Task No.: 201004O0101

Withdraw Control Rods for Startup (Alternate Path Control Rod Fails to Latch)

Trainee: ____________________ Examiner: ____________________

Pass ☐ Fail ☐ Examiner Signature: ____________________ Date: __________

Additional Program Information:

1. Appropriate Performance Locations: CR / SIM
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 20 minutes
5. NRC K/A 201003 A2.03 (3.4/3.7)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to manipulate the Reactor Manual Control System to withdraw control rods during a startup.
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Task No.: 201004O0101

Withdraw Control Rods for Startup (Alternate Path Control Rod Fails to Latch)

Directions to Trainee:

When I tell you to begin, you are to withdraw control rods to raise reactor power to increase bypass valve position to 12% in order to support heatup. The examiner will act as your concurrent verifier and will automatically concur with all moves even if the move is incorrect. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

<u>If being simulated In-Plant or Control Room:</u>

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

<u>If being performed in the Simulator:</u>

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. A plant startup is in progress with reactor pressure at 400 psig.
2. Reactor power is 4%.
3. The Control Rod Sequence Package is completed up to step 21.

General References:

1. Procedure 10.13
2. Procedure 2.1.1.

Task No.: 201004O0101

Withdraw Control Rods for Startup (Alternate Path Control Rod Fails to Latch)

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical checks denoted by "*".
3. Simulator cues denoted by "#".

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to withdraw control rods to raise reactor power to increase bypass valve position to 12% in order to support heatup.

Task No.: 201004O0101

Withdraw Control Rods for Startup (Alternate Path Control Rod Fails to Latch)

Performance Checklist	Standards	Initials
NOTE: Procedure 10.13 requires concurrent verification for all rod moves. If asked to perform a concurrent verification. Concur with all moves irrespective of whether the move is correct.		
1. Selects Control Rod 30-31.	Control Rod 30-31 Push Button on the 9-5 select matrix is depressed. **CUE**: Control Rod 30-31 Push Button on 9-5 select matrix is backlit.	________*
2. Withdraws Control Rod 30-31.	Control Rod 30-31 is at position 08. **CUE**: Four Rod display indicates 08 for rod 30-31.	________*
3. Selects Control Rod 30-15.	Control Rod 30-15 Push Button on the 9-5 select matrix is depressed. **CUE**: Control Rod 30-31 Push Button on 9-5 select matrix is backlit.	________*
4. Withdraws Control Rod 30-15.	Control Rod 30-15 is at position 08. **CUE**: Four Rod display indicates 08 for rod 30-15.	________*

Task No.: 201004O0101

Withdraw Control Rods for Startup (Alternate Path Control Rod Fails to Latch)

Performance Checklist	Standards	Initials
5. Selects Control Rod 22-39.	Control Rod 22-39 Push Button on the 9-5 select matrix is depressed. **CUE**: Control Rod 22-39 Push Button on 9-5 select matrix is backlit.	________*
6. Withdraws Control Rod 22-39.	Control Rod 22-39 is at position 08. **CUE**: Four Rod display indicates 08 for rod 22-39.	________*
7. Selects Control Rod 22-15.	Control Rod 22-15 Push Button on the 9-5 select matrix is depressed. **CUE**: Control Rod 22-15 Push Button on 9-5 select matrix is backlit.	________*
8. Withdraws Control Rod 22-15.	Control Rod 22-15 is at position 08. **CUE**: Four Rod display indicates 08 for rod 22-15.	________*
9. Selects Control Rod 30-39.	Control Rod 30-39 Push Button on the 9-5 select matrix is depressed. **CUE**: Control Rod 30-39 Push Button on 9-5 select matrix is backlit.	________*
NOTE: When control rod 30-39 is withdrawn it will fail to latch and will continue to withdraw after the withdraw signal is removed.		

Task No.: 201004O0101

Withdraw Control Rods for Startup (Alternate Path Control Rod Fails to Latch)

Performance Checklist	Standards	Initials
10. Withdraws Control Rod 30-39.	Control Rod 30-39 is moved to position 06. **CUE**: Four Rod display indicates 06 for rod 30-39 then continues to slowly withdraw. **CUE**: Rod Drift Alarm	________*
11. Obtains Procedure 2.4CRD.	Procedure 2.4CRDobtained.	________
12. Enters 2.4CRD Attachment 4.	Attachment 4 is entered.	________
13. Control Rod 30-39 is inserted.	Control Rod is inserted to position 06 with either the Emergency In control switch or Rod Movement Control Switch.	________
14. Releases insert signal and determines if rod is latched.	Determines that the control rod is not latched. **CUE:** Rod drifts out of the core when the insert signal is released.	________
15. Fully inserts Control Rod 30-39.	Control Rod 30-39 is fully inserted. **CUE:** Four Rod display indicates 00 for 30-39. **CUE: Informs the candidate the JPM is complete.**	________*

Task No.: 201004O0101

Withdraw Control Rods for Startup (Alternate Path Control Rod Fails to Latch)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required	None						
B. Initialize the Simulator in IC	IC-08						
C. Run Batch File	None						
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers							
2. Malfunctions	RD10 (30-39)	CONTROL ROD DRIFT-OUT	A	N/A	N/A	N/A	N/A
	N/A	N/A					
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					
5. Panel Setup	a. Verify no control rod is selected. b. Mark the Control Rod Sequence Package up to step 21 (Control Rod 30-31 is the next rod to withdraw from 04 to 08).						

Task No.: 201004O0101

Withdraw Control Rods for Startup (Alternate Path Control Rod Fails to Latch)

Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.

===

Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

===

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to The Control Room Supervisor directs you to withdraw control rods to raise reactor power to increase bypass valve position to 12% in order to support heatup.

<u>If being simulated In-Plant or Control Room:</u>

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

<u>If being performed in the Simulator:</u>

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. A plant startup is in progress with reactor pressure at 400 psig.
2. Reactor power is 4%.
3. The Control Rod Sequence Package is completed up to step 21.

Initiating Cues:

The Control Room Supervisor directs you to withdraw control rods to raise reactor power to increase bypass valve position to 12% in order to support heatup. The examiner will act as your concurrent verifier and will automatically concur with all moves even if the move is incorrect.

Trainee: ______________________________ Examiner:

Pass:____ Fail:____ Examiner Signature: __________________________ Date:

Task No.: 245056G0101

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Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

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Additional Program Information:

1. Appropriate Performance Locations: CR / SIM
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 20 minutes
5. NRC K/A:262001 A4.04 (3.6/3.7)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform transfer of 4160 bus 1G from DG2 to the Emergency Transformer.
2. If this JPM is performed on the Simulator, only the cues preceded by (#) should be given.
3. All blanks must be filled out with either initials or an (NP) for (not performed); an explanation may also be written in the space, if desired, by the examiner.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
5. Brief the trainee, place the Simulator in RUN, and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to perform the required actions to transfer 4160V bus 1G from DG2 to the Emergency Transformer. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

<u>If being simulated In-Plant or Control Room:</u>

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

<u>If being performed in the Simulator:</u>

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Task No.: 245056G0101

==

Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

==

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General Conditions:

1. DG2 is supplying 4160 VAC bus 1G.
2. The Emergency Transformer is available.
3. Breaker 1FS has failed.

General References:

1. Procedure 2.2.18, 4160V Auxiliary Power Distribution System
2. Procedure 2.2.20.1, Diesel Generator Operations

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical steps denoted by (*).
3. Simulator cues denoted by (#).

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to perform transfer of 4160V bus 1G from DG2 to the Emergency Transformer. Inform Control Room Supervisor when 4160V bus 1G is being carried by the Emergency Transformer and the Diesel is secured.

Task No.: 245056G0101

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Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

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Performance Checklist	Standards	Initials
1. Obtain copy of 2.2.18 and 2.2.20.1.	Operator obtains a copy of procedure 2.2.18 and 2.2.20.1.	________
2. Ensure risk has been assessed, per Procedure 0.49, for placing Breaker 1FS, EMERGENCY XFMR BKR, for Bus 1F in PULL-TO-LOCK	The operator determines that risk need not be assessed as breaker is already open due to a failure. **#CUE:** IF asked as CRS, inform the operator that risk has been evaluated.	________
3. Ensure the Emergency Transformer is energized	The operator verifies voltage available from the Emergency Transformer. **CUE**: Emergency Transformer secondary voltage is 4440VAC.	________
4. Inform Shift Manager both off-site circuits are inoperable.	Inform Shift Manager to declare both off-site circuits inoperable and to enter the appropriate Condition and Required Action of LCO 3.8.1, AC Sources - Operating. **#CUE:** SM acknowledges the information.	________
5. Verify 1GS racked in.	Ensure Breaker 1GS, EMERGENCY TRANSFORMER FEED TO 4160V BUS 1G, is racked in. **CUE**: 1GS Breaker RED light OFF, GREEN light ON.	________
6. Start signals clear	Ensure DG2 auto start signals clear.	

Task No.: 245056G0101

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Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

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Performance Checklist	Standards	Initials
	CUE: Drywell pressure is .5 pig and steady Reactor water level being controlled 15" to 40". **CUE**: 4160V Bus 1F/1G are energized	__________
7. Depress local RESET button	Direct SO to locally at DG2 Control Panel, press and release EMERGENCY to NORMAL RESET button **#CUE:** Station Operator reports EMERGENCY to NORMAL RESET button has been depressed and released	__________*
8. Place into Droop Parallel to Parallel.	Direct SO to locally at DG2 Control Panel, ensure DROOP PARALLEL switch is in PARALLEL. **#CUE:** Station Operator reports DROOP PARALLEL switch is in PARALLEL.	__________*
9. Speed control check	Adjust speed of DG2 by placing DIESEL GEN 2 GOVERNOR SWITCH to RAISE or LOWER to verify DG2 frequency control. **CUE**: DG2 frequency is 59.6 Hz **CUE**: DG2 frequency rises to 60.0 Hz	__________
10. Voltage control check	Adjust voltage of DG2 by placing DIESEL	

Task No.: 245056G0101

==

Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

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Performance Checklist	Standards	Initials
	GEN 2 VOLTAGE REGULATOR switch RAISE or LOWER to maintain DG2 voltage at 4160 volts. **CUE**: DG voltage is 4050 volts. **CUE**: DG voltage rises to 4160 volts.	__________
11. Synch switch to 1GS	Place SYNCH SWITCH 1GS to 1GS. **CUE**: SYNCH SWITCH is in 1GS position	__________ *
Note: Grid is now "incoming" and DG "running". All synchronization indications are reversed.		
12. Adjust speed	Using DIESEL GEN 2 GOVERNOR switch, adjust engine speed so SYNCHROSCOPE is rotating very slowly in counter-clockwise (slow) direction. **CUE**: If the operator indicates that he is placing the governor switch to raise indicate that the SYNCHROSCOPE is speeding up in the clockwise (fast) direction. **CUE**: If the operator indicates that he is placing the governor switch to lower indicate that the SYNCHROSCOPE starting to rotate in the counter-clockwise (slow) direction.	__________
13. Adjust voltage	Using DIESEL GEN 2 VOLTAGE REGULATOR switch, adjust Bus 1G voltage to slightly lower than EMERGENCY XFMR VOLTAGE	__________ *

