) Partially opening each station valve to verify valve OPERABILITY and no flow blockage. (2) Conducting a hose hydrostatic test pressure of 150 psig or at least 50 psig above the maximum fire main operating pressure, whichever is greater.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.E FIRE HOSE STATIONS (contd.)	9.4.11.E FIRE HOSE STATIONS (contd.)
The above action(s) shall be accomplished within 1 hour if the inoperable fire hose is the primary means of fire suppression; otherwise, provide compensatory measures within 24 hours.	
9.3.11.F YARD FIRE HYDRANTS AND HOSE HOUSES	**9.4.11.F YARD HYDRANTS AND HOSE HOUSES**
1. The yard fire hydrants shown in Table 9.3.11.D shall be OPERABLE whenever equipment in the areas protected by the yard fire hydrants is required to be OPERABLE. a. With one or more of the yard fire hydrants shown in Table 9.3.11.D inoperable, within 1 hour have sufficient lengths of appropriate size hose located at (i) one of the OPERABLE mobile apparatus or (ii) an adjacent OPERABLE fire hydrant to provide service to the unprotected area(s) if the inoperable fire hydrant is the primary means of fire suppression; otherwise, provide the additional hose within 24 hours.	1. Each of the yard fire hydrants shown in Table 9.3.11.D shall be demonstrated OPERABLE: a. At least semiannually by visually inspecting each yard fire hydrant and verifying that the hydrant barrel is dry and that the hydrant is not damaged. b. At least yearly by performing a flow check of each hydrant.

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.G FIRE-RATED ASSEMBLIES	9.4.11.G FIRE-RATED ASSEMBLIES
1. All fire barrier assemblies, including walls, floor/ceilings, conduit wraps, and other fire barriers; separating fire areas or separating systems important to safe shutdown within a fire area; and all sealing devices in fire rated assembly penetrations, including fire doors shown in Table 9.3.11.E, fire dampers shown in Table 9.3.11.F, and fire-rated cable and piping penetration seals, shall be OPERABLE at all times. Fire barriers are identified by compartmentation drawings 47W216-51 through 62. [NRC/C]	1. Each of the required fire-rated assemblies and penetration sealing devices shall be verified OPERABLE: a. At least once per 18* months by performing a visual inspection of the exposed surfaces of each fire-rated assembly**, b. At least once per 12 months by performing a visual inspection of 20% of the fire damper and the associated hardware. Dampers shall be selected, such that each damper will be inspected at least once per 5 years.
a. With one or more of the required fire-rated assemblies and/or sealing devices inoperable, a.1 Establish a continuous fire watch on one side of the affected assembly if no fire detection (as listed in Table 9.3.11.A) is available to protect either side of the inoperable barrier. or a.2 Establish a roving fire watch on one side of the affected assembly if fire detection (as listed in Table 9.3.11.A) is OPERABLE to protect at least one side of the inoperable barrier. [NCO 880210002]	* (Once per operating cycle for areas inside the Steam Tunnel and top of torus areas of Unit(s) 2 and/or 3 Reactor Building(s). ** (Includes walls, floors, ceilings, fire wraps, structural fireproofing, and penetration seals.)

9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.G FIRE-RATED ASSEMBLIES (contd.)	9.4.11.G FIRE-RATED ASSEMBLIES (contd.)
a.3 No compensatory measures required if fire detection and fire suppression (as listed in Tables 9.3.11.A/9.3.11.B, or CO_2/Halon Systems) are OPERABLE to protect both sides of the inoperable barrier. NOTE: A margin of fifteen (15) minutes is acceptable during shift turnover, to facilitate proper turnover with minimal plant impact.	2. Each of the required fire doors shall be verified OPERABLE by inspecting the automatic hold-open, release, and closing mechanisms and latches at least semiannually and by verifying: a. The OPERABILITY of the fire door supervision system for each electrically supervised fire door by performing a CHANNEL FUNCTIONAL TEST at Least monthly. b. That each locked-closed fire door is verified closed at least weekly. c. That doors with automatic hold-open and release mechanisms are free of obstructions at least daily and perform a FUNCTIONAL TEST of these mechanisms at least once per18 months. d. That each unlocked normally closed fire door without electrical supervision is verified close at least daily.

