JOB PERFORMANCE MEASURE SETUP SHEET

System:	C71 – Reactor Protection System
Time Critical:	No
Alternate Path:	Yes
Applicability:	RO/SRO
Safety Function:	1 – Reactivity Control
Setting:	Simulator
Validated:	19 minutes
References:	SVI-C71-T0051 Rev 11 & ARI-H13-P680-0005 Rev 15
Tasks:	212-531-02-01 Perform RPS Manual Scram Channel Functional Test 212-502-01-01 Perform Manual Scram
Task Standard:	Perform RPS Manual Scram Functional Surveillance and respond to rod drift problem.
Required Material:	SVI-C71-T0051, Reactor Protection System Manual Scram Channel Functional
K / A Data:	212000 A4 - Ability to manually operate and/or monitor in the control room: A4.02 Perform system functional test(s). Importance RO 3.6 / SRO 3.7; A4.01 - Provide manual SCRAM signal(s). Importance RO 4.6 / SRO 4.7; A4.11 - Scram air header pressure. Importance RO 3.7 / SRO 3.7

1. Simulator Setup Instructions: Reset simulator to full power IC Exam and perform the following:
   For 2017 ILO Exam, Reset Simulator to IC-131. Close P52-F200 then load Schedule File NRC2017-JPM-C71-501. Verify Event File NRC2017-JPM-C71-501 loads. Place Motor Feed Pump in AUTO

2. Location / Method: Simulator / performance

3. Initial Condition: Plant conditions are as is. An operator is stationed at the back panels to assist you.

4. Initiating Cue: Unit Supervisor directs you as the BOP Reactor Operator to perform SVI-C71-T0051 Reactor Protection System Manual Scram Channel Functional. Prereqs have been completed.

Start Time _____ **End Time** _____

Candidate _____

JPM BODY SHEET

Standard: Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc… before performing task.

Standard: Performer follows management expectations with regards to safety and communication standards.

Step 1

SVI-C71-T0051- Reactor Protection System Manual Scram Channel Functional

5.1 Surveillance Test

1. Print Lead Test Performers name on Attachment 2.
2. OBTAIN the Reactor Operator's "Test Start Approval" signature on the Test Cover Sheet/Surveillance Order.
3. Detach Attachment 2 and give to RO.

Standard: Candidate performs Section 5.1 Steps 1 → 3.

Instructor Cue: If asked, thermography checks on solenoid valves has been completed.

Notes: Sign Test Cover Sheet for 'Test Start Approval'.

SAT ___ UNSAT ___

Comment(s):_____

Step 2

5.1.1 Manual Scram Switch Ch A

1. Confirm the following:
   a. Annunciator 1/2 SCRAM A/C (P680 05A A9) reset.
   b. Annunciator RPS MANUAL SCRAM (P680 05A B10) reset.
   c. Annunciator MAN SCRAM SW ARMED (P680 05A C10) reset.
   d. RPS CH A&C SCRAM SOL VALVES indicating lights GP1A, GP2A, GP3A, AND GP4A [P680 11E1 (L & R)] on.
   e. RPS CH B&D SCRAM SOL VALVES indicating lights GP1B, GP2B, GP3B, AND GP4B [P680 11E1 (L & R)] on.
   f. Indicating light RPS LOGIC A ENERGIZED (P691) on.

Standard:	Candidate confirms annunciators are reset and scram solenoid valve indicating lights are on.
Instructor Cue:	When Candidate inquires about the RPS LOGIC A ENERGIZED light on P691, respond that it is ON.
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 3

2. Place RPS MANUAL SCRAM CH A switch 1C71A S3A (P680 11E1) collar to ARMED position.

Critical Step: Candidate places RPS MANUAL SCRAM CH A switch collar to ARMED position.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 4

3. Confirm annunciator MAN SCRAM SW ARMED (P680 05A C10) on.
4. Be notified the following step will result in RPS Channel A Half Scram.

Standard: Candidate confirms annunciator alarms.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 5

5. Depress and hold RPS MANUAL SCRAM CH A pushbutton 1C71A S3A.
6. Confirm Annunciator RPS MANUAL SCRAM (P680 05A B10) on.
7. Release RPS MANUAL SCRAM CH A pushbutton 1C71A S3A.

Critical Step: Candidate depresses RPS MANUAL SCRAM CH A pushbutton and confirms annunciator alarms, then releases the pushbutton.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 6

8. Confirm the following:
   a. Annunciator 1/2 SCRAM A/C (P680 05A A9) on.
   b. RPS CH A&C SCRAM SOL VALVES indicating lights GP1A, GP2A, GP3A AND GP4A [P680 11E1 (L & R)] off.
   c. Integrated Computer System (ICS) point C71EC001 CHANNEL SCRAM A STATUS indicates SCRAM.
   d. Indicating light RPS LOGIC A ENERGIZED (P691) off.
9. IF RCIS is functional AND RCIS Display SCRAM VALVES is backlit red, THEN perform the following:

Standard: Candidate confirms the above for Step 8.

Step 9 is N/A.

Instructor Cue: When Candidate inquires about the RPS LOGIC A ENERGIZED light on P691, respond that it is OFF.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 7

10. Press SCRAM RESET CH A RESET switch 1C71A S5A.

Critical Step: Candidate presses CH A Reset pushbutton.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 8

11. Confirm the following:
    a. Annunciator 1/2 SCRAM A/C (P680 05A A9) reset.
    b. Annunciator RPS MANUAL SCRAM (P680 05A B10) reset.
    c. RPS CH A&C SCRAM SOL VALVES indicating lights GP1A, GP2A, GP3A, AND GP4A [P680 11E1 (L & R)] on.
    d. RPS CH B&D SCRAM SOL VALVES indicating lights GP1B, GP2B, GP3B, AND GP4B [P680 11E1 (L & R)] on.
    e. Indicating light RPS LOGIC A ENERGIZED (P691) on.

Standard:	Candidate confirms annunciators are reset and scram solenoid valve indicating lights are on.
Instructor Cue:	When Candidate inquires about the RPS LOGIC A ENERGIZED light on P691, respond that it is ON.
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 9

12. Place RPS MANUAL SCRAM CH A switch 1C71A S3A collar to DISARM position.
13. Confirm annunciator MAN SCRAM SW ARMED (P680 05A C10) reset.

Standard:	Candidate places Scram switch collar to DISARM and confirms annunciator is reset.
Instructor Cue:	None
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 10

5.1.2 Manual Scram Switch Ch C

1. Confirm the following:
   a. Annunciator 1/2 SCRAM A/C (P680 05A A9) reset.
   b. Annunciator RPS MANUAL SCRAM (P680 05A B10) reset.
   c. Annunciator MAN SCRAM SW ARMED (P680 05A C10) reset.
   d. RPS CH A&C SCRAM SOL VALVES indicating lights GP1A, GP2A, GP3A, AND GP4A [P680 11E1 (L & R)] on.
   e. RPS CH B&D SCRAM SOL VALVES indicating lights GP1B, GP2B, GP3B, AND GP4B [P680 11E1 (L & R)] on.
   f. Indicating light RPS LOGIC C ENERGIZED (P693) on.

Standard:	Candidate confirms annunciators are reset and scram solenoid valve indicating lights are on.
Instructor Cue:	When Candidate inquires about the RPS LOGIC C ENERGIZED light on P693, respond that it is ON.
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 11

2. Place RPS MANUAL SCRAM CH C switch 1C71A S3C (P680 11E1) collar to ARMED position.

Critical Step: Candidate places RPS MANUAL SCRAM CH C switch collar to ARMED position.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 12

3. Confirm annunciator MAN SCRAM SW ARMED (P680 05A C10) on.
4. Be notified the following step will result in RPS Channel C Half Scram.

Standard: Candidate confirms annunciator alarms.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 13

5. Depress and hold RPS MANUAL SCRAM CH C pushbutton 1C71A S3C.
6. Confirm Annunciator RPS MANUAL SCRAM (P680 05A B10) on.
7. Release RPS MANUAL SCRAM CH C pushbutton 1C71A S3C.

Critical Step: Candidate depresses RPS MANUAL SCRAM CH C pushbutton and confirms annunciator alarms, then releases the pushbutton.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 14

8. Confirm the following:
   a. Annunciator 1/2 SCRAM A/C (P680 05A A9) on.
   b. RPS CH A&C SCRAM SOL VALVES indicating lights GP1A, GP2A, GP3A AND GP4A [P680 11E1 (L & R)] off.
   c. Integrated Computer System (ICS) point C71EC003 CHANNEL SCRAM A STATUS indicates SCRAM.
   d. Indicating light RPS LOGIC C ENERGIZED (P693) off.

Standard: Candidate confirms the above for Step 8.

Instructor Cue: When Candidate inquires about the RPS LOGIC C ENERGIZED light on P693, respond that it is OFF.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 15

9. Press SCRAM RESET CH C RESET switch 1C71A S5C.

Critical Step: Candidate presses CH C Reset pushbutton.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 16

10. Confirm the following:
    a. Annunciator 1/2 SCRAM A/C (P680 05A A9) reset.
    b. Annunciator RPS MANUAL SCRAM (P680 05A B10) reset.
    c. RPS CH A&C SCRAM SOL VALVES indicating lights GP1A, GP2A, GP3A, AND GP4A [P680 11E1 (L & R)] on.
    d. RPS CH B&D SCRAM SOL VALVES indicating lights GP1B, GP2B, GP3B, AND GP4B [P680 11E1 (L & R)] on.
    e. Indicating light RPS LOGIC C ENERGIZED (P693) on.