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Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

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Performance Checklist	Standards	Initials
	CUE: (Before adjustment) DG2 Voltage reads 4160 volts. **CUE**: XFMR Transformer voltage is 4449 volts. **CUE**: (after adjustment) DG2 voltage reads 4430 volts.	
14. Close 1GS	When SYNCHROSCOPE is at 1 o clock, the operator closes Breaker 1GS and check switch spring returns to NORMAL AFTER CLOSE (red flagged) **CUE**: Switch returns to center position (red flagged). 1GS Breaker , GREEN light is OFF, RED light is ON.	__________*
15. Adjust kVARS	The Operator adjust DG2 kVARS so that they are slightly positive (~200 kVARS) using DIESEL GEN 2 VOLTAGE REGULATOR switch. (100 - 300 KVARs) **CUE**: DG2 kVARS reads 40 kVARS **CUE**: DG2 kVARS reads 200 kVARS	__________
16. Bkr 1FS Pull-To-Lock.	Verify switch for 1FS in PULL-TO-LOCK (PTL) **CUE**: 1FS Breaker is still tagged	__________

Task No.: 245056G0101

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Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

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Performance Checklist	Standards	Initials
17. Lower DG2 Load	Reduce load on DG2 to 1000 KW using DIESEL GEN 2 GOVERNOR switch. **CUE**: DG2 load is 2200 KW **CUE**: DG2 load is 1000 KW	________
18. Place SYNCH SWITCH to OFF	Place SYNCH SWITCH 1GS to OFF **CUE**: SYNCH SWITCH is in OFF	________
19. DG2 Cooldown	After engine has cooled and cylinder exhaust temperature have dropped (~5 minutes), remove DG2 from services per 2.2.20.1. **#CUE:**Five minutes have elapsed. **#CUE:**Station Operator reports engine temperatures are cooling down.	________
20. Lower DG1 load (2.2.20.1)	Lower DG1 load to ≥ 400 kW and ≤ 1000 kW. **CUE**: DG2 load is 600 kW **#CUE:** 15 minutes have elapsed.	________
21. Lower to 400 KW	Lower DG2 load to 400 KW **CUE**: DG2 load is 400 kW	________
22. Lower kVARs	Reduce DG2 kVARs as low as possible.	________

Task No.: 245056G0101

==

Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

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Performance Checklist	Standards	Initials
	CUE: DG2 kVARs is 50 KVA	
23. Open EG2	Open DIESEL GEN 2 BKR EG2 **CUE**: BKR EG2 is NORMAL AFTER TRIP (green flagged). Green light is ON. Red light is OFF.	_________*
24. Inform CRS	Inform CRS that the Emergency Transformer is carrying 4160 V Bus 1G. **CUE**: CRS acknowledges. This JPM is complete. (Stop JPM at this point even if candidate continues.)	_________

==

Task Title: Transfer of 4160V Bus 1G from DG2 to Emergency Transformer

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ATTACHMENT 1

SIMULATOR SET-UP

A. Materials required

None

B. Initialize the Simulator in any at power IC (IC-18, 19 or 20 suggested)

Batch File name - none.

C. Change the Simulator conditions from those of the IC as follows:

1. Triggers

Number	File Name	Description
	None	

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial
	None					

3. Remotes

Number	Title	Trigger	TD	Value	Ramp
	None				

4. Overrides

Instrument	**Tag**	**Trigger**	**TD**	**Value**	**Ramp**
None					

5.Panel Set-up (suggested. Any setup is allowed that supports performance of the bus transfer)

a. Place Bkr 1FS in PTL and place Danger Tag on C/S

b. Place Bkr 1GS in PTL

c. Place 2nd SW pump B in service

d. Place 'B' RHR loop in Suppression Pool Cooling using Div 2 power sources

e. Place Bkr 1GS to NORMAL AFTER TRIP

f. At DG2 local panel, depress & release EMERGENCY to NORMAL RESET pushbutton.

g. At DG2 local panel, place DROOP PARALLEL switch in PARALLEL.

Note: <u>If</u> this JPM is to be performed more than once, snap the simulator into an IC after the panel setup is complete.

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to perform the required actions to transfer 4160V bus 1G from DG2 to the Emergency Transformer. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

<u>If being simulated In-Plant or Control Room:</u>

Emergency Inject with RCIC per the Hard Card (Alternate Path)

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. DG2 is supplying 4160 VAC bus 1G.
2. The Emergency Transformer is available.
3. Breaker 1FS has failed.

Initiating Cues:

The Control Room Supervisor directs you to perform transfer of 4160V bus 1G from DG2 to the Emergency Transformer. Inform Control Room Supervisor when 4160V bus 1G is being carried by the Emergency Transformer and the Diesel is secured.

Task No.: 217003O0101

Emergency Inject with RCIC per the Hard Card (Alternate Path)

Revision Summary

Changed SS to SM

Added note between step 12 and 13 to assist the examiner in evaluating the candidate. Examiner made aware that synchronization indications are reversed.

Trainee: ______________________________ Examiner: ______________________________

Pass ☐ Fail ☐ Examiner Signature: ________________________ Date: ___________

Additional Program Information:

1. Appropriate Performance Locations: Simulator
2. Appropriate Trainee Levels: RO/SRO
3. Evaluation Method: **Perform**
4. Performance Time: 10 minutes
5. NRC K/A 295031 EA1.05 4.3/4.3.

Directions to Examiner:

1. This JPM evaluates the trainee's ability to manually inject with Reactor Core Isolation System (RCIC) and to respond to a controller failure.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space if desired by the examiner.
4. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to establish injection with RCIC per the hard card. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

Task No.: 217003O0101

Emergency Inject with RCIC per the Hard Card (Alternate Path)

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to perform injection with RCIC per the hard card.

Task No.: 217003O0101

Emergency Inject with RCIC per the Hard Card (Alternate Path)

General Conditions:

1. The reactor is scrammed following a small LOCA.
2. Reactor water level is lowering.
3. RCIC is in standby.

General References:

1. SOP 2.2.67.1 Reactor Core Isolation Cooling System Operations.

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

You have been assigned to perform RCIC injection per the hard card. The Control Room Supervisor directs you to start and inject with RCIC at full flow per the hard. Notify the CRS when the task is complete.

NOTE: Tell the trainee to begin.

Task No.: 217003O0101

Emergency Inject with RCIC per the Hard Card (Alternate Path)

Performance Checklist	**Standards**	**Initials**
1. Obtain RCIC Hard Card.	Obtains the RCIC Hard Card.	_______
2. Places **RCIC-MO-132 control switch to OPEN.**	**RCIC-MO-132** Control Switch is placed to OPEN. CUE: **RCIC-MO-132 Red light is light is on and the Green light is OFF.**	_______
3. Places the GLAND SEAL VACUUM PUMP switch to START.	Gland Seal Vacuum pump control switch is placed to Start. CUE: Gland Seal Vacuum Pump Red Light is ON and the Green light is OFF.	_______
4. Places the R**CIC-MO-131 switch to OPEN.**.	**RCIC-MO-131** Control Switch is placed to OPEN. CUE: **RCIC-MO-131 Red light is light is ON and the Green light is OFF.**	_______*
5. Places the **RCIC-MO-21** valve to OPEN.	**RCIC-MO-21** Control Switch is placed to OPEN. CUE: **RCIC-MO-21 Red light is light is ON and the Green light is OFF.**	_______*
NOTE: INSERT Malfunction RC04, 0%.		

Task No.: 217003O0101

Emergency Inject with RCIC per the Hard Card (Alternate Path)

Performance Checklist	Standards	Initials
6. Verify/Adjust **RCIC-FIC-91**, RCIC flow controller.	Observes the indicated flow on the RCIC flow controller. CUE: RCIC flow initially increases to 400 gpm then falls to 0 gpm.	_______
7. Places RCIC-FIC-91 to MANUAL.	RCIC-FIC-91 is in MANUAL. CUE: RCIC-FIC-91 is in MANUAL	_______*
8. ADJUSTS RCIC-FIC-91 Manual potentiometer to raise RCIC flow to 400 gpm or greater.	RCIC-FIC-91 Manual Potentiometer is adjusted to raise RCIC Flow. CUE: Flow increases as the potentiometer is rotated clockwise. CUE: Flow is 400 gpm and reactor water level is slowly rising.	_______*
9. Ensure **REC-MO-711** is open.	Verifies that REC-MO-711 is OPEN. CUE: REC-MO-711 Red light is ON and the Green Light is OFF.	_______
10. Inform the CRS That RCIC is operating at Maximum flow.	CRS informed that RCIC is injecting at full flow. CUE: CRS acknowledges the report.	_______

Emergency Inject with RCIC per the Hard Card (Alternate Path)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None					
B. Initialize the Simulator in IC		18					
C. Run Batch File		None					
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	None	TRG 2 is active when **RCIC-MO-21** valve CS is placed to OPEN					
2. Malfunctions	RR31	RECIRC LOOP SUCTION	1	N/A	1%	None	N/A
	RC04	RCIC FLOW CONTROLLER FAILURE	2	8 s	0	None	N/A
	RC01	RCIC SYSTEM FAILURE TO AUTO-START	A	N/A	N/A	None	N/A
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					

5. Panel Setup	a. Place Simulator in Run b. Place HPCI Aux Oil Pump in PTL. c. Place the Danger tag on the HPCI Aux Oil Pump. d. Trip both RFPs and activate Trigger 1. e. After RCIC recovers level to -20(WR), reset the RCIC initiation and place RCIC in STANDBY Lineup. f. Freeze the simulator.
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.	

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to establish injection with RCIC per the hard card. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to perform injection with RCIC per the hard card.

General Conditions:

1. The reactor is scrammed following a loss of feedwater.
2. Reactor water level is lowering.
3. RCIC is in standby.

Initiating Cues:

Task No.: 208018C0101

REC Restoration Following a Loss of Power

You have been assigned to perform RCIC injection per the hard card. The Control Room Supervisor directs you to start and inject with RCIC at full flow per the hard. Notify the CRS when the task is complete.

NOTE: Tell the trainee to begin.

Trainee: ______________________________ Examiner: ______________________________

Pass ☐ Fail ☐ Examiner Signature: ________________________ Date: ___________

Additional Program Information:

1. Appropriate Performance Locations: Simulator
2. Appropriate Trainee Levels: RO/SRO
3. Evaluation Method: **Perform**
4. Performance Time: 10 minutes
5. NRC K/A 295003 AA1.03 4.4/4.4.

Directions to Examiner:

1. This JPM evaluates the trainee's ability to restore the REC system following a loss of power.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space if desired by the examiner.
4. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to perform REC restoration following a loss of power per the hard card. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

Task No.: 208018C0101

REC Restoration Following a Loss of Power

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to perform REC restoration following a loss of power per the hard card.

Task No.: 208018C0101

REC Restoration Following a Loss of Power

General Conditions:

1. The plant is shutdown following a loss of offsite power.
2. Both DG are running and tied to their busses.
3. A REC low pressure isolation occurred due to loss of power.
4. REC pumps A and D are running.
5. Restoration of REC flow to the AOG is not required.