9.3.11.H OPEN FLAMES, WELDING AND BURNING IN THE CABLE SPREADING ROOM

Hot work activities during plant operation, shall only be permitted on a case by case basis, after a satisfactory evaluation by Fire Operations and Site Engineering (Mechanical). The evaluation will specifically address accessibility to the area by site fire brigade, accessibility of manual fire fighting equipment, ventilation, and exposure protection. In addition, a member of the fire brigade shall be present in the area and a continuous fire watch shall be provided during performance of any hot work activity.

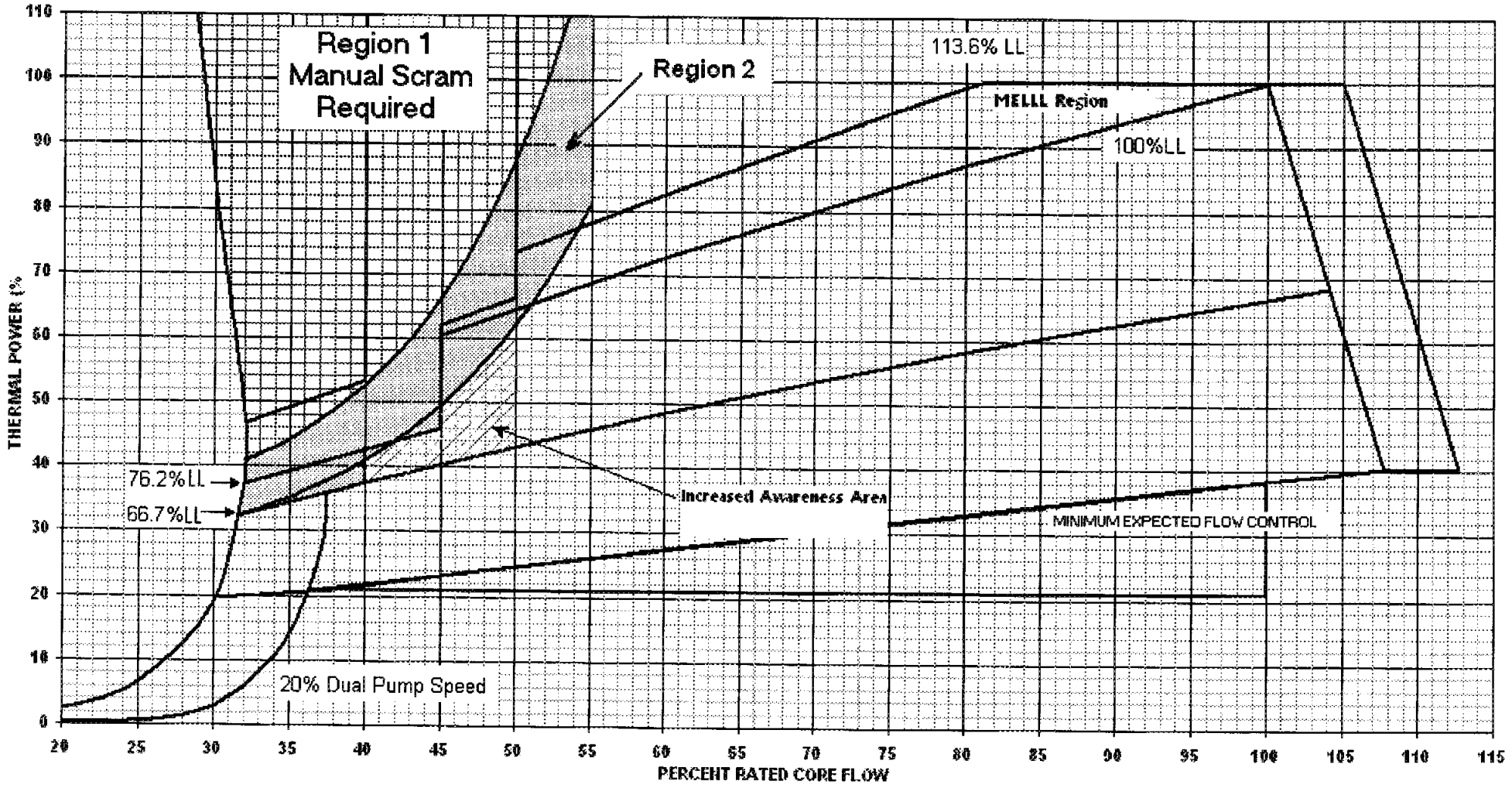
9.3/9.4 FIRE PROTECTION SYSTEMS LIMITING CONDITION FOR OPERATING AND SURVEILLANCE REQUIREMENTS (continued)