Standard:	Candidate confirms annunciators are reset and scram solenoid valve indicating lights are on.
Instructor Cue:	When Candidate inquires about the RPS LOGIC C ENERGIZED light on P693, respond that it is ON.
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 17

11. Place RPS MANUAL SCRAM CH C switch 1C71A S3C collar to DISARM position.
12. Confirm annunciator MAN SCRAM SW ARMED (P680 05A C10) reset.

Standard:	Candidate places Scram switch collar to DISARM and confirms annunciator is reset.
Instructor Cue:	None
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 18

5.1.3 Manual Scram Switch Ch B

1. Confirm the following:
   a. Annunciator 1/2 SCRAM B/D (P680 05A B9) reset.
   b. Annunciator RPS MANUAL SCRAM (P680 05A B10) reset.
   c. Annunciator MAN SCRAM SW ARMED (P680 05A C10) reset.
   d. RPS CH A&C SCRAM SOL VALVES indicating lights GP1A, GP2A, GP3A, AND GP4A [P680 11E1 (L & R)] on.
   e. RPS CH B&D SCRAM SOL VALVES indicating lights GP1B, GP2B, GP3B, AND GP4B [P680 11E1 (L & R)] on.
   f. Indicating light RPS LOGIC B ENERGIZED (P692) on.

Standard:	Candidate confirms annunciators are reset and scram solenoid valve indicating lights are on.
Instructor Cue:	When Candidate inquires about the RPS LOGIC B ENERGIZED light on P692, respond that it is ON.
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 19

2. Place RPS MANUAL SCRAM CH B switch 1C71A S3C (P680 11E1) collar to ARMED position.

Critical Step: Candidate places RPS MANUAL SCRAM CH B switch collar to ARMED position.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 20

3. Confirm annunciator MAN SCRAM SW ARMED (P680 05A C10) on.
4. Be notified the following step will result in RPS Channel B Half Scram.

Standard: Candidate confirms annunciator alarms.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 21

5. Depress and hold RPS MANUAL SCRAM CH B pushbutton 1C71A S3B.
6. Confirm Annunciator RPS MANUAL SCRAM (P680 05A B10) on.
7. Release RPS MANUAL SCRAM CH B pushbutton 1C71A S3B.

Critical Step:	Candidate depresses RPS MANUAL SCRAM CH B pushbutton and confirms annunciator alarms, then releases the pushbutton.
Instructor Cue:	When Candidate depresses the Scram pushbutton, multiple rods will scram in due to failure on RPS A side.
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 22

Candidate responds to unexpected ROD DRIFT and SCRAM VLV AIR HEADER PRESS LO alarms and recognizes more than 2 control rods drift in combination with a low scram air header pressure alarm.

ARI-H13-P680-0005-D10 – ROD DRIFT

3.0 IMMEDIATE OPERATOR ACTION

3.1 DETERMINE which rod is drifting by DEPRESSING the ROD DRIFT pushbutton and observing the red LED on the Full Core Display.

3.2 DETERMINE if the rod is still moving (more than one notch).

ARI-H13-P680-0005-D6 – SCRAM VLV AIR HEADER PRESS LO

4.0 SUBSEQUENT OPERATOR ACTION

4.3 IF ANY one of the following conditions are met:

- PRIOR TO Scram Pilot Air Hdr Press going less than 50 psig, C11EA015
- Two OR more additional control rod drifts are detected.
- The INST VOL NOT DRAINED (1H13-P680-0005, D7) alarm is received.

THEN PERFORM the following:

4.3.1 SCRAM the reactor.

Critical Step: Candidate scrams the reactor.

Instructor Cue: None

Notes: When Mode Switch is in SHUTDOWN and control rods are inserted, terminate the JPM

SAT ___ UNSAT ___

Comment(s):_____

Terminating Cue: RPS functional for channels A & C complete with Rx scrammed.

Evaluation Results: SAT_____ UNSAT_____

End Time _____

JPM CUE SHEET

INITIAL CONDITIONS:	• Plant conditions are as is. • An operator is stationed at the back panels to assist you.
INITIATING CUE:	• Unit Supervisor directs you as the BOP Reactor Operator to perform SVI-C71-T0051 Reactor Protection System Manual Scram Channel Functional. • Prereqs have been completed.

JOB PERFORMANCE MEASURE SETUP SHEET

System:	C34 Feedwater Control
Time Critical:	No
Alternate Path:	Yes
Applicability:	RO/SRO
Safety Function:	2 - Reactor Water Inventory Control
Setting	Simulator
Validated Time:	39 Minutes
References:	SOI-C34 Rev 35 & ONI-C34 Rev 9
Task:	032-518-01-01 Respond to Feedwater Control Alarms 259-533-04-01 Respond to Feed Pump Trip
Task Standard:	Shift from RFPT and MFP feeding to 2 RFPT's feeding the RPV per SOI-C34. Maintain RPV level above Level 3 and perform required actions for FW pump trip.
Required Material	SOI-C34, Feedwater Control System ONI-C34, Feedwater Flow Malfunction
K / A Data:	259001 A2.01 Ability to (a) predict the impacts of the following on the REACTOR FEEDWATER SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Pump trip BWR-5,6. RO 3.7 / SRO 3.7 A4.05 Ability to manually operate and/or monitor in the control room: Reactor water level. RO 4.0 / SRO 3.9

1. Setup Instructions: Reset simulator to a 77% power IC (**IC-136 for 2017 NRC Exam**) with the Motor Feedpump & RFPT A on DFWLC in Auto and RFPT B at ~3800 RPM in manual on DFWLCS. Disable Motor Feed Pump Auto Transfer. Insert *malfunctions* TH12A and TH12B (FCV A/B runback failure). Assign *Remote Function* FW67 (RFPT B trip) to Trigger 1. **(malfunctions and remote in schedule file NRC2017-*JPM-C34_502* for 2017 NRC exam). Provide place-kept copy of SOI-C34.**

2. Initial Condition: Reactor Power as indicated. RFPT B is being returned to service after maintenance. RFPT B is operating at ≈3800 rpm in manual on 1C34-R601B.

3. Initiating Cue: The Unit Supervisor directs you the Reactor Operator to replace the Motor Feed Pump with RFPT B per SOI-C34. Section 4.4 is complete through Step 9 and then shutdown the Motor Feed Pump to Casing Warmup.

Start Time _____ **End Time** _____

Operator _____

JPM BODY SHEET

Standard: Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc… before performing task.

Standard: Performer follows management expectations with regards to safety and communication standards.

Step 1

SOI-C34, FEEDWATER CONTROL SYSTEM

4.4 Placing Reactor Feed Pump in Service from 1100 RPM to RFPT Flow Control

4.4.10 IF maintaining RFPT Flow Control in Manual, THEN GO TO Step 4.4.15.

CAUTION
Only 2 MANUAL/AUTO STATIONs are permitted to be in Automatic (backlit green) at a time. Prior to placing a MANUAL/AUTO STATION into Automatic it is required that at least one other MANUAL/AUTO STATION be in Manual or locked in Auto (backlit white).

NOTES
Three pump operation should be minimized when reactor power is less than 57%.
The oncoming pump OUT does NOT need to exactly match the operating pump OUT as the DCS will automatically balance the pump flows.

4.4.11

Less than 15% Reactor Power
Motor Feed pump is in service
Motor Feed pump will remain in service feeding the vessel
THEN PERFORM the following:

Standard: Operator determines step 4.4.11 is NA

Instructor Cue: RFPT Flow Control will not be in Manual

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 2

4.4.12	Less than 15% Reactor Power
	Motor Feed pump is in service
	Motor Feed pump will be removed from service feeding the vessel
	THEN PERFORM the following:

Standard: Operator determines step 4.4.12 is NA

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 3

4.4.13	Greater than 15% Reactor Power			
	In-service RFPT's MANUAL/AUTO STATION is in AUTO	1C34-R601A	1C34-R601B	
	MFP MANUAL/AUTO STATION is in AUTO			1C34-R601C
	THEN PERFORM the following:			

Critical Step: Operator determines step 4.4.13 is the correct Step.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 4

4.4.13.a PLACE one of the in-service feed pumps MANUAL/AUTO STATION in Manual. 1C34-R601C

Critical Step: Operator places Motor Feed Pump controller in MANUAL.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 5

4.4.13.b BALANCE the oncoming flow controller output with the in service flow controller output that is in auto.

Standard: Operator balances the in service flow controllers.