General References:

1. SOP 2.2.65.1 REC Operations.

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".

Task Standards:

2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Initiating Cue(s):

You have been assigned to perform REC restoration after power loss per the hard card. The Control Room Supervisor directs you to perform REC restoration following loss of power per the hard card and restoration of REC to AOG is not required. Notify the CRS when the task is complete.

NOTE: Tell the trainee to begin.

REC Restoration Following a Loss of Power

Performance Checklist	Standards	Initials
11. Obtain REC Hard Card.	Obtains the REC Hard Card.	_______
12. Verifies that REC low pressure isolation is due to loss of power.	Verifies that REC isolation is not due to leak. CUE: Station Operators report no REC leakage.	_______
13. Verifies two REC pumps are running.	Checks Pump indications on Panel M. CUE: REC pump A and D Red lights are ON. REC pump B and C Red lights are OFF.	_______
14. Ensures a Critical Loop Supply Valve is OPEN.	Checks REC-MO-711, NORTH CRITICAL LOOP SUPPLY and REC-MO-714, SOUTH CRITICAL LOOP SUPPLY valve indications on Panel-M. CUE: REC-MO-711, NORTH CRITICAL LOOP SUPPLY valve red light is ON and the Green light is OFF.	_______

REC Restoration Following a Loss of Power

Performance Checklist	Standards	Initials
15. Ensures drywell temperature is ≤ 260°F.	Checks PC-TI-505A through PC-TI-505E. CUE: PC-TI-505A is 154°F. PC-TI-505B is 150°F. PC-TI-505C is 164°F. PC-TI-505D is 170°F. PC-TI-505E is 160°F.	______
16. OPENS the DRYWELL REC ISOL VALVE.	DRYWELL REC ISOL VALVE CONTROL switch is placed to OPEN. CUE: DRYWELL REC ISOL VALVE Red light is ON.	______*
NOTE: **REC-MO-712 is throttle open only. If the candidate opens the valve too far and the REC HX OUTLET PRESSURE alarm is received, the valve must be fully closed prior to recommencing pressurization of REC non-critical header. Multiple attempts are allowed.**		
17. Throttles OPEN REC-MO-712, REC HX A OUTLET Valve.	REC-MO-712 is throttled open, REC HX OUTLET PRESSURE alarm is clear and REC CRIT LOOP SUPPLY PRESS in green band. CUE: REC HX outlet pressure alarm is clear and REC Critical loop pressure is in the green band.	______*

Performance Checklist	Standards	Initials
18. STARTS REC pump B.	REC Pump B is running. CUE: REC pump B red light is ON and the Green Light is OFF.	______*
19. Throttles OPEN REC-MO-712, REC HX A OUTLET Valve.	REC HX outlet valve throttled open until REC CRIT LOOP SUPPLY PRESS ≥ 62 psig and REC HEADER PRESSURE in <u>top</u> of green band. CUE: REC Critical Loop Supply Pressure is 68 psig. CUE: REC Header Pressure is in the TOP of the Green Band.	______*

REC Restoration Following a Loss of Power

NOTE: Steps 10 and 11 are performed together.		
20. OPENS REC-MO-700, NON-CRITICAL HEADER SUPPLY.	REC-MO-700, NON-CRITICAL HEADER SUPPLY valve is OPEN. CUE: REC-MO-700 Red light is ON and the Green Light is OFF.	______*
21. Throttles OPEN REC A HX Outlet Valve REC-MO-712.	REC HX Outlet Valve is throttled open and REC HEADER PRESSURE is in the green band. CUE: REC-MO-712 Red Light is ON and the Green light is OFF. REC Header Pressure is in the Green Band.	______*
22. Ensure REC-MO-712 is Full Open.	Checks REC-MO-712 is Full OPEN. CUE: REC-MO-712 Red light is ON and the Green Light is OFF.	______
23. OPENS REC-AO-710 RWCU NON-REGEN HX INLET.	REC-AO-710 RWCU NON-REGEN HX INLET is open. CUE: REC-AO-710 Red light is ON and the Green light is OFF.	______*

Task No.: 208018C0101

REC Restoration Following a Loss of Power

24. PLACES the DRYWELL REC ISOL VALVE CONTROL switch to AUTO.	DRYWELL REC ISOL VALVE CONTROL is in AUTO. CUE: DRYWELL REC ISOL VALVE CONTROL is in AUTO.	______
25. Informs the CRS That REC restoration is complete.	CRS informed that REC Restoration is complete. CUE: CRS acknowledges the report.	______

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None					
B. Initialize the Simulator in IC		18					
C. Run Batch File		None					
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	TRG2						
2. Malfunctions	ED05	LOSS OF POWER (START-UP TRANSFORMER)	2	None	N/A	None	N/A
	ED06	LOSS OF POWER (EMERGENCY 69KV TRANSFORMER)	2	None	N/A	None	N/A
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					
5. Panel Setup	g. Place Simulator in Run h. Ensure or place REC pumps A and D in Standby. i. Ensure or place REC HX A in service. j. Activate trigger 2. k. After the both DG start, tie to their busses, and both STBY REC pumps start delete ED05 and ED 06 then freeze the simulator.						

REC Restoration Following a Loss of Power

Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.

ATTACHMENT 2

Directions to Trainee:

You have been assigned to perform REC restoration after power loss per the hard card. The Control Room Supervisor directs you to perform REC restoration following loss of power per the hard card and restoration of REC to AOG is not required

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to perform REC restoration following a loss of power per the hard card.

General Conditions:

1. The plant is shutdown following a loss of offsite power.
2. Both DG are running and tied to their busses.
3. A REC low pressure isolation occurred due to loss of power.
4. REC pumps A and D are running.
5. Restoration of REC flow to the AOG is not required.

Initiating Cues:

You have been assigned to perform REC restoration after power loss per the hard card. The Control Room Supervisor directs you to perform REC restoration following loss of power per the hard card and restoration of REC to AOG is not required.

NOTE: Tell the trainee to begin.

Trainee: ________________________________ Examiner: ______________________________

Task No.: 241011O0101

Raise DEH pressure setpoint to 926 psig.

Pass ☐ Fail ☐ Examiner Signature: ________________________ Date: ___________

Additional Program Information:

1. Appropriate Performance Locations: CR / SIM
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 20 minutes
5. NRC K/A 241000 A4.06 (3.9/3.9)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to manipulate the DEH controls in order to raise reactor pressure during a startup.
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to raise reactor pressure setpoint to 926 psig and raise pressure at a rate such that the average heatup rate for the period is 50°F/hr. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

<u>If being simulated In-Plant or Control Room:</u>

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete

Task No.: 241011O0101

Raise DEH pressure setpoint to 926 psig.

the assigned task.

<u>If being performed in the Simulator:</u>

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. A plant startup is in progress with reactor pressure at 400 psig.
2. Reactor power is 4%.

General References:

1. Procedure 2.2.77.1

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical checks denoted by "*".
3. Simulator cues denoted by "#".

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

Task No.: 241011O0101

Raise DEH pressure setpoint to 926 psig.

The Control Room Supervisor directs you to raise pressure setpoint to 926 psig and raise pressure at a rate such that the average heatup rate for the period is 50°F/hr.

Task No.: 241011O0101

Raise DEH pressure setpoint to 926 psig.

Performance Checklist	Standards	Initials
16. Determines pressurization rate equivalent for 50°F/hr heatup rate.	Determines that 4psi/minute is the required pressurization rate.	________
17. Press PRESS RATE - PSI/MIN button.	PRESS RATE - PSI/MIN button is depressed. **CUE**: The PRESS RATE - PSI/MIN button is backlit.	________*
18. Check existing pressure rate	The existing pressure rate in the TURBINE DISPLAY window is checked. **CUE**: The pressure rate in the turbine display window is 1 psi/minute.	________
19. RAISE the pressurization rate.	RAISE/LOWER pushbuttons are depressed until the pressurization rate is entered. **CUE**: TURBINE DISPLAY window indicates 4 psi/minute	________*
20. Press the ENTER button.	Enter Button is Depressed.	________

Task No.: 241011O0101

Raise DEH pressure setpoint to 926 psig.

Performance Checklist	Standards	Initials
21. Press PRESSURE SETPOINT - PSI button and check it backlights.	PRESSURE SETPOINT - PSI button is depressed. **CUE**: PRESSURE SETPOINT - PSI button is backlit**.**	________
22. Check existing pressure setpoint	Existing pressure setpoint in TURBINE DISPLAY window is determined to be 400 psig. **CUE**: Turbine display window indicates 400 psig.	________
23. RAISES pressure setpoint to 926 psig.	The RAISE button is depressed until 926 is displayed in the TURBINE DISPLAY window. **NOTE:** The operator may also depress the fast action pushbutton. **CUE**: 926 is displayed in the turbine display window.	________*
24. ENTERS the new setpoint.	ENTER button is depressed. **CUE:** Hold button is backlit.	________*
25. Commences the heat up.	GO button is depressed. **CUE**: GO button backlights and pressure setpoint is rising.	________*

Task No.: 241011O0101

Raise DEH pressure setpoint to 926 psig.

Performance Checklist	**Standards**	**Initials**
26. Informs CRS.	CRS is informed. **#CUE**:**CRS acknowledges the report.**	________

Task No.: 241011O0101

Raise DEH pressure setpoint to 926 psig.

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required	None						
B. Initialize the Simulator in IC	IC-08						
C. Run Batch File	None						
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	None						
2. Malfunctions							
	N/A	N/A					
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					

Task No.: 241011O0101

Raise DEH pressure setpoint to 926 psig.

5. Panel Setup	c. Raise DEH pressure setpoint to 400 psig. d. Change the DEH pressurization rate to 1 psi/min. e. After conditions stabilize verify that bypass valves are at least 5% open. If less than 5% open pull in sequence control rods until 5% bypass valve position is obtained.
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.	

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to raise DEH pressure setpoint to 926 psig and enter a pressurization rate equivalent to an average heat up of 50°F/hr. After these are entered commence ramping pressure to 926 psig.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. A plant startup is in progress with reactor pressure at 400 psig and reactor power at 4%.

Initiating Cues:

The Control Room Supervisor directs you to raise pressure setpoint to 926 psig and raise pressure at a rate such that the average heatup rate for the period is 50°F/hr.

Trainee: ______________________________ Examiner: ______________________________

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

Pass ☐ Fail ☐ Examiner Signature: ______________________ Date: __________

Additional Program Information:

1. Appropriate Performance Locations: CR / SIM
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: Perform ____ Simulate ____
4. Performance Time: 20 minutes
5. NRC K/As 259001 A4.02 (3.9/3.7)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to place the second RFPT in service.If this JPM is performed on the Simulator, only the cues preceded by “#” should be given.
2. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space, if desired, by the examiner.
3. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
4. Brief the trainee, place the Simulator in RUN, and tell the trainee to begin.

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

Directions to Trainee:

When I tell you to begin, you are to place the second RFPT in service. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. Generator load is 450 Mwe gross.
2. 1A RFP is in service.
3. 1B RFPT is in standby at 875 rpm. All pre-start checks are completed per 2.2.28.