9.3.11.I EMERGENCY LIGHTING UNITS	9.4.11.I EMERGENCY LIGHTING UNITS
1. All self-contained, battery-powered emergency lighting units listed in Table 9.3.11.G are required to support unit shutdown in the event of a fire and coincident loss of offsite power shall be OPERABLE. These units are incorporated into the plant's preventive maintenance program. 2. With any of the emergency lighting unit(s) listed in Table 9.3.11.G inoperable, restore the inoperable unit(s) to OPERABLE status within 7 days or provide alternate emergency lighting unit(s) for the affected area.	1. At least once per quarter by checking each unit's operable status. 2. At least once per refueling cycle (not to exceed 18 months) by performance of an eight-hour discharge test to verify adequate battery condition. 3. *Replacement of the batteries every 6 years. 4. Replacement of the lampheads every 6 years.

*The eight-hour discharge test as required by 9.4.11.I.2 need not be performed on new batteries. The first eight-hour discharge test for a new battery will not be required until after 18 months of service.

BACKUP STABILITY PROTECTION POWER TO FLOW MAP

BACKUP STABILITY PROTECTION REGION APPLICABLE FOR REDUCED FEEDWATER TEMPERATURE



The unit is operating with reduced feedwater temperature when the feedwater temperature is below the "Uprate FW Heating- Lower limit temperature" line on page 2 of Illustration 1.