Instructor Cue: None

Notes: RFPT B will not start feeding until its output is ~67%

SAT ___ UNSAT ___

Comment(s):_____

Step 6

4.4.13.c PLACE the on-coming RFPT MANUAL/AUTO STATION in Auto.
1C34-R601B

Critical Step: Operator places RFPT B in AUTO.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 7

4.4.14

Greater than 15% power	
The other RFPT MANUAL/AUTO STATION is in Manual OR locked in Auto	MFP MANUAL/AUTO STATION is in Manual
THEN PERFORM the following:	

Standard: Operator determines step 4.4.14 is NA

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 8

4.4.15 VERIFY the OPERATOR RX LEVEL SETPOINT at 196".

4.4.16 DIRECT Chemistry to establish sample flow.

Standard:	Operator verifies Setpoint at 196" and directs Chemistry to establish sample flow
Instructor Cue:	As Chemistry, "Understand, establish sample flows."
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 9

4.4.17 IF removing a feed pump from service, THEN REFER TO one of the following:

- Section 6.2, MFP Shutdown to Casing Warmup
- Section 6.3, Reactor Feed Pump Shutdown to 1100 RPM

Standard:	Operator proceeds to Section 6.2
Instructor Cue:	None
Notes:	Shutdown MFP to Casing Warmup given in Initiating Cue

SAT ___ UNSAT ___

Comment(s):_____

Step 10

6.2 MFP Shutdown to Casing Warmup

6.2.1 Direct Chemistry to ALIGN Hydrogen Water Chemistry as required

6.2.2 CONFIRM one or both of the following:

RFPT A operating with the RFPT A MANUAL/AUTO STATION in AUTO

RFPT B operating with the RFPT B MANUAL/AUTO STATION in AUTO

6.2.3 VERIFY that the capacity of the remaining Feed Pumps is sufficient to maintain RPV Level.

6.2.4 VERIFY the MFP FCV MAN/AUTO STATION is in MANUAL. 1C34-R601C

Standard:	Operator verifies MFP FCV MAN/AUTO STATION is in MANUAL
Instructor Cue:	If directed to align H_2 Water Chemistry, respond, "Understand align Hydrogen water chemistry as required." If the Candidate is waiting for a report back that H2 has been realigned, then respond that, "Hydrogen water chemistry has been properly aligned."
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 11

6.2.5 WHILE maintaining RPV level in band, ADJUST the MFP FCV MAN/AUTO STATION to 0%. 1C34-R601C

6.2.6 VERIFY the following valves are closed:

- MFP FULL FLOW CONTROL VALVE 1N27-F010
- MFP LOW FLOW CONTROL VALVE 1N27-F110

Critical Step:	Operator adjusts 1C34-R601C to close 1N27-F010 and 1N27-F110.
Instructor Cue:	When Operator announces RFPT trip, Announce entry to ONI-C34. "Enter ONI-C34"
Notes:	When MFP valves are almost closed or closed, RFPT B will trip. **Simulator driver** verify **Event 2** inserts to trip RFPT B when Motor Feed Pump flow is less than 500 gpm

SAT ___ UNSAT ___

Comment(s):_____

Step 12

ONI-C34, FEEDWATER FLOW MALFUNCTION

3.0 IMMEDIATE ACTIONS

3.1 IF a flow control malfunction has occurred, THEN PERFORM the following:

3.1.1 TRANSFER the affected RFPT(s) to the Manual Speed Control Dial. 1N27-S50, 1N27-S52

3.1.2 IF the MFP malfunctions, THEN PLACE the MFP MAN/AUTO STATION in MANUAL. 1C34-R601C

3.2 IF a Feed Pump failure occurred, THEN PERFORM the following:

NOTE
Section 4.4, Reactor Feed Pump Quick Restart provides a method of rapidly returning a RFPT to service.

3.2.1 IF needed to match Feed Water AND Steam flows, THEN START either of the following:

- Motor Feed Pump
- Reactor Feed Pump Turbine

CAUTION
Intentional entry into the IMMEDIATE EXIT/CONTROLLED ENTRY Region of the Power to Flow Map, PDB-A0006 is prohibited.

3.3 IF Reactor Power is above the available Feed Pump operating limits, THEN LOWER reactor recirculation flow to restore the following:

- Reactor Power within the following limits of operating Feed Pumps:
- One RFPT & MFP – 85%
- One RFPT only – 63%
- MFP only – 17%

3.4 MAINTAIN RPV Level 192 to 200 inches.

3.5 PRIOR TO RPV level reaching the Level 3 Scram (178”) Scram the reactor.

Critical Step:	Operator prevents a Reactor Recirculation pump downshift or a Reactor Scram by opening Motor Feed Pump Valves 1N27F010 and 1N27F110 with 1C34R601C. OR Operator lowers Reactor Recirculation flow OR Operator inserts a Manual Scram prior to 178".
Instructor Cue:	Restore level 192 to 200 inches.
Notes:	At this power level, the Candidate has almost 2 minutes to gain control of Feedwater or Reactor Recirc flow before RPV level lowers to the auto scram setpoint (178")

SAT ___ UNSAT ___

Comment(s):_____

Terminating Cue: Reactor Level maintained 192 to 200 inches with RFPT A and Motor Feed Pump.

Evaluation Results: SAT_____ UNSAT_____

End Time: _____

JPM CUE SHEET

INITIAL CONDITIONS:	• Reactor Power as indicated. • RFPT B is being returned to service after maintenance. • RFPT B is operating at ≈3800 rpm in manual on 1C34-R601B.
INITIATING CUE:	• The Unit Supervisor directs you the Reactor Operator to replace the Motor Feed Pump with RFPT B per SOI-C34. • Section 4.4 is complete through Step 9. • Then shutdown the Motor Feed Pump to Casing Warmup.

JOB PERFORMANCE MEASURE SETUP SHEET

System:	E51, Reactor Core Isolation Cooling
Time Critical:	No
Alternate Path:	No
Applicability:	RO/SRO
Safety Function:	3 - Reactor Pressure Control
Validated:	17 minutes
References:	EOP-SPI 6.6 Rev 3
Required Material	EOP-SPI 6.6, RCIC Injection And Pressure Control
Tasks:	217-509-01-01 Manually Startup the RCIC System from Standby Readiness (CST to CST).
Task Standard:	Lineup RCIC to control RPV Pressure per EOP-SPI 6.6
K/A Data:	217000 A4 Ability to manually operate and/or monitor in the control room: A4.07 Reactor pressure. Importance: RO 3.9 / SRO 3.8

1. Setup Instructions:

   - Reset simulator to **IC-127**. (SP Water level > 18.4'). Let simulator run until WTR LEG LO PRESS alarm clears, then place simulator in FREEZE.
   - Place simulator in RUN after Initiating Cue is read to Candidate.
   - While maintaining RPV pressure, open SRV at 204" rising and close SRV at 204" lowering or 810 psig – whichever occurs first.
   - Place 'yellow' copy of procedure in EOP-SPI 6.6 tool bag.

2. Location / Method: Simulator / Perform

3. Initial Condition: The unit is scrammed due to closure of MSIV's and is operating IAW EOP-1, RPV Control. Feedwater is in Manual and controlling RPV level 150" to 219". Pressure band is 800 to 1000 psig. Pressure control is on SRV's.

4. Initiating Cue: The Unit Supervisor directs you control RPV pressure using RCIC IAW EOP-SPI 6.6, RCIC Injection and Pressure Control.

Start Time: _____ **End Time**: _____

Candidate: _____

JPM BODY SHEET

Standard: Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc before performing task.

Standard: Performer follows management expectations with regards to safety and communication standards.

Step 1

EOP-SPI 6.6, RCIC Injection and Pressure Control

1.0 IF the RCIC system is isolated OR an isolation may occur, THEN BYPASS isolations signals as follows:

1.1 AT H13-P629, Card File E21A-Z3-1, REMOVE trip unit RX PRESS. E31-N685A

1.2 AT H13-P618, Card File E12A-Z6-1, REMOVE trip unit RX PRESS. E31-N685B

1.3 AT H13-P642, VERIFY the following keylock switches in BYPASS:

- RCIC LD ISOLATION BYPASS. E31A-S2B
- RHR LD ISOL BYPASS FOR RHR AND RCIC. E31A-S4B

1.4 AT H13-P632, VERIFY the following keylock switches in BYPASS:

- RCIC LD ISOLATION BYPASS. E31A-S2A
- RHR LD ISOL BYPASS FOR RHR AND RCIC. E31A-S4A

1.5 AT H13-P601, DEPRESS the following pushbuttons:

- RCIC DIVISION 1 ISOLATION RESET E51A-S16
- RCIC DIVISION 2 ISOLATION RESET E51A-S25

Standard: Step 1.0 is not applicable.

Instructor Cue: If asked, it is not anticipated that an isolation will occur.

Notes: Candidate may perform Step 1.0 if he/she feels an isolation may occur. However, with RPV level control on Feedwater, an isolation should not occur.

SAT ___ UNSAT ___

Comment(s):_____

Step 2

2.0 AT H13-P629, Card File E21A-Z2-1, REMOVE the following trip units to defeat the RCIC High Suppression Pool Level suction transfer:

- SUPR PL LVL E51-N636A
- SUPR PL LVL E51-N636E

Critical Step: Candidate removes trip units at panel H13-P629

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 3

3.0

RPV level will be operated below 130 inches (Level 2)	RCIC turbine is tripped	RCIC system is isolated
THEN DEFEAT the RCIC Automatic Initiation as follows:		

3.1 AT H13-P629, Card File E21A-Z2-1, REMOVE trip unit RX LEVEL, 1B21-N692A
3.2 AT H13-P629, Card File E21A-Z5-1, REMOVE trip unit RX LEVEL, 1B21-N692E

Standard: Step 3.0 is not necessary.

Instructor Cue: If asked, it is not anticipated that RPV level will go below Level 2 (130").

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 4

NOTE
The control switch for RCIC PUMP SUPR PL SUCT ISOL, 1E51-F031, must be placed in CLOSE prior to RCIC PUMP CST SUCTION VALVE, 1E51-F010, reaching full open or the CST/Supr Pool suction interlock will cause RCIC PUMP CST SUCTION VALVE, 1E51-F010, to close automatically.

4.0 The CST is available

RCIC PUMP SUPR PL SUCT ISOL, 1E51-F031 is OPEN

THEN PLACE RCIC suction on the CST as follows:

4.1	IF RCIC is running AND RCIC pump flow controller is in Auto, THEN WHILE suction valves are stroking, VERIFY RCIC pump flow controller set at 700 GPM.	1E51-R600
4.2	TAKE RCIC PUMP CST SUCTION VALVE to OPEN.	1E51-F010
4.3	TAKE RCIC PUMP SUPR PL SUCT ISOL to CLOSE.	1E51-F031

Critical Step: Candidate shifts RCIC suction to the CST.