General References:

1. Procedure 2.2.28.1, FEEDWATER SYSTEM OPERATION.

General Tools and Equipment:

1. None

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical steps denoted by “*”.
3. Simulator cues denoted by “#”.

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to place 1B RFP in service and balance flows per section 6 of procedure 2.2.28.1. Inform the CRS when the 1B RFP has been placed service.

NOTE: Place the Simulator in RUN and tell the trainee to begin.

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

Performance Checklist	Standards	Initials
1. Ensure RFC-CS-RFPTB, RFPT B CONTROL STATION, for RFPT B is in MDEM.	Verifies RFC-CS-RFPTB is in MDEM. **CUE**: RFC-CS-RFPT B is in MDEM.	______
2. Ensures RFPT speed is <5200 RPM.	RFPT Speed is determined to be less than 5200 RPM. **CUE**: RFPT speed is 4800 RPM.	______
3. Raises speed of RFPT B.	RFPT speed is slowly raised using UP/DOWN arrows on RFC-CS-RFPT B until RFPT discharge pressure is equal to or slightly below reactor pressure. **CUE**: RFPT B discharge pressure is 985 psig.	______ *

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

4. Opens RF-MO-29	The operator slowly jogs open RF-MO-30, RFP B DISCHARGE VLV. **CUE**: RF-MO-30, RFP B DISCHARGE VLV red light is ON and the Green light is ON. **CUE**: RF-MO-30, RFP B DISCHARGE VLV red light is ON and the Green light is OFF.	_______ *
5. Adjusts OUTPUT on RFC-CS-RFPT B.	Slowly adjusts OUTPUT on RFC-CS-RFPT B using UP/DOWN arrows for RFPT B until its flow is ~ $1.5x10^6$ lbs/hr. **CUE**: Flow is $1.5x10^6$ lbs/hr.	_______*
6. Check RFPT A speed drops to maintain RPV level.	RFPT A speed is checked. **CUE**: RFPT A Speed is 4200 RPM.	_______
7. Closes RFPT B minimum Flow Valve.	RFPT B minimum flow valve is closed. **CUE**: RFPT B Minimum flow valve red light is off.	_______ *

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

8. Adjusts OUTPUT on RFC-CS-RFPT B to zero deviation meter.	Slowly adjusts OUTPUT on RFC-CS-RFPT B using UP/DOWN arrows for RFPT B until its deviation meter is at zero. **CUE**: Deviation meter indicates zero.	_______*
9. Places RFC-CS-RFPT B to AUTO.	RFC-CS-RFPT B is in AUTO. **CUE**: RFC-CS-RFPT B is in AUTO.	_______*
10. Adjust bias on RFC-CS-RFPTB to balance flow.	Bias on RFC-CS-RFPTB is adjusted using UP/DOWN arrows. Pump flows are balanced and both pump biases are ≤0. **CUE**: Pump flows are matched and bias for each pump is ≤0.	_______*
11. Ensure RFPT TURNING GEAR control switch for RFPT being placed in service in AUTO.	Verifies that the RFPT B turning gear switch is in AUTO. **CUE:** RFPT B Turing gear switch is in AUTO.	_______
12. Ensure both RFPs are operating properly and controlling RPV level.	RFPT operation is verified and RPV level is verified. **CUE:** RPV level is steady at 35" and both pumps respond to level changes.	_______

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

13. Closes RFPT drains	RF-DRV-9B, RF-DRV-11B, and RF-DRV-10B are closed. **CUE:** RF-DRV-9B, RF-DRV-11B, and RF-DRV-10B green lights are on, and the red lights are off.	______
14. Informs the CRS.	CRS informed that RFPT B is operating in Automatic. #CUE: Acknowledge the report. #CUE: Inform the candidate that the JPM is complete.	______

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required	None						
B. Initialize the Simulator in IC14	Start 2nd Feedpump (BOL)						
C. Run Batch File	None						
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	None						
2. Malfunctions	None						
	N/A	N/A					
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					

Task No.: 259034P0101

PLACE THE SECOND RFPT IN SERVICE

5. Panel Setup	l. Reset the simulator in IC-14 m. Perform RFPT startup to standby status per 2.2.28. n. Place the simulator in Freeze.
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.	

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to place the second RFPT in service. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. Generator load is 450 Mwe gross.
2. 1A RFP is in service.
3. 1B RFPT is in standby at 875 rpm. All pre-start checks are completed per 2.2.28.

Initiating Cue(s):

The Control Room Supervisor directs you to place 1B RFP in service and balance flows per section 6 of procedure 2.2.28.1. Inform the CRS when the 1B RFP has been placed service.

Trainee: ______________________________ Examiner:

Pass:____ Fail:____ Examiner Signature: ________________________ Date:

Task No. 213002P0101

==

Task Title: Verify Group 2 Isolation (Alt Path TIP Shear)

==

THIS IS AN ALTERNATE PATH JPM

Additional Program Information:

1. Appropriate Performance Locations: SIM
2. Appropriate Trainee Level: RO/SRO
3. Evaluation Method: **Perform**
4. Performance Time: 10 Minutes
5. NRC K/A 2.1.31 (4.2/3.9) and 223002 A4.01 (3.6/3.5)

Directions to Examiner:

THIS IS AN ALTERNATE PATH JPM

1. This JPM evaluates the Trainee's ability to perform the actions for verifying a group 2 isolation and take appropriate actions.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space if desired by the examiner.
4. Brief the trainee, and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to perform a verification of Group 2. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Task No. 213002P0101

==

Task Title: Verify Group 2 Isolation (Alt Path TIP Shear)

==

General Conditions:

1. The plant Scrammed on Low Reactor Water level.
2. The low level resulted in a group 2 isolation.
3. There are indications of a LOCA in progress.

General References:

1. 2.1.22, Recovering from a Group Isolation
2. 4.1.4, Transverse In-Core Probe System

General Tools and Equipment:

1. Key to operate the TIP Shear Valve.

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".
2. Simulator Setup: See Attachment 1
3. Alternate Path steps denoted by "♦"

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

The plant has just scrammed and the CRS has directed you to perform the actions associated with verifying the Group 2 Isolation using the Hard Card and notify the CRS when you have completed the required actions.

Note: Tell the trainee to begin.

Task No. 213002P0101

==

Task Title: Verify Group 2 Isolation (Alt Path TIP Shear)

==

<table>
<tr><th>Performance Checklist</th><th>Standards</th><th>Initials</th></tr>
<tr><td>1. Obtain the Hard Card for group verifications</td><td>The Operator obtains the Hard Card for verifying the Group 2 Isolation.</td><td>________</td></tr>
<tr><td colspan="3">NOTE: The Hard Card shows RHR-MO-25A and RHR-MO-25B but since the plant was not in Shutdown Cooling when the isolation occurred they may be open.</td></tr>
<tr><td colspan="3">The Operator ensures the following Group 2 valves close:

RHR-MO-920 ____ RHR-MO-921 ____ RW-AO-82 ____ RW-AO-83 ____
RHR-MO-274A ____ RHR-MO-274B ____ RW-AO-94 ____ RW-AO-95 ____
RHR-MO-25A ____ RHR-MO-25B ____ PC-MO-1306 ____ PC-MO-1305 ____
RHR-MO-18 ____ RHR-MO-17 ____ PC-MO-1304 ____ PC-MO-1303 ____
RHR-SSV-60 ____ RHR-SSV-61 ____ PC-MO-1311 ____ PC-MO-1310 ____
RHR-SSV-95 ____ RHR-SSV-96 ____ PC-MO-1302 ____ PC-MO-1312 ____
RHR-MO-57 ____ RHR-MO-67 ____ PC-MO-1308 ____ PC-MO-1301 ____
RMV-AO-10 ____ RMV-AO-11 ____ TIP BALL VALVES ♦____ *
RMV-AO-12 ____ RMV-AO-13 ____</td></tr>
<tr><td colspan="3">NOTE: The Operator may perform either step 2 or 3 first. The key is to tell the Operator to “Isolate the Line”.</td></tr>
<tr><td>2. Informs CRS that TIP Ball Valve A is still OPEN</td><td>The Operator informs the CRS that TIP Ball Valve A is OPEN.

#CUE: Respond as the CRS, and tell the Operator to perform the actions to isolate the line.</td><td>________</td></tr>
<tr><td>3. Attempts to CLOSE TIP Ball Valve A</td><td>The Operator Attempts to CLOSE TIP Ball Valve A.

CUE: The Ball Valve Red light is ON and the Green light is OFF.</td><td>________</td></tr>
</table>

Task No. 213002P0101

==

Task Title: Verify Group 2 Isolation (Alt Path TIP Shear)

==

Performance Checklist	Standards	Initials
4. Refer to procedure 4.1.4 TIP System	The Operator refers to procedure 4.1.4 Transverse In-Core Probe System Section 6, Respond to Group 2 Isolation. #CUE: If the operator reports that the TIP is in the shield, respond and tell the operator to perform the actions to isolate the line.	________
5. Fire the TIP A Shear Valve.	The operator obtains a key and fires the TIP A Shear Valve by placing the keylock switch to Fire.	________ *
6. Notify the CRS that the line is isolated.	The Operator notifies the CRS that the TIP Shear valve has been fired and the line is isolated. #CUE: Acknowledge the report as the CRS.	________

==

Task Title: Verify Group 2 Isolation (Alt Path TIP Shear)

==

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required - None

B. Initialize the simulator to any full power IC (suggested).

Batch File Name - JPM\3421mab.

C. Change the simulator conditions as follows:

1. Triggers - None

2. Malfunctions

Malfuntion	Title	Severity
RR20a	A RR Loop Leak	20%

3. Remotes - None

4. Overrides

Instrument	Tag	Trigger	TD	Value	Ramp
PANEL 9-3 TIP VLVs	ZLOPCISDS126			OFF	
PANEL 9-3 TIP VLVs	ZLOPCISDS125			ON	
PNL 9-13 TIP A VLV	ZLOTIPADS13[1]			ON	
PNL 9-13 TIP A VLV	ZLOTIPADS14[1]			OFF	

==

Task Title: Verify Group 2 Isolation (Alt Path TIP Shear)

==

5. Panel Setup

   a. Initialize Simulator to any full power IC and place tip Machine on and the toggle switch for the in-shield limit switches above the TIP machines to on.

   b. Ensure PCIS Display for TIP Ball Valves indicates OPEN and that TIP Ball Valve A indicates OPEN.

Note: If this JPM is to be performed more than once, snap the simulator into an IC after the panel setup is complete.

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to perform a verification of Group 2. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The plant Scrammed on Low Reactor Water level.
2. The low level resulted in a group 2 isolation.
2. There are indications of a LOCA in progress.

Initiating Cue(s):

The plant has just scrammed and the CRS has directed you to perform the actions associated with verifying the Group 2 Isolation using the Hard Card and notify the CRS when you have completed the required actions.