ILLUSTRATION 1
POWER TO FLOW OPERATING MAP

Final Feedwater Temperature Graph

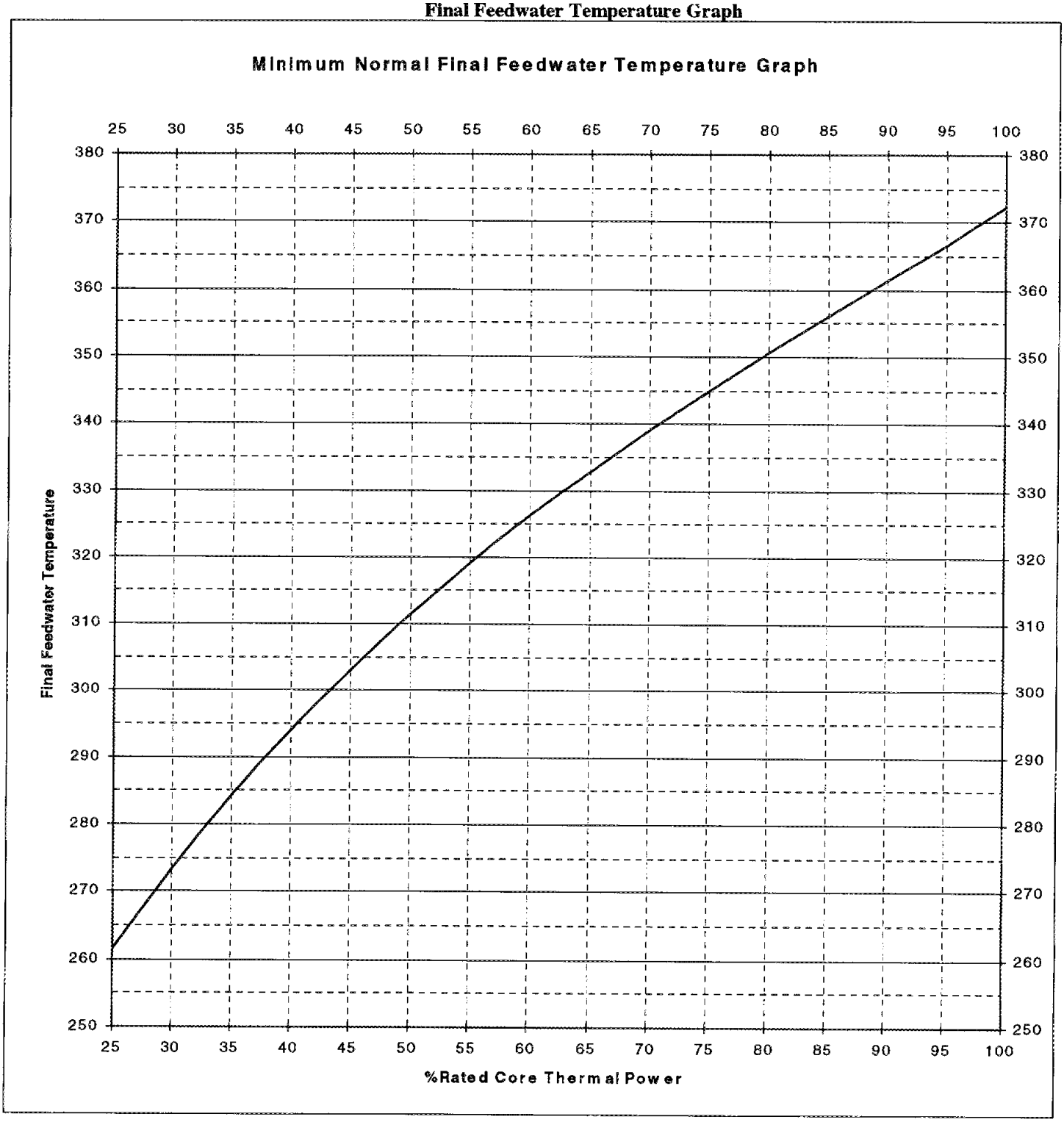
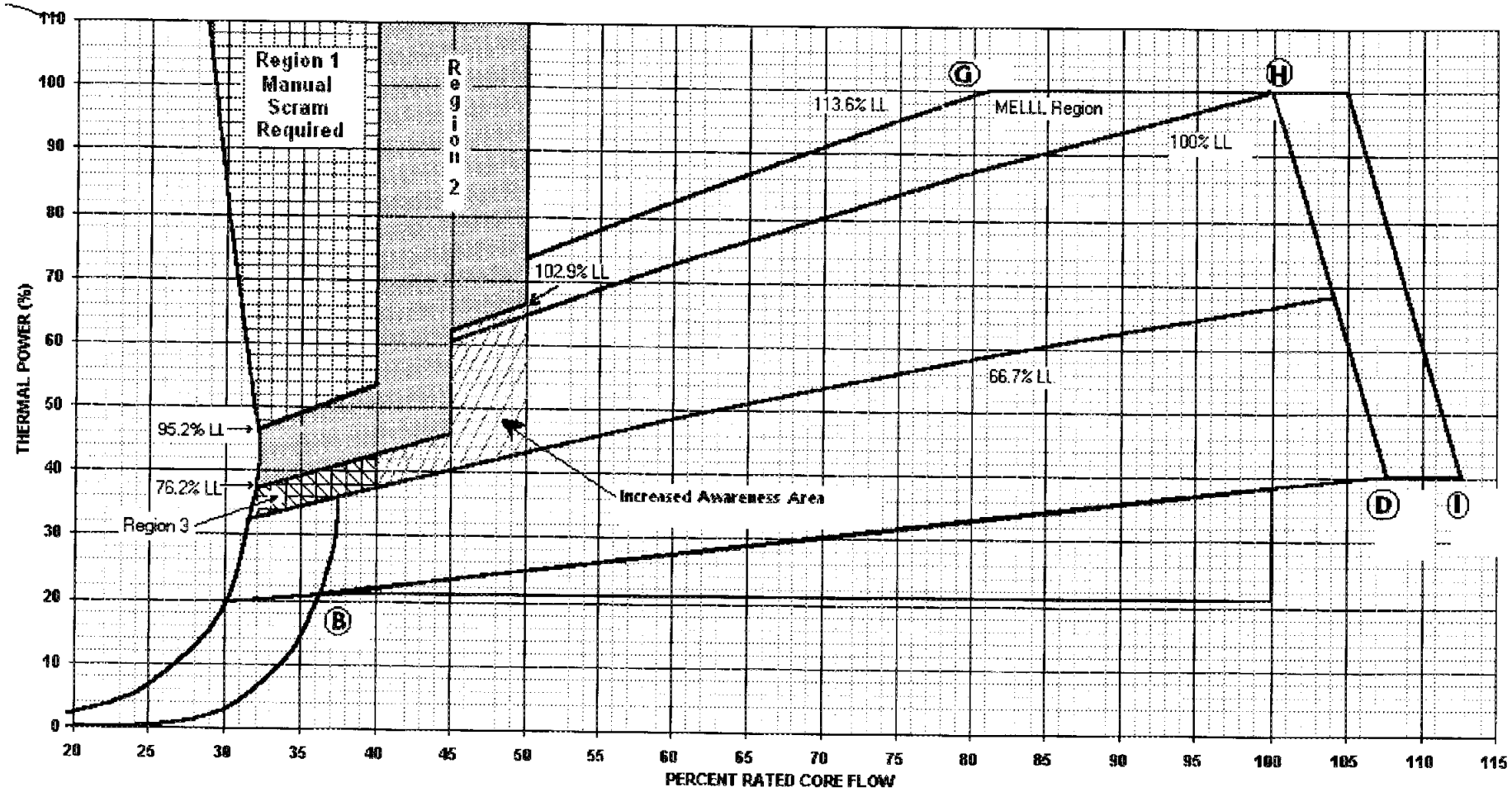