Instructor Cue: None

Notes: RCIC suction is initially on the Suppression Pool

SAT ___ UNSAT ___

Comment(s):_____

Step 5

5.0 DEPRESS the RCIC INIT – MN & FDW TB TRIP - SEAL IN RESET pushbutton. 1E51A-S18

6.0 CONFIRM the RCIC INIT – MN & FDW TB TRIP - SEAL IN RESET white seal in light is OFF. 1E51A-S18

Standard: Candidate Depresses pushbutton and confirms white light off.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 6

7.0 IF ESW PUMP A is available AND is NOT running, THEN TAKE ESW A PUMP control switch to START. 1P45-C001A

8.0 IF ECC PUMP A is available AND is NOT running, THEN TAKE ECC A PUMP control switch to START. 1P42-C001A

Standard: Candidate verifies ESW and ECC pumps started.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 7

9.0 IF RCIC gland seal compressor is available, THEN VERIFY the RCIC gland seal compressor is running. E51-C004

Standard: Candidate starts gland seal compressor.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 8

10.0 INITIATE an evacuation from the following:
- Reactor Building Annulus.
- Containment Building.

11.0

RCIC turbine is tripped	RCIC system is isolated
THEN VERIFY RCIC STEAM SHUTOFF is CLOSED	1E51-F045

Standard: Candidate announces evacuation over PA.

Instructor Cue: None

Notes: Step 11.0 is N/A

SAT ___ UNSAT ___

Comment(s):_____

Step 9

12.0 VERIFY the following:

- RCIC SECOND TEST VALVE TO CST is OPEN. 1E51-F059
- RCIC pump flow controller, in Auto set between 350 to 700 GPM. 1E51-R600
- RCIC TURBINE TRIP THRT V LATCH is OPEN. 1E51-F510
- RCIC TURBINE TRIP THRT V POSITION is OPEN. 1E51-F510

Critical Step: Candidate Opens 1E51-F059.

Instructor Cue: None

Notes: Candidate verifies 1E51-R600 set at 350 to 700 GPM (not critical step).

SAT ___ UNSAT ___

Comment(s):_____

Step 10

13.0 IF RCIC system is isolated,
THEN AT H13-P601, VERIFY the following valves are OPEN:

13.1	RCIC TURB EXHAUST SHUTOFF.	E51-F068
13.2	RCIC ST SUPP WARMUP ISOL.	E51-F076
13.3	RCIC ST SUPP INBD ISOL.	E51-F063
13.4	RCIC ST SUPP OTBD ISOL.	E51-F064

Standard: Step 13.0 is N/A

Instructor Cue: None

Notes: No isolation occurred.

SAT ___ UNSAT ___

Comment(s):_____

Step 11

14.0 PERFORM Steps 15.0 and 16.0 as needed to maintain RPV Level and RPV pressure within directed bands.

Standard: Candidate verifies the above.

Instructor Cue: None

Notes: Step 16.0 is not used now – using RCIC for level control.

SAT ___ UNSAT ___

Comment(s):_____

Step 12

15.0 WHEN desired to operate RCIC in the Pressure Control Mode as follows, THEN PERFORM the following:

15.1 VERFIY RCIC INJECTION VALVE is CLOSED. 1E51-F013

15.2 VERIFY RCIC STEAM SHUTOFF is OPEN. 1E51-F045

Standard: Candidate verifies E51-F013 is closed.

Critical Step: Candidate opens E51-F045.

Instructor Cue: None

Notes: Step 15.1 is complete. 1E51-F013 was not open

SAT ___ UNSAT ___

Comment(s):_____

Step 13

15.3 MAINTAIN RCIC flow between 350 GPM and 700 GPM.

Standard:	Candidate maintains RCIC flow between 350 GPM and 700 GPM.
Instructor Cue:	None
Notes:	SOI-E51 P&L warns against operating RCIC on min flow.

SAT ___ UNSAT ___

Comment(s):_____

Step 16

15.4 THROTTLE RCIC FIRST TEST VALVE TO CST to maintain desired RPV pressure.
1E51-F022

Critical Step:	Candidate throttles E51-F022 to control RPV pressure in 800 to 1000 psig band.
Instructor Cue:	None
Notes:	Candidate needs to control RPV pressure in band of 800 to 1000 psig.

SAT ___ UNSAT ___

Comment(s):_____

Terminating Cue: RCIC is operating in CST to CST Mode and controlling RPV pressure in band.

Evaluation Results: SAT_____ UNSAT_____

End Time _____

JPM CUE SHEET

INITIAL CONDITIONS:	• The unit is scrammed due to closure of MSIV's and is operating IAW EOP-1, RPV Control. • Feedwater is in Manual and controlling RPV level 150" to 219". • Pressure control is on SRV's. • Pressure band is 800" to 1000 psig.
INITIATING CUE:	The Unit Supervisor directs you control RPV pressure using RCIC IAW EOP-SPI 6.6, RCIC Injection and Pressure Control.

JOB PERFORMANCE MEASURE SETUP SHEET

System:	E12 - RHR
Time Critical:	No
Alternate Path:	Yes
Applicability:	RO/SRO
Safety Function:	4 - Heat Removal From the Core
Validated Time:	27 Minutes
References:	SOI-E12 - RESIDUAL HEAT REMOVAL SYSTEM Rev 67 & ARI-H13-P601-20 Rev 18
Required Material	SOI-E12 Section 4.5 & ARI-H13-P601-20
Task:	205-535-01-01 Warmup and Initiate Shutdown Cooling from Standby Readiness
Task Standard:	Establish Shutdown Cooling using RHR A through the normal return path and use RHR A Head Spray per SOI-E12 and respond to low RHR Suction Flow problem.
K/A Data:	205000 – Ability to (a) predict the impacts of the following on the SDC System (RHR SDC MODE); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.10-Valve operation IR=2.9/2.9, Ability to manually operate and/or monitor in the control room: A4.01-SDC/RHR pumps. IR=3.7/3.7, A4.03-SDC/RHR discharge valves IR=3.6/3.5 & A4.09- System flow IR=3.1/3.1

1. Setup Instructions:
   - Reset simulator to a shutdown IC (**IC-126 for 2017 ILO NRC Exam**) with Rx pressure < 135 psig. Insert schedule file **NRC2017-JPM-E12_504.sch**. verify Event file **NRC2017-JPM-E12_504.evt loads**.
   - Verify Rx pressure is ~ 15 psig and maintained less than the 135 psig SDC isolation.
   - Provide marked-up copy of SOI-E12.

2. Location / Method: Simulator / performance

3. Initial Condition: The Plant is in Mode 3. Plant shutdown for beginning of RFO in progress. Feedwater is in operation on the Low Flow Controller, Unit Supervisor is operating in IOI-4 Shutdown. RHR A is ready to be placed in Shutdown Cooling. SOI-E12 Section 4.7, Steps 4.7.1 through 4.7.18 are complete.

4. Initiating Cue: The Unit Supervisor directs you to:
   - Establish Shutdown Cooling using RHR A through the normal return path.
   - Establish a temperature band of 100°F to 110°F.
   - And it is desired to use RHR A Head Spray.

Operator _____ **Start Time** _____ **End Time** _____

JPM BODY SHEET

Standard: Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc… before performing task.

Standard: Performer follows management expectations with regards to safety and communication standards.

Step 1

SOI-E12 - RESIDUAL HEAT REMOVAL SYSTEM

4.7 Shutdown Cooling Startup for RHR A(B)

Standard: Candidate reviews procedure to verify in correct Step.

Instructor Cue: If asked, Unit Supervisor is ready to make Mode Change @ 200°F.

Notes: Section 4.5.3 was completed.

SAT ___ UNSAT ___

Comment(s):_____

Step 2

4.7.19 HOLD the Oncoming RHR HX'S BYPASS VALVE in CLOSE for 59-62 seconds. 1E12-F048A.

Critical Step: Candidate closes 1E12-F048A for 59-62 seconds.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 3

4.7.20 HOLD RHR HX'S OUTLET VALVE in CLOSE, UNTIL closed. 1E12-F003A.

Critical Step: Candidate closes 1E12-F003A.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 4

4.7.21

It is desired to establish the Normal Return Path	1E12-F053A
RHR Upper Pool Cooling Isol is closed	1E12-F037A
LPCI Injection Valve is closed	1E12-F042A
THEN PERFORM the following:	

4.7.21.a IF the Feedwater System is shutdown, THEN VERIFY the Oncoming RHR loop FDW HDR SHUTOFF is closed, to prevent flow to the feedwater system. 1B21-F065A 1B21-F065B

Standard: Feedwater operating, 1B21-F065's are open, operator NA's step.

Instructor Cue: If asked about the status of Feedwater, inform the candidate that another operator will shut down feedwater after Shutdown Cooling is in service and he is to continue.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 5

CAUTIONS

- The RHR PUMP MIN FLOW VALVE is down-powered in the closed position. Throttling open the RHR HX'S BYPASS VALVE, 1E12-F048A(B) after starting the pump ensures pump min flow requirements are met following pump start.
- Maintain RHR Shutdown Cooling flow greater than 2575 gpm to ensure that the RHR PUMP A(B) has adequate minimum flow.

4.7.21.b. INITIATE flow through the SHUTDOWN COOLING TO FDW SHUTOFF as follows:

4.7.21.b.1 PERFORM the following simultaneously:

- Hold the SHUTDOWN COOLING TO FDW SHUTOFF control switch in OPEN UNTIL open. 1E12-F053A
- Take RHR PUMP to START. 1E12-C002A

4.7.21.b.2 WITHIN 8 seconds, THROTTLE RHR HX'S BYPASS VALVE, UNTIL RHR PUMP FLOW is at least 2575 gpm. 1E12-F048A 1E12-R603A

Critical Step: Candidate opens 1E12-F053A and starts RHR A pump. If necessary, throttle E12-F048A until flow > 2575 gpm.