Task No.:

Task Title: Perform APRM Gain Adjustment

Trainee: ______________________ Examiner: ______________________

Pass ☐ Fail ☐ Examiner Signature: ______________________ Date: __________

Time Started: ____________ Time Finished: ____________

Additional Program Information:

1. Appropriate Performance Locations: CR / SIM
2. Appropriate Trainee Level: RO / SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 10 minutes
5. Importance Rating: 3.63
6. NRC K/A 215005 A1.07(3.0.3.4)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform APRM calibration with a valid Periodic Case available with two RR loops operating.

Task No.:

Task Title: Perform APRM Gain Adjustment

2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space, if desired, by the examiner.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
5. Brief the trainee and tell the trainee to begin.

Task No.:

Task Title: Perform APRM Gain Adjustment

Directions to Trainee:

When I tell you to begin, you are to perform any corrective actions for the data given. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

==

General Conditions:

1. The plant is in normal operation with two Recirc Pumps in service.

Task No.:

Task Title: Perform APRM Gain Adjustment

2. Reactor power is as shown on Periodic Case data (provided).
3. The reactor is in a limiting control rod pattern.
4. All actions required by the limiting control rod pattern are complete.

General References:

1. Procedure 10.1

General Tools and Equipment:

1. Periodic Case computer edit data (attached to this JPM or from simulator computer)
2. Small screwdriver
3. NPP 10.1, Attachment 1 and 4

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical checks denoted by "*".
3. Simulator cues denoted by "#".

Task No.:

Task Title: Perform APRM Gain Adjustment

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to review the shiftly Periodic Case and complete any required Attachment(s). Inform the CRS when the task is complete and provide him with completed Attachment(s) for his review.

NOTE: Provide the shiftly Periodic Case data sheet.

Task No.:

Task Title: Perform APRM Gain Adjustment

Performance Checklist	Standards	Initials
7. Obtain copy of NPP 10.1, Att 1	Obtain a copy of NPP 10.1, Attachment 1	________
8. Verify APRM Status	At Panel 9-5, ensure APRM recorder is energized, APRM/IRM switch in APRM, and pen not stuck. **CUE**: All APRMs have been checked	________
9. Record CTP on Attachment 1	Record CTP from Periodic Case (CTP is CMWT on Periodic Case) or OD-3 on Att 1. **CUE**: CTP recorded.	________*
10. Calculate and record FRP on Attachment 1	Calculate and record FRP (FRP = CMWT/2381) on Att. 1. **CUE**: FRP calculated and recorded.	________*

Task No.:

Task Title: Perform APRM Gain Adjustment

Performance Checklist	Standards	Initials
11. Check Impulse Pressure vs. FRP on Att. 4	Check Impulse Pressure on DEH panel and compare reading to FRP on Att. 4. **CUE**: Impulse Pressure is 690 psig at 100% power, (400 at ~ 60% power).	________
12. Record APRM Desired reading	Determine and record the APRM Desired reading on Att. 1. (APRM Desired = FRP x 100) **CUE**: APRM Desired reading recorded.	________*
13. Record AGAF Initial on Att 1	Record the AGAF Initial from Periodic Case or OD-3 on Att. 1. **CUE**: AGAFs recorded.	________*

Task No.:

Task Title: Perform APRM Gain Adjustment

Performance Checklist	Standards	Initials
14. Bypass APRM Channel	At Panel 9-5, bypass APRM B with the Manual Bypass Joystick. **CUE**: APRM B bypassed.	________
15. APRM B in 'AVERAGE'	At Panel 9-14, verify or place in AVERAGE APRM B Meter Function Switch on Panel 9-14. **CUE**: Switch is in AVERAGE.	________
16. Adjust gain to obtain APRM Desired reading	At Panel 9-14, adjust the Gain Adjustment Potentiometer to obtain APRM Desired reading from Att. 1. **CUE**: APRM B indicates APRM Desired reading.	________*

Task No.:

Task Title: Perform APRM Gain Adjustment

Performance Checklist	Standards	Initials
17. Unbypass APRM Channel.	At Panel 9-5, unbypass APRM B by placing the Manual Bypass Joystick in NEUTRAL position. **CUE**: Switch is in NEUTRAL.	_________

Task No.:

Task Title: Perform APRM Gain Adjustment

Performance Checklist	Standards	Initials
NOTE: If the OD-3 is demanded too quickly after un-bypassing APRM B, the GAF and Power will indicate 00. If this happens as the CRS instruct the trainee to wait 1 minute and demand another OD-3.		
18. Generate OD-3 report (PMIS terminal).	Demand an OD-3, then selects the typer option, which he obtains when printed. **CUE**: OD-3 obtained from typer.	________*
19. Record AGAF Final on Att 1	Ensure all AGAF Finals are written within ranges, then record the AGAF Finals from the OD-3 and attach the OD-3 to Att. 1. **CUE**: AGAF Final recorded. OD-3 attached.	________*

Task No.:

Task Title: Perform APRM Gain Adjustment

Performance Checklist	Standards	Initials
20. Complete NPP 10.1 Att 1.	Sign, date and enter time on Att. 1. **CUE**: Attachment 1 completed.	________
21. Check acceptance criteria	Check the acceptance criteria. **CUE**: Acceptance criteria is satisfied.	________
22. Inform the Control Room Supervisor that the task is complete	Inform the CRS that NPP 10.1 Attachment 1 is complete and provide him with the completed Attachment 1 for his review. #**CUE**: The CRS acknowledges the report.	________

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

NPP 10.1, Attachment 1 and 4

B. Initialize the Simulator in any IC above 50% power.

Batch File Name - none.

C. Change the simulator conditions as follows:

1. Triggers

None

2. Malfunctions

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

None

3. Remotes

None

4. Overrides

None

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

5. Panel Setup

   a. Place Simulator in RUN.

   b. Adjust APRM B gain to lower 3-4%.

   c. Ensure 2381 MWT.

   d. Ensure Periodic Case indicates only B APRM requires gain adjustment. This may require the adjustment of APRMs other than B.

   e. Obtain Periodic Case edit to provide to trainee.

   NOTE: If valid computer edits cannot be obtained, insert BOGEY values for M545 and M546, substituting "1" on the PMIS IDT.

   f. Place the simulator in FREEZE.

Note: If this JPM is to be performed more than once, snap the simulator into IC-0 after the panel setup is complete.

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to perform any corrective actions for the data given. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

<u>If being simulated In-Plant or Control Room:</u>

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

<u>If being performed in the Simulator:</u>

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

2. The plant is in normal operation with two Recirc Pumps in service.
3. Reactor power is as shown on Periodic Case data (provided).
3. The reactor is in a limiting control rod pattern.
4. All actions required by the limiting control rod pattern are complete.

Initiating Cue(s):

The Control Room Supervisor directs you to review the shiftly Periodic Case and complete any required Attachment(s). Inform the CRS when the task is complete and provide him with completed Attachment(s) for his review.

Trainee: ______________________ Examiner: ______________________

Pass ☐ Fail ☐ Examiner Signature: ______________________ Date: __________

Time Started: __________ Time Finished: __________

ALTERNATE PATH

Additional Program Information:

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

6. Appropriate Performance Locations: Plant
7. Appropriate Trainee Level: SO / RO / SRO
3. Evaluation Method: __ Simulate __ Perform

4. Performance Time: 12 minutes

5. NRC K/A 286000 A2.06 3.1/3.2

Directions to Examiner:

NOTE:	THIS IS AN **ALTERNATE PATH** JPM. THE FIRST METHOD OF STARTING THE DIESEL WILL BE UNSUCCESSFUL.

1. This JPM evaluates the trainee's ability operate the diesel fire pump manually.

2. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space, if desired, by the examiner.

3. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.

4. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

When I tell you to begin, you are to operate the diesel fire pump manually. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

General Conditions:

1. The plant has experienced a fire.
2. The "C" fire pump is out of service.
3. The electric fire pump is unable to maintain system pressure.
4. The Diesel Fire Pump has failed to auto start.
5. The Diesel Fire Pump cannot be started at panel FA.

General References:

1. Procedure 2.2.30

General Tools and Equipment:

1. Master key for building access

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*."

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

Task Standards:

23. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to start the diesel fire pump at FP-PNL-F2 in the diesel fire house **AND** check engine parameters per procedure 2.2.30. Notify the CRS when the task is complete.

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

Performance Checklist	Standards	Initials
1. Check the engine oil level.	Check the engine oil level is normal. **CUE**: Engine oil level is at normal.	________
2. Check the engine cooling reservoir. NOTE: The reservoir is above the control panel.	Check the engine cooling water reservoir is full. **CUE**: The water level is at the top of the reservoir.	________
3. Position selector switch.	Position the selector switch on the local control cabinet in the MANUAL 1 or MANUAL 2 position. **CUE**: (As selected) switch is positioned to Manual 1 or Manual 2.	________
4. Start the pump.	Depress the start button. **CUE**: Sound of engine cranking sluggishly and the engine does not start.	________

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

Performance Checklist	Standards	Initials
5. Place selector switch in opposite position.	Position the selector switch to the OPPOSITE manual position. **CUE**: (As selected) switch is positioned to Manual 2 or Manual 1.	______*
6. Depress the START pushbutton.	Depress the start button. **CUE**: Sound of engine cranking briskly. **CUE**: Sound of engine running. **CUE**: (When checked) state that the diesel engine has warmed up.	______*

Task No.:

Task Title: Operate the Diesel Fire Pump Manually (Alt. Path)

Performance Checklist	Standards	Initials
7. Check circ water temperature.	Check circ water temperature is between 165ºF and 195ºF. **CUE**: Temperature reads 170ºF.	________
8. Check oil pressure.	Check oil pressure is between 30 and 85 psig. **CUE**: Pressure reads 80 psig.	________
9. Check RPM.	Check engine RPM is between 1740 and 1840. **CUE**: RPM reading is 1750.	________
10. Inform the Control Room Supervisor of completion.	Notify the CRS that the diesel fire pump has started and the engine parameters have been checked. **CUE**: The CRS acknowledges the report.	________

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

ATTACHMENT 1

When I tell you to begin, you are to operate the diesel fire pump manually. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

General Conditions:

1. The plant has experienced a fire.
2. The "C" fire pump is out of service.
3. The electric fire pump is unable to maintain system pressure.
4. The Diesel Fire Pump has failed to auto start.
5. The Diesel Fire Pump cannot be started at panel FA.

Initiating Cues:

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

The Control Room Supervisor directs you to start the diesel fire pump at FP-PNL-F2 in the diesel fire house **AND** check engine parameters per procedure 2.2.30. Notify the CRS when the task is complete.

Trainee: ______________________ Examiner: ______________________

Pass ☐ Fail ☐ Examiner Signature: ______________________ Date: __________

Time Started: ____________ Time Finished: _____________

Additional Program Information:

8. Appropriate Performance Locations: Plant
9. Appropriate Trainee Levels: SO
10. Evaluation Method: __ Perform __ Simulate
11. Performance Time: 20 minutes
12. Importance Factor: 3.25
13. NRC K/A: 201001 SG9(3.7/3.4)

Directions to Examiner:

24. This JPM evaluates the trainee's ability to place a Hydraulic Control Unit in service.
25. Brief the trainee and tell the trainee to begin.