ILLUSTRATION 1
POWER TO FLOW OPERATING MAP



Unit 3 POWER/FLOW MAP (Continued)

Natural Circulation Line

Expected reactor power level would follow this line if the control rods were withdrawn in the absence of Reactor Recirc pump operation. The Reactor Protection System would supply a rod block at 59% power.

20% Dual Pump Speed Line

Expected reactor power level would follow this line if the control rods were withdrawn with both Reactor Recirc pumps at minimum (20%) speed (~345 RPM generator speed). Normal plant startups are performed with the Reactor Recirc pumps at approximately 28% (~480 RPM generator speed).

Point B

Represents the point at which Reactor Recirc pump speed may be raised above 28% (~480 RPM generator speed) after Feedwater flow has reached 19% of its rated flow. The 19% Feedwater interlock ensures the Reactor Recirc pump and jet pump NPSH requirements are met.

Design Flow Control Line (100% rod line)

Reactor power level would follow this line for core flow change with a rated power control rod pattern.

Constant Pump Speed Line (D-G)

Reactor power level changes would exhibit this type of change when control rods are moved with a constant Reactor Recirc pump speed. Core flow will lower from point D to point G because of more head in the core area due to more two-phase flow as reactor power rises.

Point G - 100% Reactor Power/100% Core Flow.

Point H - 100% Reactor Power/105% Core Flow.

Point I - 40.4% Reactor Power/112% Core Flow.

Increased Core Flow Area

The area bounded by points D, G, H, and I. A maximum flow of 107.62×10^6 lbm/hr at 100% power is allowable. The rise in core flow from 105% at 100% power to 112% at 40.4% power results from the reduced head loss in the core at lower power levels.

Unit 3 POWER/FLOW MAP (Continued)

Normal Operating Region

The area bounded above by the MELLLA line, (113.6% LL), below by the Minimum Expected Flow Control Line, to the right by the ICF Region, and to the left by the 20% Dual Pump Speed line is the normal allowable operating region.

MELLLA Region

The Maximum Extended Load Line region is defined by the area above the 100% Rod Line and below the Maximum Extended Load Line Limit Analysis (MELLLA) Line. This region is part of the Normal Operating Region. The MELLLA Line has been determined by analysis to be the most limiting power/flow condition at which the unit will operate at steady state conditions. This region is part of the ARTS/MELLLA program which will improve power ascension capability by extending plant operation at rated power with less than rated core flow. MELLLA significantly increases operating boundaries, improves capacity, increases operational capabilities, and reduces operating cost. MELLLA provides an expansion of the Power to Flow Map permitting improved power ascension capability by extending plant operation at rated power with less than rated core flow during the fuel cycle, the Domain along the 113.6% Rod line to 100% power at 81% core flow. The upper limit of the MELLA region is bounded by the 113.6 Rod Line.
[NRC/C]

Region 1

Region 1 is shown on the Recirculation System Operating Map as the low flow / high power region bounded by the Natural Circulation line and the curve beginning at about 32% core flow and 44% power. An immediate manual scram is required upon entering this region or if entering this region is a known consequence of an event in progress.

Region 2

Region 2 is shown on the Recirculation System Operating Map as the region just below and right of Region 1. No deliberate entry into this region is permitted. Technical Specifications require that immediate action be taken to exit this region and for it to be exited within two hours. An immediate exit is required by either inserting control rods or increasing core flow. However, a tripped recirc pump may NOT be restarted in region 2.