Instructor Cue: None

Notes: If Candidate throttles E12-F048A closed for more than 62 seconds (JPM Step 2) flow will be < 2575 gpm.

SAT ___ UNSAT ___

Comment(s):_____

Step 6

4.7.21.c JOG OPEN the RHR HX'S BYPASS VALVE in 1000-2000 gpm increments, UNTIL RHR PUMP FLOW is 6000-7100 gpm.
1E12-F048A 1E12-R603A

4.7.21.d GO TO RHR Shutdown Cooling Operations for RHR A(B).

Critical Step: Operator establishes flow.

Instructor Cue: None

Notes: The Operator goes to SOI-E12 Section 7.6 for further adjustments.

SAT ___ UNSAT ___

Comment(s):_____

Step 7

7.6 RHR Shutdown Cooling Operations for RHR A(B)

7.6.1 OBSERVE the following limitations when in Shutdown Cooling:

- MAINTAIN cooldown rate less than 100°F in any 1 hour period.

7.6.2. PERFORM the following as needed to maintain desired cooldown rate AND RHR Pump flow 7000-7100 1E12-R603A

- Throttle RHR A HX'S OUTLET VALVE, 1E12-F003A
- Throttle RHR A HX'S BYPASS VALVE, 1E12-F048A

Critical Step: Candidate establishes Cooldown rate of < 100°F/hr.

Instructor Cue: If asked, an I&C tech is performing the cooldown surveillance.

Notes: Operator should review the limitations of Step 7.6.1.

For this combination of RPV temperature and lake water temperature, with E12-F048A HX Bypass valve fully closed and E12-F003A HX inlet valve open, a cooldown of 100°F can be accomplished in 26 minutes.

SAT ___ UNSAT ___

Comment(s):_____

Step 8

7.6.3	RHR A is in Shudown Cooling
	Head Spray is desired
	THEN PERFORM the following:

7.6.3.a. Confirm that RCIC INJECTION VLV is closed 1E51-F013

7.6.3.b. PERFORM the following, UNTIL HD SPRAY FLOW is 500 gpm AND RHR Pump flow 7000-7100:

- THROTTLE RHR HX A OUTLET VALVE. 1E12-F003A
- THROTTLE RHR A HX'S BYPASS VALVE. 1E12-F048A
- THROTTLE RHR A HEAD SPRAY ISOL. 1E12-F023

Critical Step: Vessel head is being sprayed thru 1E12-F023.

Instructor Cue: If asked, inform operator that 1E51-F013 was verified closed when RCIC was placed in secured status.

Notes: Simulator Operator: Verify **Event 4** activates when E12-F023 is full open.

SAT ___ UNSAT ___

Comment(s):_____

Step 9

Acknowledge annunciator, RHR A SUCTION PRESS LOW and review pump parameters & ARI.

Standard:: Candidate acknowledges annunciator "RHR A Suction Press Low" and refers to the ARI.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 10

ARI-H13-P601-20-D3, RHR A SUCTION PRESS LOW

4.0 SUBSEQUENT OPERATOR ACTION
4.1 IF the pump suction path has been lost, THEN TRIP RHR Pump A.

Critical Step: Candidate places RHR "A" Pump control switch to STOP.

Instructor Cue: None

Notes: Terminate the JPM

SAT ___ UNSAT ___

Comment(s):_____

Terminating Cue: RHR Pump "A" has been tripped.

Evaluation Results: **SAT_____ UNSAT_____**

End Time _____

JPM CUE SHEET

INITIAL CONDITIONS:	• The Plant is in Mode 3. • Plant shutdown for beginning of RFO in progress. • Feedwater is in operation on the Low Flow Controller, • Unit Supervisor is operating in IOI-4 Shutdown. • RHR A is ready to be placed in Shutdown Cooling. • SOI-E12 Section 4.7, Steps 4.7.1 through 4.7.18 are complete.
INITIATING CUE:	The Unit Supervisor directs you to: • Establish Shutdown Cooling using RHR A through the normal return path. • Establish a temperature band of 100°F to 110°F. • And it is desired to use RHR A Head Spray.

JOB PERFORMANCE MEASURE SETUP SHEET

System:	B21 – Nuclear Steam Supply Shutoff System
Time Critical:	No
Alternate Path:	Yes
Applicability:	RO/SRO
Safety Function:	5 – Containment Integrity
Setting:	Simulator
Validated:	8 minutes
References:	OAI-1703 Rev 30
Tasks:	299-998-05-01 Utilize the Actuations and Isolations Hardcards During EOP-1
Task Standard:	Verify Isolations and Actuations per EOP-1 and OAI-1703 and correct any failures.
Required Material:	OAI-1703, HARDCARDS – Attachments 1 and 16
K / A Data:	223002 A3 – Ability to monitor automatic operations of the Primary Containment Isolation System/Nuclear Steam Supply Shut-Off including: A3.01 System indicating lights and alarms. Importance: RO 3.4 / SRO 3.4; A3.02 Valve closures. Importance: RO 3.5 / SRO 3.5 A4 – Ability to manually operate and/or monitor in the control room: A4.06 Confirm initiation to completion. Importance: RO 3.6 / SRO 3.7.

1. Simulator Setup Instructions: Reset simulator to shutdown IC with RCIC running and HPCS overridden off and perform the following:
   For 2017 ILO Exam, Reset Simulator to IC-137. Do NOT go to Run until ICS falls through. Load Schedule File NRC2017-JPM-B21-508. Verify Event File NRC2017-JPM-B21-508 loads. Place simulator in Freeze. After candidate has been read the Initiating Cue, place simulator in run. During the JPM, acknowledge alarms as ATC.

2. Location / Method: Simulator / performance

2. Initial Condition: The plant was operating at 90% power with Suppression Pool Cleanup in service when a loss of Feedwater occurred. The Unit Supervisor is operating in EOP-1, RPV Control. ATC is controlling RPV level and pressure.

4. Initiating Cue: Unit Supervisor directs you as the BOP Operator to perform Horseshoe Actuation's Hardcard and Isolation Hardcard for Level 3 and Level 2.

Start Time _____ **End Time** _____

Candidate _____

JPM BODY SHEET

Standard: Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc… before performing task.

Standard: Performer follows management expectations with regards to safety and communication standards.

Step 1

EOP-1 – RPV Control

Reactor Level Control

RLC-2 Verify Isolations and Actuation

Standard:	Candidate obtains the Actuations and Isolations hard-cards.
Instructor Cue:	If asked, the Field Supervisor is verifying back-panel actuations. If asked about HPCS, reply "HPCS is overridden off for level control".
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 2

Compare Isolation Status with Isolation Hardcard.

Critical Step:	Candidate determines that valves G42-F010 & F020 should not be open and manually closes G42-F010 & F020 from P870.
Instructor Cue:	If asked, no EOP-SPI's have been performed.
Notes:	G42 valves were open for SPCU operations prior to scram, but should not be open as no EOP-SPI's or ONI-SPI's would require these valves open for these plant conditions.

SAT ___ UNSAT ___

Comment(s):_____

Step 3

Compare Isolation Status with Isolation Hardcard.

Standard:	Candidate determines that valves M16-F010A & F010B should be open and since Drywell/Containment differential pressure is less than 0.0 psid.
Instructor Cue:	None
Notes:	M16 valves indicate open and should not be closed as a slight vacuum exists in the Drywell. Candidate may direct Radwaste to secure sump pumps per Note 4 of Hardcard.

SAT ___ UNSAT ___

Comment(s):_____

Step 4

Compare Isolation Status with Isolation Hardcard.

Critical Step:	Candidate determines that P53-F030 should be open and manually opens P53-F030.
Instructor Cue:	None
Notes:	1P53-F030 & 1P53-F040 are designed to open on a BOP LOCA signal to route any leakage from a LOCA between the outer air lock seals to the annulus to be processed by the AEGTS (M15) System.

SAT ___ UNSAT ___

Comment(s):_____

Step 5

Compare Isolation Status with Isolation Hardcard.

Critical Step:	Candidate determines that P53-F040 should be open and manually opens P53-F040.
Instructor Cue:	None
Notes:	1P53-F030 & 1P53-F040 are designed to open on a BOP LOCA signal to route any leakage from a LOCA between the outer air lock seals to the annulus to be processed by the AEGTS (M15) System.

SAT ___ UNSAT ___

Comment(s):_____

Step 6

Compare Actuation Status with Actuation's Hardcard.

Critical Step:	Candidate determines that ECC A pump should be running and manually starts ECC A pump.
Instructor Cue:	None
Notes:	ECC A pump starts to support RCIC operation.

SAT ___ UNSAT ___

Comment(s):_____

Step 7

Continuing comparing Actuation Status with Actuation's Hardcard and Isolation Status with Isolations Hardcard.

Standard:	Candidate confirms all other Actuations and Isolations are correct for Level 3 & Level 2.
Instructor Cue:	None
Notes:	Terminate the JPM

SAT ___ UNSAT ___

Comment(s):_____

Terminating Cue: Actuations and Isolations have been verified and problems corrected.