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

26. Observe the trainee during performance of the JPM for proper use of self-checking methods.
27. All blanks must be filled out with either initials or an "NP" for "not performed", and an explanation may also be written in the space if desired by the examiner.

Directions to Trainee:

When I tell you to begin, you are to perform the field activities for placing a Hydraulic Control Unit in service. Before you start, I will state the general plant conditions, the initiating cues, and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to place a Hydraulic Control Unit in service.

General Conditions:

11. Plant is shutdown, with refueling in progress.
12. HCU 30-43 has been isolated for maintenance.
3. The condensate make-up, instrument air, and REC systems are available.

4. The CRD system is in service.

General References:

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

13. Procedure 2.2.8

General Tools and Equipment:

B. Crescent or box wrench, if performed.

Special Conditions, References, Tools, Equipment:

b. Critical checks denoted by "*".

Task Standards:

3. 100% of critical elements successfully completed without error.
4. 100% of safety and radiological work practices.

Initiating Cue(s):

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

The CRS has directed you to perform the field activities to valve in HCU 30-43 in accordance with SOP 2.2.8, Section 10. You are to inform the CRS when complete.

NOTE: Tell the trainee to begin.

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

Performance Checklist	Standards	Initials
1. Obtain Procedure.	The operator obtains a copy of Procedure 2.2.8 Section 10 from the Control Room or at the entrance to the Reactor Building. CUE: Once the operator has shown he knows were to obtain a copy of the procedure, Provide him a copy of section 10 and Attachment 1 on which to write.	________
2. Ensure SCRAM TEST switch is UP	The operator verifies with the CRS that the SCRAM TEST switch for HCU 30-43 is UP. CUE: Scram Test switch is UP.	________
3. Ensure Fuse 5A-F19A (117) is installed	The operator verifies that Fuse 5A-F19A (117) for HCU 30-43 is installed. CUE: As found.	________
4. Ensure Fuse 5A-F19B (118) is installed	The operator verifies that Fuse 5A-F19B (118) for HCU 30-43 is installed. CUE: As found.	________

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

Performance Checklist	Standards	Initials
5. Check CRD-101 (30-43) closed	The operator verifies that CRD-101(30-43), INSERT RISER SHUTOFF VALVE, is closed. CUE: The handwheel is fully clockwise and the valve stem is in.	________
6. Check CRD-104 (30-43) closed	The operator verifies that CRD-104(30-43), COOLING WATER RISER SHUTOFF VALVE, is closed. CUE: The handwheel is fully clockwise and the valve stem is in.	________
7. Check CRD-105 (30-43) closed	The operator verifies that CRD-105(30-43), EXHAUST WATER RISER SHUTOFF VALVE, is closed. CUE: The handwheel is fully clockwise and the valve stem is in.	________
8. OPEN CRD-116 (30-43)	The operator OPENS CRD-116(30-43), SCRAM PILOT AIR SHUTOFF VALVE. CUE: The valve position indicator parallel to pipe.	________*

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

Performance Checklist	Standards	Initials
9. Check Scram Valves closed	The operator verifies that the Scram Inlet and Outlet Valves closed. CUE: The Scram Valves indicate closed.	________*
10. Check CRD-PI-131 (30-43) pressure	The operator ensures that CRD-PI-131(30-43) reading is 500 psig. CUE: CRD-PI-131(30-43) is reading 550 psig.	________
11. OPEN CRD-112 (30-43)	The operator OPENS CRD-112(30-43), SCRAM DISCHARGE RISER SHUTOFF VALVE. CUE: The handwheel is fully counter-clockwise and the valve stem is out.	________*
12. CLOSE CRD-107 (30-43)	The operator CLOSES CRD-107(30-43), ACCUMULATOR DRAIN VALVE. CUE: Valve is fully clockwise.	________
13. THROTTLE CRD-107 (30-43)	The operator THROTTLES CRD-107(30-43), ACCUMULATOR DRAIN VALVE, open one turn. CUE: Valve is throttled one turn counter-	________

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

Performance Checklist	Standards	Initials
	clockwise.	
NOTE TO THE EXAMINER: Steps 13 and 14 are performed concurrently.		
14. OPEN CRD-113 (30-43)	The operator slowly OPENS CRD-113(30-43), CHARGING WATER RISER SHUTOFF VALVE. CUE: The handwheel is fully counter-clockwise and the valve stem is out.	________*
15. Vent accumulator, then CLOSE CRD-107 (30-43)	When the accumulator has been vented, the operator CLOSES CRD-107(30-43). CUE: Steady flow sound is heard and drain line is warm. The handwheel is fully clockwise.	________*
16. OPEN CRD-102 (30-43)	The operator OPENS CRD-102(30-43), WITHDRAW RISER SHUTOFF VALVE. CUE: The handwheel is fully counter-clockwise and the valve stem is out.	________*

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

Performance Checklist	Standards	Initials
17. OPEN CRD-101 (30-43)	The operator OPENS CRD-101(30-43). CUE: The handwheel is fully counter-clockwise and the valve stem is out.	________*
18. OPEN CRD-104 (30-43)	The operator OPENS CRD-104(30-43). CUE: The handwheel is fully counter-clockwise and the valve stem is out.	________*
19. OPEN CRD-105 (30-43)	The operator OPENS CRD-105(30-43). CUE: The handwheel is fully counter-clockwise and the valve stem is out.	________*
20. OPEN CRD-103 (30-43)	The operator OPENS CRD-103(30-43), DRIVE WATER RISER SHUTOFF VALVE. CUE: The handwheel is fully counter-clockwise and the valve stem is out.	________*
NOTE TO THE EXAMINER: Steps 20 through 23 may be performed in any order.		

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

Performance Checklist	Standards	Initials
21. CONNECT Amphenol to Directional Control Valve 120	The operator CONNECTS the amphenol to Directional Control Valve 120. CUE: Amphenol is connected.	________*
22. CONNECT Amphenol to Directional Control Valve 121	The operator CONNECTS the amphenol to Directional Control Valve 121. CUE: Amphenol is connected.	________*
23. CONNECT Amphenol to Directional Control Valve 122	The operator CONNECTS the amphenol to Directional Control Valve 122. CUE: Amphenol is connected.	________*
24. CONNECT Amphenol to Directional Control Valve 123	The operator CONNECTS the amphenol to Directional Control Valve 123. CUE: Amphenol is connected. CUE: The HCU has been valved in for 35 minutes.	________*

Task No.:

Task Title: Place a Hydraulic Control Unit in Service

Performance Checklist	**Standards**	**Initials**
25. Check accumulator pressure vs. ambient temperature	The operator checks HCU 30-43 accumulator pressure vs. Reactor Building ambient temperature. CUE: Accumulator pressure is 1110 psig and ambient temperature is 80ºF.	________
26. Inform CRS	The operator informs the CRS that HCU 30-43 has been returned to service. CUE: I have been informed. This JPM is now complete.	________

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to perform the field activities for placing a Hydraulic Control Unit in service. Before you start, I will state the general plant conditions, the initiating cues, and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to place a Hydraulic Control Unit in service.

General Conditions:

14. Plant is shutdown, with refueling in progress.
15. HCU 30-43 has been isolated for maintenance.
3. The condensate make-up, instrument air, and REC systems are available.
4. The CRD system is in service.

Initiating Cue(s):

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

The CRS has directed you to perform the field activities to valve in HCU 30-43 in accordance with SOP 2.2.8, Section 10. You are to inform the CRS when complete.

Trainee: ______________________________ Examiner: ______________________________

Pass ☐ Fail ☐ Examiner Signature: ________________________ Date: __________

Additional Program Information:

1. Appropriate Performance Locations: In-plant
2. Appropriate Trainee Levels: SO/RO/SRO
3. Evaluation Method: **Perform**
4. Performance Time: 10 minutes
5. NRC K/A 233000.A2.02 3.1/3.3.

Directions to Examiner:

1. This JPM evaluates the trainee's ability to make up to the fuel pool using the fire protection system with the refueling floor inaccessible.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space if desired by the examiner.
4. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

When I tell you to begin, you are to perform the field actions to emergency makeup to the fuel pool using the fire protection system with the refuel floor inaccessible. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to perform emergency makeup to the fuel pool using the fire protection system with the refuel floor inaccessible.

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

General Conditions:

1. An accident occurred that resulted in a low fuel pool level and high radiation on the refueling floor.
2. The only system available to makeup to the fuel pool is the Fire Protection System.

General References:

1. 2.4FPC FUEL POOL COOLING TROUBLE.

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".

Task Standards:

4. 100% of critical elements successfully completed without error.
5. 100% of safety and radiological work practices.

Initiating Cue(s):

You have been assigned to perform the field actions for emergency makeup to the fuel pool using the fire protection system with the refuel floor inaccessible. The Control Room Supervisor directs you to coordinate with the RO and fill the fuel pool using the fire protection system per 2.4FPC Attachment 3. Notify the CRS when the task is complete.

NOTE: Tell the trainee to begin.

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

Performance Checklist	Standards	Initials
26. Obtains 2.4FPC	Obtains 2.4FPC. CUE: Hand the candidate a copy of 2.4FPC.	______
27. Obtains Equipment from R-881-SW Quad inside 5.3ALT-STRATEGY equipment box.	Locates the 5.3ALT-STRATEGY equipment box R-881-SW Quad and obtains fire hose. CUE: When the candidate locates the equipment box inform the candidate that they have the hose.	______*
28. Connects one end of the Fire hose to FP-329, HOSE STATION NO. 32.	Fire hose is connected to FP-329. CUE: The hose end is connected to FP-329.	______*
29. Connects the other hose end to RHR-147, LOOP B SUPPRESSION CHAMBER COOLING LINE DRAIN (R-881-SW Quad).	Other hose end is connected to RHR-147. CUE: The hose end is connected to RHR-147.	______*

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

Performance Checklist	Standards	Initials
30. Ensures RHR Pump B and D are in PULL-to- Lock (PTL).	Control room is contacted to verify RHR Pump B and D are in PTL. CUE: RHR pump B and D are in PTL.	______
31. Verified position of RHR-147 (R-881-SW Quad).	Valve is checked by attempting to turn in the close direction. CUE: RHR-147 does not move with force in the closed direction.	______
32. Opens RHR-147.	RHR-147 is OPEN. CUE: RHR-147 is open and will not turn any further in the open direction.	______*
33. Slowly opens FP-329.	FP-329 is OPEN. CUE: FP-329 is full open and will not turn further in the open direction.	______*

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

Performance Checklist	Standards	Initials
34. Ensures RHR-MOV-39B SUPPRESSION POOL COOLING/TORUS SPRAY OUTBOARD VALVE (R-881-SW Quad).	Contacts the Control Room and asks the position of RHR-MOV-39B. CUE: The Control Room indicates that RHR-MOV-39B is now open.	______

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

35. Establishes Communication between the Control Room and RHR-82, RHR SYSTEM RETURN TO FPC SYSTEM (R-958-SW).	Communication established between RHR-82 and the Control Room. CUE: Control Room directs RHR-82 and to fill the Fuel pool at the highest rate.	______
36. Slowly Throttles Open RHR-82.	RHR-82 is open. CUE: RHR-82 is fully open.	_______*
37. Reports that RHR-82 is OPEN.	Reports to the Control Room that RHR-82 is open and the fuel pool is filling. CUE: Control Room Acknowledges the report.	______

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to perform the field actions to emergency makeup to the fuel pool using the fire protection system with the refuel floor inaccessible. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to perform emergency makeup to the fuel pool using the fire protection system with the refuel floor inaccessible.