Region 3

Region 3 is shown on the Recirculation System Operating Map as the region below 40% rated core flow and above the 66.7% rod line, excluding Region 1 and 2. At BFN, deliberate entry into Region 3 is not permitted. An immediate exit is required by either inserting control rods or increasing core flow. However, a tripped recirc pump may NOT be restarted in region 3.

Unit 3 POWER/FLOW MAP (Continued)

Increased Awareness for Power Instability region

The Increased Awareness for Power Instability region is shown on the Recirculation System Operating Map as the region below 50% rated core flow and above 66.7% rod line, excluding Regions 1, 2, and 3. This area provides a buffer zone to Regions 1, 2, and 3 because their boundaries are not exact but rather an approximate region where oscillations have been known to occur at other sites. LPRMs and APRMs should be carefully monitored whenever operating in this area, particularly when control rods are withdrawn, core flow is decreased, or feedwater temperature is reduced.

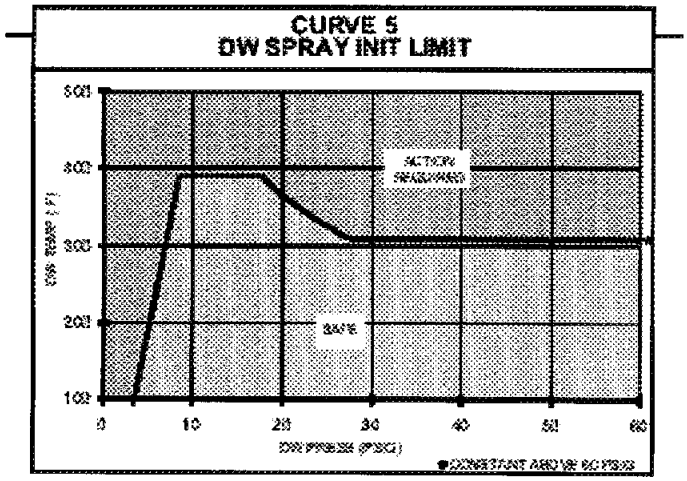
Reactor Instability Indications

One or more of the following conditions is an indication of reactor instability induced power oscillations when operating in or near the regions identified on the Recirculation System Operating Map.

- Sustained rise in APRM and/or LPRM peak-to-peak signal noise level reaching 2 or more times its initial level at reduced flow conditions.

- Rising noise periodicity changes from random (irregular time intervals between peaks and irregular magnitudes) to more regular time intervals and amplitude peaks with a characteristic period of less than 3 seconds. Best observed on LPRMs and period meters. Note that the period meter does not indicate "oscillation period", but rather the swing of the period meter indicator will occur at the characteristic period.

- LPRM and/or APRM upscale and/or downscale annunciators that alarm with a characteristic period of less than 3 seconds. [NCO 940245001]


CURVE 5
DW SPRAY INIT LIMIT
500
400
300
200
100
0
10
20
30
40
50
60

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Suppression pool water level shall be ≥ -6.25 inches with and -7.25 inches without differential pressure control and ≤ -1.0 inches.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Suppression pool water level not within limits.	A.1	Restore suppression pool water level to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.2.1	Verify suppression pool water level is within limits.	24 hours

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

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.	12 hours
	OR		
	A.2	----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. --- Place associated trip system in trip.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- One or more Functions with one or more required channels inoperable in both trip systems.	B.1	Place channel in one trip system in trip.	6 hours
	OR		
	B.2	Place one trip system in trip.	6 hours
C. One or more Functions with RPS trip capability not maintained.	C.1	Restore RPS trip capability.	1 hour
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Enter the Condition referenced in Table 3.3.1.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to < 30% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1	Be in MODE 2.	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1	Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1	Initiate alternate method to detect and suppress thermal hydraulic instability oscillations.	12 hours
J. Required Action and associated Completion Time of Condition I not met.	J.1	Be in Mode 2.	4 hours