Evaluation Results: SAT_____ UNSAT_____

End Time _____

JPM CUE SHEET

INITIAL CONDITIONS:	The plant was operating at 90% power with Suppression Pool Cleanup in service when a loss of Feedwater occurred. The Unit Supervisor is operating in EOP-1, RPV Control. ATC is controlling RPV level and pressure.
INITIATING CUE:	Unit Supervisor directs you as the BOP Operator to perform: • Horseshoe Actuation's Hardcard and • Isolation Hardcard for Level 3 and Level 2

JOB PERFORMANCE MEASURE SETUP SHEET

System:	R43 – Standby Diesel Generators
Time Critical:	No
Alternate Path:	No
Applicability:	RO/SRO
Safety Function:	6 - Electrical
Setting:	Simulator
Validated:	18 minutes
References:	SOI-R43 Rev 45,
Tasks:	264-502-01-01 Terminate Parallel Operations with the Grid (Remote) 264-506-01-01 Shutdown the SBDG to Standby Readiness (Remote)
Task Standard:	Terminate parallel operations with the grid and shutdown Div 1 diesel generator to Standby per SOI-R43
Required Material:	SOI-R43, Division 1 And 2 Diesel Generator System
K / A Data:	264000 A4.01 Ability to manually operate and/or monitor in the control room: Adjustment of exciter voltage: RO 3.3 / SRO 3.4 A4.04 Manual start, loading, and stopping of emergency generator: Plant-Specific RO 3.7 / SRO 3.7

1. Setup Instructions: For 2017 NRC exam, reset simulator to IC 135. Run Schedule file NRC2017-JPM-R43_016.sch. Verify Event file NRC2017-JPM-R43_016.evt loads. [Reset simulator to any IC. Start and parallel Div 1 DG with the grid. Load DG to 3000KW or higher and 500 KVAR. Acknowledge the local Div 1 DG alarm. Take a snapshot. Ensure SOI-R43 Sections 7.3 and 6.2 are erased.]

2. Initial Condition: Div 1 DG is operating in parallel with the grid in accordance with SOI-R43. The RSE reports a fuel injector just started leaking fuel oil.

3. Initiating Cue: The Unit Supervisor directs you, the Reactor Operator to terminate parallel operations with the grid and shutdown Div 1 DG to standby readiness in accordance with SOI-R43. Rapid generator load reduction is required and EH11 will be supplied from the Preferred Source.

Start Time: _____ **End Time**: _____

Candidate: _____

JPM BODY SHEET

Standard: Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc… before performing task.

Standard: Performer follows management expectations with regards to safety and communication standards.

Step 1

SOI-R43, DIVISION 1 AND 2 DIESEL GENERATOR SYSTEM

7.3 Remote - Terminating Parallel Operations With the Grid

NOTE
This section may be performed when operating the DIESEL GEN GOVERNOR as directed by Diesel Operations Using Mechanical Governor Control.

CAUTION
To prevent a generator reverse power trip condition, do not reduce generator load below 100 KW when synchronized with the grid.

7.3.1 IF Bus EH11(EH12) is to be supplied from the Preferred or Alternate Preferred Source, THEN PERFORM the following:

7.3.1.a IF a rapid load reduction is necessary, THEN PERFORM the following concurrently:

- LOWER generator load to approximately 100 KW on DG LOADING KILOWATTS using the DIESEL GEN GOVERNOR 1R43-R013A
- ADJUST generator vars to approximately 100 KVAR using the DIESEL GEN VOLTAGE RGLTR 1R43-R012A

Critical Step: Operator lowers load to approximately 100 KW and KVAR to 100 KVAR.

Instructor Cue: None

Notes: Per Initiating Cue, Bus EH11 is to be supplied from Preferred Source and a rapid load reduction is required.

SAT ___ UNSAT ___

Comment(s):_____

Step 2

7.3.1.b IF a Rapid load reduction is NOT necessary, THEN PERFORM the following:

Standard: Step 7.3.1.b is N/A per Initiating Cue.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 3

NOTES
- The diesel generator should be shutdown within 5 minutes after load is lowered below 2500 KW.
- Load reduction limitations do not apply below 2500 KW.

7.3.1.c LOWER DG LOADING KILOWATTS to approximately 100 KW. 1R43-R013A

7.3.1.d LOWER DG LOADING KILOVARS to approximately 100 KVAR. 1R43-R012A

7.3.1.e TAKE the DIESEL GEN BRKR to TRIP. EH1102

Critical Step: Operator trips breaker EH1102.

Instructor Cue: None

Notes: Steps 7.3.1.c & 7.3.1.d should have been performed in Step 7.3.1.a.

SAT ___ UNSAT ___

Comment(s):_____

Step 4

7.3.1.f VERIFY the DIESEL GEN VOLTAGE RGLTR adjusted to read 3900 to 4400 Volts on DIESEL GEN AØ-BØ VOLTS.

7.3.1.g SHUTDOWN the Division Diesel Generator to the desired configuration.

Standard: Operator verifies voltage and proceeds to Section 6.1 to shutdown the diesel generator

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 5

6.1 Remote - Shutdown to Standby Readiness

NOTES
- If the voltage and speed are not adjusted on DG shutdown, the DG will need to be started and shutdown per this SOI to adjust speed and voltage prior to operability.
- Emergency stop is accomplished by performing Emergency Shutdown.

6.1.1 IF diesel unloading was NOT within the unloading limits listed in the Precautions and Limitations, THEN OPEN the Diesel Turbo Prelube Oil Valve. 1R47-F544A

Standard: Operator directs NLO to open Diesel Turbo Prelube Valve 1R47-F544A.

Instructor Cue: Prelube valve has been opened.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 6

6.1.2 VERIFY the DIESEL GENERATOR in AUTO at 1H13-P877. Div 1

6.1.3 VERIFY the DIESEL GENERATOR CONTROL TRANSFER is in CONT RM at the Generator Control Panel. 1H51-P055A

Standard: Operator verifies diesel in AUTO at P877 and in CONT RM at H51-P055A.

Instructor Cue: Diesel is in Control Room at 1H51-P055A.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 7

6.1.4 PERFORM the following at 1H13-P877:

6.1.4.a CONFIRM the DIESEL GEN BRKR green light is on EH1102

Standard: Operator confirms EH1102 green light on.

Instructor Cue: None.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 8

6.1.4.b IF the PREFERRED SOURCE BRKR is closed, THEN PLACE the SYNC SEL SWITCH in TH1. EH1114

6.1.4.c IF the ALTN PREFERRED SOURCE BRKR is closed, THEN PLACE the SYNC SEL SWITCH in TH21. EH1115

6.1.4.d ADJUST the DIESEL GEN GOVERNOR so the SYNCHROSCOPE is moving slow in the FAST direction. 1R43-R022A

Critical Step:
- Operator places the sync selector switch in TH1
- Operator adjusts governor so synch scope is moving slow in fast direction.

Instructor Cue: None.

Notes: Step 6.1.4.c is N/A.

Initially, Synchroscope will be moving slow in the slow direction.

SAT ___ UNSAT ___

Comment(s):_____

Step 9

6.1.4.e PLACE the SYNC SEL SWITCH in OFF

Standard: Operator places sync selector switch in OFF.

Instructor Cue: None.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 10

6.1.4.f ADJUST the DIESEL GEN VOLTAGE RGLTR to read 4100 to 4200 Volts on DIESEL GEN A-B VOLTS. **1R43-R017A**

Critical Step: Operator adjusts voltage regulator to obtain 4100 to 4200 volts on 1R43R017A.

Instructor Cue: None

Notes: Initially, voltage will be > 4200 volts.

SAT ___ UNSAT ___

Comment(s):_____

Step 11

6.1.5

The DIESEL GENERATOR FIELD BREAKER CLOSED amber light is off at Generator Control Panel.	1H51-P055A
The bulb is good.	
THEN PERFORM the following:	

6.1.5.a INITIATE a Notification.

6.1.5.b Inform the Unit Supervisor.

Standard: Operator checks with NLO for status of amber light.

Instructor Cue: Amber light on.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 12

NOTE
The Diesel Generator is Inoperable for Manual starts for 2 - 3 minutes, until the Unit Avail Emergency Status light is illuminated.

6.1.6 RECORD appropriate Maintenance Rule status in Plant Narrative Log.

6.1.7 TAKE the DIESEL GENERATOR to STOP at 1H13-P877.

Critical Step: Operator stops Div 1 DG by taking the DG control switch to STOP.

Instructor Cue: Log entry will be made.

If NLO is questioned about local alarms on DG S/D, respond, "the Shutdown Cylinder is extended."

Notes: The Shutdown Cylinder extends for ~2 minutes following DG S/D.

SAT ___ UNSAT ___

Comment(s):_____

Step 13

6.1.8 OBSERVE the DIESEL GENERATOR FIELD BREAKER CLOSED light is de-energized.

Standard: Operator checks with NLO for status of amber light.

Instructor Cue: Amber light is off.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 14

6.1.9 IF the DIESEL GENERATOR FIELD BREAKER CLOSED amber light is energized, THEN PERFORM the following:

6.1.10 IF annunciator DG TRIP* PROTECT RELAY LOCKOUT [1H13-P877-1(2), E2] is in alarm, THEN PERFORM the following:

6.1.11 IF annunciator DG TRIP DIFF RELAY LOCKOUT [1H13-P877-1(2), E4] is in alarm, THEN PERFORM the following:

6.1.12 IF Diesel Turbo Prelube Valve is open, THEN CLOSE the Diesel Turbo Prelube Valve. 1R47- F544A

Standard: Steps 6.1.9, 6.1.10, & 6.1.11 are N/A. Operator directs NLO to close Prelube valve.

Instructor Cue: When asked, Prelube Valve is closed.

Notes: Terminate the JPM

SAT ___ UNSAT ___

Comment(s):_____

Terminating Cue: Division 1 DG is shutdown to Standby.