General Conditions:

1. An accident occurred that resulted in a low fuel pool level and high radiation on the refueling floor.
2. The only system available to makeup to the fuel pool is the Fire Protection System.

Initiating Cues:

You have been assigned to perform the field actions for emergency makeup to the fuel pool using the fire protection system with the refuel floor inaccessible. The Control Room Supervisor directs you to coordinate with the RO and fill the fuel pool using the fire protection system per 2.4FPC Attachment 3. Notify the CRS when the task is complete.

NOTE: Tell the trainee to begin.

Trainee: ____________________ Examiner: ____________________

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

Pass ☐ Fail ☐ Examiner Signature: ________________________ Date: __________

Additional Program Information:

1. Appropriate Performance Locations: CR / SIM
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: Perform
4. Performance Time: 5 minutes
5. NRC K/As 2.1.7 Imp. 3.7/4.4

Directions to Examiner:

16. This JPM evaluates the trainee's ability to Obtain and Interpret a Gardel Periodic Case.
17. If this JPM is performed on the Simulator, only the cues preceded by # should be given.
18. All blanks must be filled out with either initials or an NP for not performed; an explanation may also be written in the space, if desired, by the examiner.

Directions to Trainee:

When I tell you to begin, you are to Obtain and Evaluate a Gardel Official Case by completing Attachment 2 of 6.LOG.601. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

<u>If being simulated In-Plant or Control Room:</u>

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

<u>If being performed in the Simulator:</u>

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

General Conditions:

1. The Reactor is at approximately 100% power.

General References:

1. Procedure 6.LOG.601 Daily Surveillance Log.

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical steps denoted by *.
3. Simulator cues denoted by #.

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to obtain a Gardel Periodic Case and verify that Thermal Limits are within Specification by completing Attachment 2 of 6.LOG.601. Inform the CRS when you have completed you review of the official case.

NOTE: Give the candidate Attachment 2 of 6.LOG.601 and tell the candidate to begin.

Task No.: 283016S0101

Obtain and Interpret a GARDEL Periodic Report

Performance Checklist	Standards	Initials
1. Demand a Gardel Periodic Case	The Operator demands and prints a Periodic Case. **CUE**: Gardel Official Case prints. **#CUE:** Remove the periodic case from the printer and give the Candidate the attached Periodic Case	________*
3. Scans the periodic case and records the highest value of MFLCPR.	Value for the highest MFLCPR is recorded on Attachment 2.	________
4. Scans the periodic case and records the highest value of MFLPD.	Value for the highest MFLPD is recorded on Attachment 2.	________
5. Scans the periodic case and records the highest value of MAPRAT.	Value for the highest MAPRAT is recorded on Attachment 2.	________
6. Scans the periodic case and records reactor power.	Reactor power is recorded on Attachment 2	________

Performance Checklist	Standards	Initials
7. Scans the periodic case and records lowest value of MCPR.	Value for the lowest MCPR is recorded on Attachment 2.	________ *
8. Informs the CRS that MCPR is out of limits.	CRS informed that MCPR value is less than 1.40 for the current power level. This constitutes a limiting control rod pattern. **#CUE**: Acknowledge the report. Inform the candidate that the JPM is complete.	________*

ATTACHMENT 1

Cooper Nuclear Station GARDEL

Gardel: Periodic Report Today's Date Current Time

	A	C	E	B	D	F				
							Thermal Power	2380.6	MWth	99.98%
APRM	100.1	100.5	100.7	100.6	100.3	100.7	**Elect. Power**	767.6	MWel	
APRM GAF	1.006	1.012	1.017	1.017	1.014	1.017	**Efficiency**	32.18%		
APRM -%CTP	-0.57	-1.45	-1.70	-1.27	-1.37	-1.20	**Coolant Flow**	60.5	Mlb/hr	82.26%
LPRM Status	Normal						**APRM ave.**	98.83		
ADAPT	ON TIP+LPRM									

The 4 most limiting bundles of the core

MFLCPR	Position	MCPR	CPRLIM	MFLPD	Position	LHGR	LHGRLIM	MAPRAT	Position	APLHGR	ALHLIM
0.964	19-32	1.370	1.370	0.800	31-44-04	10.718	13.397	0.887	19-28-05	9.228	10.399

0.962	15-32	1.401	1.370	0.798	35-44-04	10.689	13.397	0.887	21-32-05	9.102	10.257
0.898	23-38	1.412	1.370	0.798	11-38-04	10.686	13.397	0.882	25-34-04	9.289	10.535
0.892	37-24	1.441	1.370	0.794	15-42-04	10.637	13.397	0.805	35-44-04	8.159	10.138

Control Rod Withdrawal PCIUTL Position 19-28-04

	02	06	10	14	18	22	26	30	34	38	42	46	50
51													
47													
43							16						
39													
35													
31													
27			16				12				16		
23													
19													
15													
11							16						
07													
03													

Simulator Parameters

CR withdrawal	4.81%
Ave. Xenon conc.	1593.85E12/cm3
Xenon symmetry	-0.03%
Core press drop	18.04 psi
Average void	47.08%
Total bypass flow	17.25%
K-effective	1.00159
Cycle burnup	2032 GWD/Mt
Total pow peaking	2.461
Sup plate pres drop	13.19 psi

Heat Balance Parameters

Feed water flow	9.49 Mlb/hr
Feed water temp.	363.66 F
Absolute press	1009.78 psi
Inlet subcooling	31.33 Btu/lb
CR drive temp.	100.00 F
CR drive flow	0.02Mlb/hr
Cleanup inlet temp.	514.91 F
Cleanup system flow	0.11 Mlb/hr
Ext. Recirc pump A	2.28 MW
Ext. Recirc pump B	2.29 MW
Steam flow	9.51 Mlb/hr
Sup plate pres drop	15.03 psi

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to obtain and interpret a Gardel Periodic Case. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

If being simulated In-Plant or Control Room:

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

If being performed in the Simulator:

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The Reactor is at approximately 100% power.

Initiating Cue(s):

The Control Room Supervisor directs you to obtain a Gardel Periodic Case and to perform the thermal limit checks in 6.LOG.601 Attachment 2 to verify operation is within limits.

Task No.: 299012O0301

Task Title: Develop Tagouts

Inform the CRS when you have completed you review of the official case.

Trainee: ______________________________ Examiner: ______________________________

Pass ☐ Fail ☐ Examiner Signature: ________________________ Date: ___________

Time Started: ____________ Time Finished: _____________

Additional Program Information:

1. Appropriate Performance Locations: CR, SIM, EOF
2. Appropriate Trainee level: SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 15 minutes

Task No.: 299012O0301

Task Title: Develop Tagouts

5. NRC K/A 2.1.23 (3.9/4.0)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform a Tagout development of HPCI Booster Pump.
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.
4. Brief the trainee, place the simulator in run, and tell the trainee to begin.
5. Hand the candidate ATTACHMENT 1.

Directions to Trainee:

When I tell you to begin, you are to complete the Tagout generation of the HPCI Booster Pump fluid system. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

General Conditions:

1. The plant is operating at 100% power.

28. The HPCI Booster Pump has a bad impeller that must be removed and replaced.
29. Clearance Order HPCI-1-1234567 HPCI BSTR PMP needs to be finished.

Task No.: 299012O0301

Task Title: Develop Tagouts

30. NOMS is unavailable.

General References:

1. Procedure 0.9 Tagout

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".
C. Simulator cues denoted by "#".

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

Task No.: 299012O0301

Task Title: Develop Tagouts

You are to complete the Tagout generation of the HPCI Booster Pump fluid system. Inform the SM when the review is complete.

Task No.: 299012O0301

Task Title: Develop Tagouts

Performance Checklist	Standards	Initials
1. Refer to Procedure 0.9.	Refer to Procedure 0.9.	________
i. Reviews the provided Tagout for applicable components to be tagged.	Determines the components to be tagged for the planned activities.	________

Task No.: 299012O0301

Task Title: Develop Tagouts

Performance Checklist	Standards	Initials
j. Determines the required position for each of the components.	Determines the required position for each of the components. HPCI-MO-17 CLOSED HPCI-MO-58 CLOSED HPCI-MO-20 CLOSED HPCI-MO-25 CLOSED HPCI-61 CLOSED HPCI-15 HPCI-16 HPCI-17 HCI-18 HPCI-19 HPCI-22 HPCI- HPCI- HPCI-	________*

Task No.: 299012O0301

Task Title: Develop Tagouts

Performance Checklist	**Standards**	**Initials**
k. Determines the required sequence for each of the components.	Determines the required sequence for each of the components.	________*
l. Informs the SS.	Informs the SM. **CUE:** As the SM acknowledge the report.	________*

Task No.: 299012O0301

Task Title: Develop Tagouts

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to complete the Tagout generation of the HPCI Booster Pump fluid system. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

General Conditions:

1. The plant is operating at 100% power.

31. The HPCI Booster Pump has a bad impeller that must be removed and replaced.
32. Clearance Order HPCI-1-1234567 HPCI BSTR PMP needs to be finished.
33. NOMS is unavailable.

Initiating Cue(s):

You are to complete the Tagout generation of the HPCI Booster Pump fluid system. Inform the SM when the review is complete.