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

2. 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 associated Function maintains RPS trip capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	24 hours
SR 3.3.1.1.2	----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. --- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is ≤ 2% RTP while operating at ≥ 25% RTP.	7 days
SR 3.3.1.1.3	----------NOTE---------- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL FUNCTIONAL TEST.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.4	Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 3.3.1.1.5	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to withdrawing SRMs from the fully inserted position
SR 3.3.1.1.6	----------NOTE---------- Only required to be met during entry into MODE 2 from MODE 1. ---------- Verify the IRM and APRM channels overlap.	7 days
SR 3.3.1.1.7	Calibrate the local power range monitors.	1000 MWD/T average core exposure
SR 3.3.1.1.8	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.1.1.9	----------NOTES---------- 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL CALIBRATION.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.10	Perform CHANNEL CALIBRATION.	184 days
SR 3.3.1.1.11	(Deleted)	
SR 3.3.1.1.12	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.13	----------NOTE---------- Neutron detectors are excluded. ---------- Perform CHANNEL CALIBRATION.	24 months
SR 3.3.1.1.14	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months
SR 3.3.1.1.15	Verify Turbine Stop Valve - Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure - Low Functions are not bypassed when THERMAL POWER is ≥ 30% RTP.	24 months
SR 3.3.1.1.16	----------NOTE---------- For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.1.1.17	Verify OPRM is not bypassed when APRM Simulated Thermal Power is ≥ 25% and recirculation drive flow is < 60% of rated recirculation drive flow.	24 months

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux - High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.5 SR 3.3.1.1.6 SR 3.3.1.1.9 SR 3.3.1.1.14	≤ 120/125 divisions of full scale
	5(a)	3	H	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.9 SR 3.3.1.1.14	≤ 120/125 divisions of full scale
b. Inop	2	3	G	SR 3.3.1.1.3 SR 3.3.1.1.14	NA
	5(a)	3	H	SR 3.3.1.1.4 SR 3.3.1.1.14	NA
2. Average Power Range Monitors					
a. Neutron Flux - High, (Setdown)	2	3(b)	G	SR 3.3.1.1.1 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.16	≤ 15% RTP
b. Flow Biased Simulated Thermal Power - High	1	3(b)	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.16	≤ 0.66 W + 66% RTP and ≤ 120% RTP(c)
c. Neutron Flux - High	1	3(b)	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.16	≤ 120% RTP

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) Each APRM channel provides inputs to both trip systems.

(c) [.66 W + 66% - .66 Δ W] RTP when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating.

NOTE: This page is applicable after commencing Cycle 11 operation.

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
d. Inop	1,2	3(b)	G	SR 3.3.1.1.16	NA
e. 2-Out-Of-4 Voter	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.14 SR 3.3.1.1.16	NA
f. OPRM Upscale	1	3(b)	I	SR 3.3.1.1.1 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.16 SR 3.3.1.1.17	NA
3. Reactor Vessel Steam Dome Pressure - High	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 1090 psig
4. Reactor Vessel Water Level - Low, Level 3	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≥ 528 inches above vessel zero
5. Main Steam Isolation Valve - Closure	1	8	F	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 10% closed
6. Drywell Pressure - High	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 2.5 psig
7. Scram Discharge Volume Water Level - High					
a. Resistance Temperature Detector	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 50 gallons
	5(a)	2	H	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 50 gallons

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) Each APRM channel provides inputs to both trip systems.

Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Scram Discharge Volume Water Level - High (continued)					
b. Float Switch	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 46 gallons
	5(a)	2	H	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 46 gallons
8. Turbine Stop Valve - Closure	≥ 30% RTP	4	E	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14 SR 3.3.1.1.15	≤ 10% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	≥ 30% RTP	2	E	SR 3.3.1.1.8 SR 3.3.1.1.13 SR 3.3.1.1.14 SR 3.3.1.1.15	≥ 550 psig
10. Reactor Mode Switch - Shutdown Position	1,2	1	G	SR 3.3.1.1.12 SR 3.3.1.1.14	NA
	5(a)	1	H	SR 3.3.1.1.12 SR 3.3.1.1.14	NA
11. Manual Scram	1,2	1	G	SR 3.3.1.1.8 SR 3.3.1.1.14	NA
	5(a)	1	H	SR 3.3.1.1.8 SR 3.3.1.1.14	NA
12. RPS Channel Test Switches	1,2	2	G	SR 3.3.1.1.4	NA
	5(a)	2	H	SR 3.3.1.1.4	NA
13.Deleted					

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

ATTACHMENT C (Page 1 of 1)
PROTECTIVE ACTION RECOMMENDATIONS

Note 1: If conditions are unknown utilizing the flowchart, then answer NO.