Evaluation Results: SAT_____ UNSAT_____

End Time: _____

JPM CUE SHEET

INITIAL CONDITIONS:	▪ Div. 1 DG is operating in parallel with the grid in accordance with SOI-R43. ▪ The RSE reports a fuel injector just started leaking fuel oil.
INITIATING CUE:	▪ The Unit Supervisor directs you, the Reactor Operator to terminate parallel operations with the grid and shutdown Div 1 DG to standby readiness in accordance with SOI-R43. ▪ Rapid generator load reduction is required. ▪ EH11 will be supplied from the preferred source.

JOB PERFORMANCE MEASURE SETUP SHEET

System:	C51 – APRM System
Time Critical:	No
Alternate Path:	No
Applicability:	RO/SRO
Safety Function:	7 - Instrumentation
Setting:	Simulator
Validated:	17 minutes
References:	SOI-C51(APRM) Rev 18, SOI-C11(RCIS) Rev 30, & ARI-H13-P680-06 Rev 9
Tasks:	003-501-04-01 Bypass an APRM Channel 003-503-04-01 Bypass an Individual LPRM 003-509-01-01 Monitor APRM/LPRM Status 003-524-04-01 Bypass an OPRM Channel
Task Standard:	Determine which LPRM failed and Bypass the LPRM per SOI-C51 (APRM)
Required Material:	SOI-C51 (APRM), Average Power Range Monitoring System
K / A Data:	215005 Ability to (a) predict the impacts of the following on the Rod Control And Information System (RCIS) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Importance RO 3.0 / SRO 3.4 Ability to manually operate and/or monitor in the control room: A4.01 Operator control module (lights and push buttons): BWR-6. Importance RO 3.7 / SRO 3.7. 215005 Ability to manually operate and/or monitor in the control room: A4.03 APRM back panel switches, meters and indicating lights. Importance RO 3.2 / SRO 3.3. A4.04 LPRM back panel switches, meters and indicating lights. Importance RO 3.2 / SRO 3.2

1. Simulator Setup Instructions: For 2017 NRC exam, reset simulator to IC-135. Insert schedule file NRC2017-JPM-C51_002. [Reset simulator to any power IC. Place the following LPRM's in bypass 16-41-2B, 32-41-3D, 08-33-3A, and 40-17-6C. Insert malfunctions NM03L3209D to 1% (LPRM 32-09-6D failure.) and YC01 for SPDS failure.]

2. Location / Method: Simulator / Performance

3. Initial Condition: Reactor Power is as indicated. LPRM Downscale annunciator has just come in. The following LPRM's are INOPERABLE and bypassed 16-41-2B, 08-33-3A, 40-17-6C, and 32-41-3D. SPDS just failed.

4. Initiating Cue: The Unit Supervisor directs you as the Reactor Operator to determine which LPRM has caused the alarm, obtain the current LPRM reading for the problem LPRM, and then bypass the problem LPRM.

Start Time: _____ **End Time**: _____ **Candidate**: _____

JPM BODY SHEET

Standard: Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc… before performing task.

Standard: Performer follows management expectations with regards to safety and communication standards.

Step 1

Determine which LPRM has caused the alarm.

Critical Step: Operator determines LPRM 32-09-6D has failed.

Instructor Cue: None

Notes: The operator observes lights on H13-P672 to determine which LPRM failed downscale.

SAT ___ UNSAT ___

Comment(s):_____

Step 2 Obtain current LPRM reading. The Candidate has a choice of how the LPRM reading is obtained. He can use SOI-C51(APRM) Section 7.1 or Section 7.3. Only one section needs to be performed. (Candidate has choice of performing either section or from memory)

SOI-C51 (APRM), Average Power Range Monitoring System

7.1 Obtaining an Individual LPRM Output on the APRM Channel Display Meter

7.1.1 REFER TO Attachment 2, LPRM to APRM Channel Assignment and DETERMINE the APRM Channel to which the LPRM is assigned.

NOTE

- The following steps are performed at the applicable following panel, for the APRM Channel which the LPRM is assigned:
  - Power Range Neutron Mon Ch A/E Panel, 1H13-P669
  - Power Range Neutron Mon Ch B/F Panel, 1H13-P670
  - Power Range Neutron Mon Ch C/G Panel, 1H13-P671
  - Power Range Neutron Mon Ch D/H Panel, 1H13-P672
- On the Display (top) Section of each Power Range Neutron Mon Panel, the LPRMs in both APRM Channels are referenced by number, for example: 1A-24-57.
  - "1A" corresponds to the required positions of the METER FUNCTION switches on the APRM Display Meter. The "A" is also the LPRM's position within the string, A being the lowest and D the uppermost in the string.
  - The "24-57" is the selected LPRM's string position in the core.
- For the previous example, the switches would be placed as follows:
  - Left side METER FUNCTION in "1"
  - Right side METER FUNCTION in "A"

7.1.2 PLACE METER FUNCTION switches, on the associated APRM Channel, as required to select the LPRM output Display Meter.

D/H
1H13-P672.

7.1.3 READ the indicated value on the APRM Channel Display Meter.

7.1.4 WHEN the individual LPRM output reading is no longer required, THEN PLACE the (right side) METER FUNCTION switch in AVERAGE.

7.3 Obtaining an Individual LPRM Output on the RCIS Full Core Display

7.3.1 REFER TO the Rod Selection section of SOI-C11 (RCIS) and SELECT a control rod next to the desired LPRM String.

JPM Step 2 Continued next page:

JPM Step 2 continued

NOTE

Indications are interpreted as follows:

- Power level in % of 13.4 kW/ft
- Red LED = upscale condition at 100%
- Yellow LED = bypassed LPRM detector
- Green LED = downscale condition at 3%

7.3.2 READ the LPRM individual detector outputs (A, B, C, and D) in the lower right corner of the Full Core Display, under the heading of LPRM LEVEL.

Critical Step: Candidate determines LPRM 32-09-6D has failed and is reading <3%.

Instructor Cue: None

Notes: RC&IS - downscale light will appear green for 32-09 string and the Candidate can select Rod 30-07, 30-11, 34-07, or 34-11, if using Section 7.3.

SAT ___ UNSAT ___

Comment(s):_____

Step 3

Bypass the problem LPRM.

7.6 Bypassing an LPRM

7.6.1 REFER TO Attachment 2, LPRM to APRM Channel Assignment, and DETERMINE the APRM Channels associated with the LPRM to be bypassed.

Critical Step: Operator determines that the failed LPRM is associated with APRM D.

Instructor Cue: None

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 4

7.6.2 REFER TO Bypassing an APRM Channel and BYPASS the associated APRM Channel. D

7.4 Bypassing an APRM Channel

NOTES
- This section is used when instrument failure may require an APRM Channel output to RCIS or RPS to be bypassed.
- The normal Flux Level input to the Reactor Recirculation System Flux Controller for power control is from APRM Channel A. When APRM Channel A is bypassed, the input to the Flux Controller is automatically switched to APRM Channel E.
- Bypassing the APRM does NOT cause the associated OPRM Module to be inoperable. The associated OPRM receives Reactor Power and Loop Flow signals

CAUTIONS
- This section shall NOT be used to bypass a valid APRM upscale trip. Bypassing an APRM channel bypasses all trip and alarm functions initiated from that channel and requires that it be declared inoperable.
- If an APRM is bypassed at 1H13-P680, then depressing the Bypass Test pushbutton on the associated APRM drawer will reactivate the channel's trip function and may result in a half scram.

7.4.1 REFER TO Technical Specification Table 3.3.1.1-1 Item 2 for applicability.

NOTE
When bypassing APRM A, the following step must be performed to ensure a Rcirc Flow change does not occur.

7.4.2 IF APRM Channel A is to be bypassed, THEN VERIFY that all conditions of either 7.4.2.a OR 7.4.2.b exist:

(JPM Step 4 continued on next page)

(JPM Step 4 continued)

Standard:	The Operator checks with the US on Tech Specs.
Instructor Cue:	Unit Supervisor checking Technical Specifications.
Notes:	Step 7.4.2 is N/A

SAT ___ UNSAT ___

Comment(s):_____

Step 5

7.4.3 PLACE the NEUTRON MONITOR BYPASS, APRM joystick on 1H13-P680, in the BYPASS position for the APRM Channel being bypassed. 1C51B-S6 CH D

Critical Step:	Operator bypasses APRM D.
Instructor Cue:	None
Notes:	If operator has bypassed wrong APRM, due to identification problem with LPRM, terminate JPM.

SAT ___ UNSAT ___

Comment(s):_____

Step 6

7.4.5 CONFIRM that the APRM Bypass status light comes on at the selected APRM's Power Range Neutron Mon Panel. 1H13-P672

7.4.9 IF the bypassed APRM channel caused any trips or alarms, THEN RESET those trips or alarms.

Standard: The Operator confirms lights are on and alarms are reset.

Instructor Cue: None.

Notes: SOI-C51(APRM) Steps 6.6→6.8 are N/A.

SAT ___ UNSAT ___

Comment(s):_____

Step 7

NOTES

- Bypassing an LPRM may result in a half scram signal from the associated OPRM Modules.
- In the following step, only the OPRM Module associated with the APRM being bypassed, is required to be bypassed (i.e. If APRM A was bypassed, then OPRM A).

7.6.3 REFER TO Bypassing an OPRM Module and BYPASS the OPRM Module associated with the APRM bypassed in Step 7.6.2. D

7.8 Bypassing an OPRM Module

NOTES

- This step causes the OPRM BYPASS annunciator, 1H13-P680-6-B2, to alarm.
- This step may also cause a momentary OPRM INOP annunciator, 1H13-P680-6-A1, to alarm due to cell re-initialization for the operating OPRM Module in the same cabinet.
- The Keylock Mode Switch is located on the outside of applicable Panel 1H13-P669, P670, P671, or P672 (Bay B).