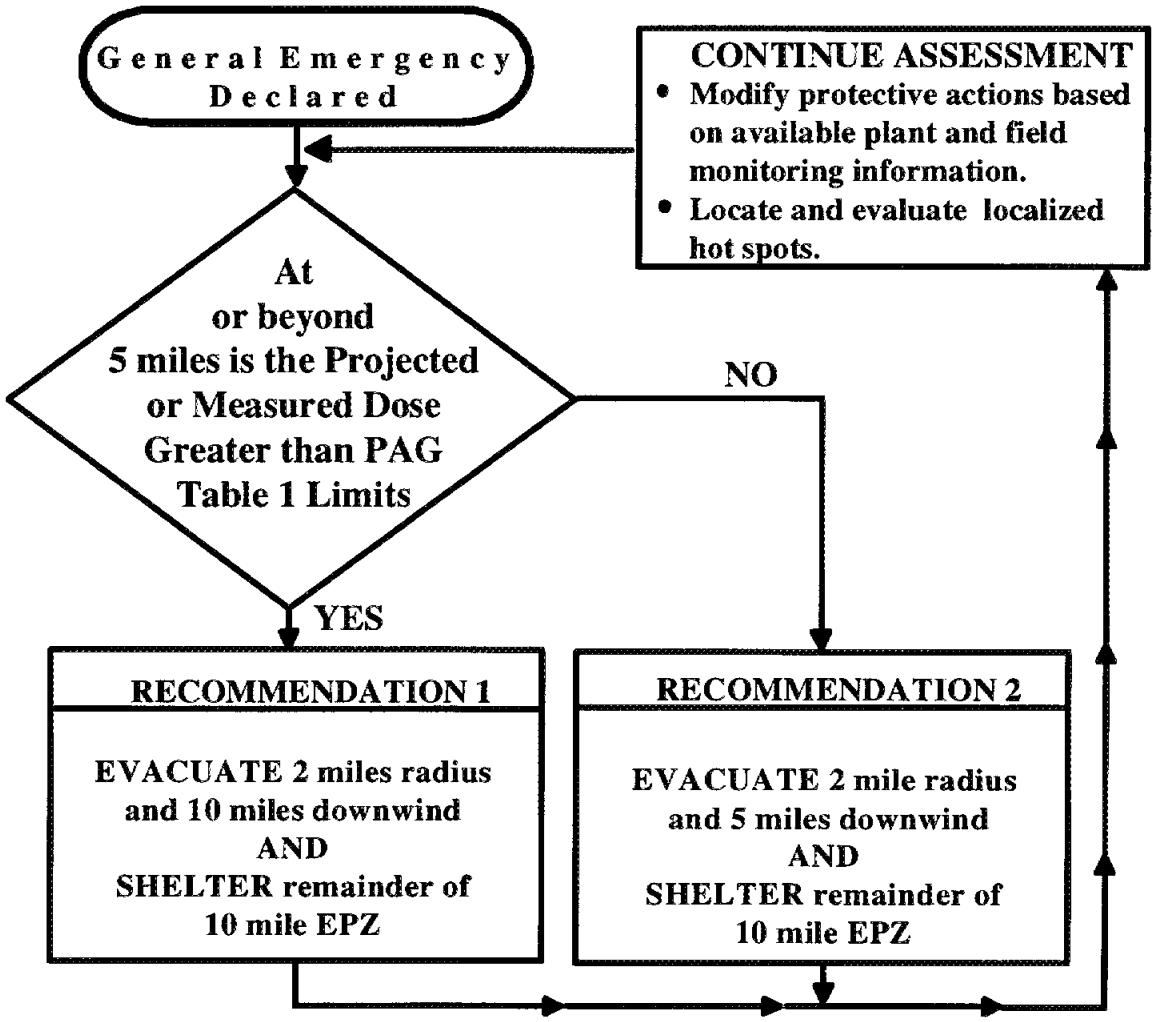


TABLE 1 Protective Action Guides	
TYPE	**LIMIT**
Measured	3.9E-6 micro Ci/cc of Iodine 131 or 1 REM/hr External Dose
Projected	1 REM TEDE or 5 REM Thyroid CDE