(JPM Step 7 continued next page)

(JPM Step 7 continued)

7.8.1 CONFIRM one of the following:

- The minimum number of OPRM Channels will remain OPERABLE when the OPRM Module is bypassed. (TS 3.3.1.3)
- Power is < 23.8% Rated Thermal Power
- Unit Supervisor has determined that the potential of a half scram from the OPRM Module being bypassed is acceptable for current plant conditions.

7.8.2 PLACE selected OPRM Module NORMAL/BYPASS switch in BYPASS.

7.8.3 DOCUMENT in accordance with OAI-1701.

Critical Step: Operator bypasses OPRM D.

Instructor Cue: 1. Step 7.8.1 is complete proceed with bypass,

2. The ATC is documenting per OAI-1701.

Notes: None

SAT ___ UNSAT ___

Comment(s):_____

Step 8

7.6.4	Bypassing the LPRM will result in less than 2 LPRM inputs per core level	Bypassing the LPRM will result in less than 14 LPRM inputs to the APRM Channel
	NOTIFY the Unit Supervisor that the associated APRM channel will become inoperable.	

Standard: The Operator determines that Step 7.6.4 is N/A.

Instructor Cue: None.

Notes: APRM D will have 15 remaining LPRM inputs.

SAT ___ UNSAT ___

Comment(s):_____

Step 9

7.6.5 DETERMINE if the Associated OPRM will remain operable as follows:

7.6.5.a REFER TO Attachment 3, LPRM to OPRM Assignment, and DETERMINE the OPRM Channels associated with the LPRM to be bypassed.

7.6.5.b IF bypassing the LPRM will result in less than 1 LPRM input to the associated OPRM, THEN NOTIFY the Unit Supervisor that the associated OPRM channel will become inoperable.

Standard: The Operator determines that OPRM D will remain operable.

Instructor Cue: None.

Notes: OPRM D will have 30 remaining LPRM inputs.

SAT ___ UNSAT ___

Comment(s):_____

Step 10

NOTE
The bypassed LPRM's white bypass status light on the display section (top) of the panel will come on when placed in BY.

7.6.6 PLACE the LPRM Card Mode Switch for the LPRM to be bypassed in BY inside the associated APRM Power Range Neutron Mon Panel. 1H13-P672

7.6.7 DIRECT Reactor Engineering to perform a TIP Trace as necessary.

Critical Step: Operator bypasses failed LPRM 32-09-6D.

Instructor Cue: Reactor Engineering will perform a TIP Trace if necessary.

Notes: Terminate the JPM at this point.

SAT ___ UNSAT ___

Comment(s):_____

Terminating Cue: APRM D is bypassed, OPRM D is bypassed, and LPRM 32-09-6D is bypassed.

Evaluation Results: SAT_____ UNSAT_____

End Time: _____

JPM CUE SHEET

INITIAL CONDITIONS:	• Reactor Power is as indicated. • LPRM Downscale annunciator has just come in. • The following LPRM's are inoperable and bypassed 16-41-2B, 08-33-3A, 40-17-6C, and 32-41-3D. • SPDS just failed.
INITIATING CUE:	The Unit Supervisor directs you as the Reactor Operator to: • Determine which LPRM has caused the alarm, • Obtain the current LPRM reading for the problem LPRM and then • Bypass the failed LPRM.

JOB PERFORMANCE MEASURE SETUP SHEET

System:	M15 – Annulus Exhaust Gas Treatment
Time Critical:	No
Alternate Path:	No
Applicability:	RO/SRO
Safety Function:	9 - Radioactivity Release
Setting:	Simulator
Validated:	12 minutes (updated 8/22/16 - with time compression)
References:	SOI-M15 Rev 11 ARI-H13-P800-0001 Rev 7
Tasks:	261-503-02-01 Shift Operating Trains 261-507-01-01 Respond to Alarms
Task Standard:	Shift AEGTS trains per SOI-M15.
Required Material:	SOI-M15, ANNULUS EXHAUST GAS TREATMENT SYSTEM
K / A Data:	261000 A4 - Ability to manually operate and/or monitor in the control room: A4.03 Fan. Importance RO 3.0 / SRO 3.0. A4.07 System flow. Importance RO 3.1 / SRO 3.2.

1. Simulator Setup Instructions: Reset simulator to any IC with AEGTS A running and perform the following:
   [Insert malfunction cp03_1m15c0001b to 20% on Event 11.
   Make a snapshot. Following the last performance of this JPM, delete the snapshot. **]**
   For 2017 ILO Exam, Reset Simulator to IC-131.

   If/when candidate identifies correct procedure (SOI-M15, Section 7.1) provide him/her with a YELLOW copy of the procedure.

2. Location / Method: Simulator / performance

3. Initial Condition: Plant conditions are as is.

4. Initiating Cue: Unit Supervisor directs you as Reactor Operator to shift Annulus Exhaust Gas Treatment System trains per SOI-M15 to equalize run time.

Start Time _____ **End Time** _____

Candidate _____

JPM BODY SHEET

Standard: Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc… before performing task.

Standard: Performer follows management expectations with regards to safety and communication standards.

Step 1

SOI-M15 - Annulus Exhaust Gas Treatment System

7.1 Shifting Operating Trains

7.1.1 IF Backup DW Purge is in operation, THEN NOTIFY the Chemistry Unit to sample in accordance with REC-0104.

7.1.2 TAKE the offgoing AEGT ELEC HT COIL to STOP.

1M15-D001A

Critical Step: Candidate takes 1M15-D001A to STOP position.

Instructor Cue: None

Notes: Step 7.1.1 is N/A

SAT ___ UNSAT ___

Comment(s):_____

Step 2

7.1.3 WHEN five minutes has elapsed since stopping the offgoing AEGT ELEC HT COIL, THEN PLACE the oncoming AEGT FAN in ON. 1M15-C001B

Critical Step:	Candidate places AEGT FAN B in ON position after 5 minutes has elapsed.
Instructor Cue:	None
Notes:	Time compression may be used if desired.

SAT ___ UNSAT ___

Comment(s):_____

Step 3

7.1.4 **TAKE** the oncoming AEGT ELEC HT COIL to START.

M16-D001B

Critical Step:	Candidate starts B heater.
Instructor Cue:	None
Notes:	After starting the fan, the Candidate must wait until the B low flow alarm is reset before starting the heater as the heater will not energize until the fan is up to speed.

SAT ___ UNSAT ___

Comment(s):_____

Step 4

7.1.5 WHEN 1 to 2 minutes have elapsed since starting the oncoming AEGT FAN, THEN CONFIRM annulus pressure is maintained between 0.75" and 1.0" H2O vacuum.

- ANNULUS DIFF PRESSURE RECORDER 1M15-R016A
- ANNULUS DIFF PRESSURE RECORDER 1M15-R016B

7.1.6 CONFIRM the oncoming ANNULUS EXH FAN FLOW LOW annunciator window is reset. 1H13-P800-1 A1

Standard:	Candidate waits one to two minutes and confirms dampers have repositioned and Annulus ΔP within band.
Instructor Cue:	None
Notes:	None

SAT ___ UNSAT ___

Comment(s):_____

Step 5

7.1.7 DECLARE the offgoing AEGT FAN inoperable in accordance with T.S. 3.6.4.3.

Standard:	Candidate informs US of AEGT A fan inoperability.
Instructor Cue:	The AEGT fan has been declared inoperable per TS 3.6.4.3.
Notes:	The off-going fan is declared INOP while holding the switch in OFF.

SAT ___ UNSAT ___

Comment(s):_____

Step 6

7.1.8 HOLD the offgoing AEGT FAN in STOP. 1M15-C001A.

7.1.9 WHEN 1 to 2 minutes have elapsed since stopping the offgoing AEGT FAN, THEN CONFIRM the following:

- Annulus pressure is maintained between 0.75" and 1.0" H2O vacuum on ANNULUS DIFF PRESSURE RECORDER. 1M15-R016A 1M15-R016B
- Operating ANNULUS EXH FAN FLOW LOW annunciator is reset. 1H13-P800-1 D1

7.1.10 RELEASE the offgoing switch AEGT FAN to STBY. 1M15-C001A

Critical Step: Candidate holds AEGT fan A in STOP and confirms Annulus ΔP in band and annunciator is reset, then places switch in STBY.

Instructor Cue: None

Notes: Switch should be held long enough for Annulus ΔP alarm to reset. Annulus ΔP alarm may or may not come in, but is not relevant to this task.

SAT ___ UNSAT ___

Comment(s):_____

Step 7

7.1.11 CONFIRM the following for the offgoing AEGT train:

- AEGT RCIRC DAMPER closes 1M15-F070A
- AEGT EXH DAMPER opens 1M15-F080A

7.1.12 IF the offgoing AEGT FAN amber LOCA override is NOT illuminated, THEN REQUEST the Unit Supervisor to determine the appropriate operability status now that the AEGT Train has been returned to its normal standby readiness alignment. 1M15-C001A

7.1.13 PERFORM independent verification of the required components.

Standard:	Candidate confirms damper positions, requests Operability Status, and performs first part of IV.
Instructor Cue:	If Candidate requests operability status, respond AEGT train A is operable. Inform Candidate IV will be completed by another operator
Notes:	Terminate the JPM

SAT ___ UNSAT ___

Comment(s):_____

Terminating Cue: AEGT train B is running and train A is in standby.

Evaluation Results: SAT_____ UNSAT_____

End Time _____

JPM CUE SHEET

INITIAL CONDITIONS:	Plant conditions are as is.
INITIATING CUE:	Unit Supervisor directs you as Reactor Operator to shift Annulus Exhaust Gas Treatment System trains per SOI-M15 to equalize run time