Section Coversheet

Tagout: CLEARANCE ORDER

Section: HPCI-1-1234567 HPCI-BSTR-PMP **03/14/2007 14:17**

Component to be Worked:

HPCI-BSTR-PMP

HPCI BOOSTER PUMP

R-859-HPCI ROOM

Description:

For Training Use Only

Replace impeller

Special Instructions

Worker Notes

Release Notes

Perform Valve Lineup prior to releasing clearance

Section Attributes:

Attribute Description	Attribute Value
MRRS	YES

LCO ACTION REQUIRED	YES
FIRE IMPAIRMENT REQUIRED	NO
CONTAINMENT AFFECTED	NO
REQUIRED PLANT CONDITION	EQUIPMENT OUT OF SERVICE

Work Order List:

Section Verification:

Status	Description	User	Verification Date
	Section Prepared		
	Section Verified		
	Section Authorized		
	Equip. Ready for Maintenance		
	Release Prepared		
	Release Verified		
	Release Authorized		
	Section Complete		

Temporary Safety Devices List:

Section Tag List

Tagout: CLEARANCE ORDER

Section: HPCI-1-1234567 HPCI-BSTR-PMP **03/14/2007 14:17**

Tag Serial No.	Tag Type	Equipment Equipment Description Equipment Location	Ver. Req.	Pla. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	As Left Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Tag Placement Notes	Tag Removal Notes
0	Danger	*HPCI-SW-S-20 *CONTROL SWITCH HPCI AUX OIL PMP CONTROL ROOM PANEL 9-3		1	PULL TO LOCK			23	NORMAL AFTER STOP	NORMAL AFTER STOP				
0	Danger	*HPCI-SW-S-22 *CONTROL SWITCH HPCI GLAND SEAL COND PMP CONTROL ROOM PANEL 9-3		2	NORMAL AFTER STOP			22	AUTO	AUTO				
0	Danger	*HPCI-SW-S2 *CONTROL SWITCH FOR HPCI-MO-16, STM SUPP OUTBD ISOL VLV *CONTROL ROOM PANEL 9-3		3	CLOSED			21	AUTO	AUTO				
0	Danger	*HPCI-SW-S1 *CONTROL SWITCH		4	CLOSED			20	AUTO	AUTO				

		FOR HPCI-MO-15, STM SUPP INBD ISOL VLV *CONTROL ROOM PANEL 9-3												
0	Danger													

Section Tag List

Tagout: CLEARANCE ORDER

Section: HVRX-1-1234567 FC-R-1F **07/01/2003 14:17**

Tag Serial No.	Tag Type	Equipment Equipment Description Equipment Location	Ver. Req.	Pla. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	As Left Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Tag Placement Notes	Tag Removal Notes

Task No.:

Task Title:

Task No.:

Task Title:

Section Tag List

Tagout: CLEARANCE ORDER

Section: HVRX-1-1234567 FC-R-1F **07/01**

Tag Serial No.	Tag Type	Equipment Equipment Description Equipment Location	Ver. Req.	Pla. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	As Left Configuration	Rest. Verif Date/

Task No.:

Task Title:

Section Tag List

Tagout: CLEARANCE ORDER

Section: HVRX-1-1234567 FC-R-1F **07/01**

Tag Serial No.	Tag Type	Equipment Equipment Description Equipment Location	Ver. Req.	Pla. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	As Left Configuration	Rest. Verif Date/

Task No.:

Task Title:

Trainee: ________________________ Examiner: ________________________

Pass ☐ Fail ☐ Examiner Signature: ________________________ Date: __________

Time Started: __________ Time Finished: __________

Additional Program Information:

1. Appropriate Performance Locations: CR / SIM
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 16 minutes
5. NRC K/A Rating 295038 EA2.01 (3.3/4.3)

Directions to Examiner:

Task No.:

Task Title:

1. This JPM evaluates the trainee's ability to perform a release rate determination based on curie content and vent flow rate.
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.

Directions to Trainee:

When I tell you to begin, you are to perform a release rate determination based on Drywell curie content and vent flow rate. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders, and controls you would be using. State the position of controls as you would have manipulated them to perform a release rate determination based on Drywell curie content and vent flow rate. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Task No.:

Task Title:

General Conditions:

14. The plant had been in a normal line up with the reactor at 100% power for last 10 days.
2. The Reactor is S/D.
3. A LOCA has occurred.
34. Torus to Drywell vacuum breakers have stuck open.
35. Drywell spray is unavailable.
6. Kaman ERP effluent monitors are out of service.
7. The reactor was scrammed at 15:05.
8. Level fell to -50" on fuel zone instruments prior to recovery.
9. The PMIS system is out of service.
10. RMA-RR-40, high range containment radiation recorder, is out of service.

General References:

1. Procedure 5.7.16

General Tools and Equipment:

1. Scientific calculator.

Task No.:

Task Title:

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical checks denoted by "*".
3. Simulator cues denoted by "#".

Task Standards:

1. 100% of critical elements, as defined in the JPM, successfully completed without error.

Initiating Cue(s):

It is now 22:35 hours. The decision has been made to vent the Drywell through SBGT using the 1" line in accordance with 5.8.18. The Shift Manager has directed you to do a release rate determination based on Drywell curie content. Inform the Shift Manager when you have completed the task.

NOTE: Place the Simulator in RUN and tell the trainee to begin.

Task No.:

Task Title:

Performance Checklist	Standards	Initials
1. Determine Effective Age	Calculate time interval from shutdown to time of release determination and enter on Attachment "3" Col #1 Expected: 7.5 hrs	________*
2. Determine Primary Containment monitor reading	Read the activity from RMA-RM-40A or B and record whichever is HIGHEST (A or B) on Attachment "3" Col #2. Expected: 80R/hr Acceptable Range: 78 to 82 **CUE**: (When checked) Monitor A indicates 70 R/hr. Monitor B indicates 80 R/hr.	________*
3. Determine the DBA-LOCA exposure rate	Use the Effective Age from Col #1 Attachment "3" and Attachment "4" to determine the projected Drywell Dose Rate and record on Attachment "3" Col #3 Expected: 9.0×10^5 Acceptable Range: 8.1E5 to 9.9E5.	________*

Task No.:

Task Title:

Performance Checklist	Standards	Initials
4. Determine the DBA-LOCA Noble Gas Drywell Curie Content	Use the Effective Age from Col #1 Attachment "3" and Attachment "6" to determine the projected Drywell Curie Content and record on Attachment "3" Col #4 Expected: 1.4 x 10^{8} Acceptable Range: 1.3E8 to 1.7E8.	________*
5. Determine estimated Drywell Noble Gas Curie Content	Divide Col #2 by Col #3, then multiplies by Col #4 and record result on Attachment "3" Col #5 Expected: 1.24 x 10^{4} Acceptable Range: 1.15E4 to 1.51E4.	________*
6. Determine Drywell Noble Gas concentration	Divide Col #5 by Col #6 and record result on Attachment "3" Col #7 Expected: 8.6 x 10^{-2} Acceptable Range: 7.9E-2 to 1.0E-1.	________*

Task No.:

Task Title:

Performance Checklist	Standards	Initials
7. Determine venting flow rate	Determine vent path flow and records on Attachment “3" Col #8. Expected: 319 cfm Acceptable Range: 319 cfm **NOTE**: Flow of 319 cfm assumes only one vent path will be used.	________*
8. Determine the release rate of Noble Gases	Multiply Col #7 times Col #8 times Col #9 and record the result on Attachment "3" Col #10. Expected: 4.58×10^5 Acceptable Range: 4.2E5 to 5.32E5.	________*
9. Inform the SM that the task is complete	Inform the Shift Manager that release rate determination based on Drywell curie content is complete. **CUE**: The Shift Manager acknowledges the report. This JPM is complete.	________

Task No.:

Task Title:

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

Extra copies of 5.7.16

B. Initialize the Simulator in IC-18.

Batch File Name - JPM/342054

C. Change the simulator conditions as follows:

1. Triggers

None

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial

Task No.:

Task Title:

Number	**Title**	**Trigger**	**TD**	**Severity**	**Ramp**	**Initial**
RM03DD	RMA-RA-40A	A	N/A	26.36%	N/A	N/A
RM03EE	RMA-RA-40B	A	N/A	27.19%	N/A	N/A
CR01	Fuel Cladding Failure	A	0	100	0	N/A
RM02L	Gas Rad Mon Fail ERP Normal Range RMP-RM-3A	A	0	0	0	N/A
RM02M	Gas Rad Mon Fail ERP High Range RMP-RM-3B	A	0	0	0	N/A
MS01A	Steam Leakage Inside Primary Containment	A	0	20	0	N/A
PC02B	Torus to Drywell Vacuum Breaker Failure	A	0	100	N/A	N/A
PC02C	Torus to Drywell Vacuum Breaker Failure	A	0	100	N/A	N/A
PC02D	Torus to Drywell Vacuum Breaker Failure	A	0	100	N/A	N/A
PC02E	Torus to Drywell Vacuum Breaker Failure	A	0	100	N/A	N/A
PC02F	Torus to Drywell Vacuum Breaker Failure	A	0	100	N/A	N/A
ED18	PMIS Power Failure	A	N/A	N/A	N/A	N/A

3. Remotes

None

Task No.:

Task Title:

4. Overrides

None

Task No.:

Task Title:

5. Panel Setup

   a. Initialize Simulator in any IC that supports performance of this JPM.

   b. Suggested setup:

      19. Reset to any full power IC and place in RUN.

      2. Insert batch file 342054.

      3. Place mode switch in S/D.

      4. Close the MSIVs <u>after</u> Gp 2 isolation is received.

      20. When Drywell pressure is 35 psig, lower malfunction MS01A to 5%.

      21. Adjust MS01A as necessary to maintain Drywell pressure above 35 psig and below 58 psig.

   c. Ensure Drywell Rad Monitors A and B indicate 70 and 80 R/hr respectively, or adjust override values to obtain these values.

Task No.:

Task Title:

d. Place a red arrow on RMA-RR-40, high range containment radiation recorder, to indicate that the recorder is out of service

Note: If this JPM is to be performed more than once, snap the simulator into an IC after the panel setup is complete.

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to perform a release rate determination based on Drywell curie content and vent flow rate. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders, and controls you would be using. State the position of controls as you would have manipulated them to perform a release rate determination based on Drywell curie content and vent flow rate. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The plant had been in a normal line up with the reactor at 100% power for last 10 days.
2. The Reactor is S/D.
3. A LOCA has occurred.

D. Torus to Drywell vacuum breakers have stuck open.
E. Drywell spray is unavailable.

6. Kaman ERP effluent monitors are out of service.
7. The reactor was scrammed at 15:05.
8. Level fell to -50" on fuel zone instruments prior to recovery.

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

9. The PMIS system is out of service.

10. RMA-RR-40, high range containment radiation recorder, is out of service.

Initiating Cues:

It is now 22:35 hours. The decision has been made to vent the Drywell through SBGT using the 1" line in accordance with 5.8.18. The Shift Manager has directed you to do a release rate determination based on Drywell curie content. Inform the Shift Manager when you have completed the task.

Trainee: ________________________ Examiner: ________________________

Pass ☐ Fail ☐ Examiner Signature: ____________________ Date: __________

Time Started: ___________ Time Finished: ____________

Additional Program Information:

1. Appropriate Performance Locations: CR/SIM
2. Appropriate Trainee level: RO/SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 16 minutes
5. NRC K/A 295038 EA 2.01 (3.3/4.3)

Directions to Examiner:

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

1. This JPM evaluates the trainee's ability to perform a dose assessment with ERP effluent monitor release rate.
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. Observe the trainee during performance of the JPM for proper use of self-checking methods.
4. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to perform a dose assessment. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to perform a dose assessment. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

General Conditions:

1. The reactor was shutdown at 22:35 following an ATWS and LOCA.
2. The core was dry for approximately 45 minutes.
3. Standby Liquid Control has been injected.
4. The Computerized Dose Projection (CNS-DOSE) program will not run.
5. The containment is being vented via SBGT to reduce pressure. The venting will take 45 minutes.

General References:

1. Procedure 5.7.17
2. Procedure 5.7.16

General Tools and Equipment:

1. None

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical checks denoted by "*".
3. Simulator cues denoted by "#".

Task Standards:

1. Accurately locate, identify, operate and/or manipulate all component controls required to be utilized to perform a dose assessment.
2. Accurately locate and identify all instrumentation required to be monitored to perform a dose assessment.
3. Correctly interpret instrument and system responses and their interrelationships when performing a dose assessment.

Initiating Cue(s):

The Reactor was SHUTDOWN one hour ago. The Shift Manager has directed you to perform a hand calculated dose projection for 1, 2, 5 and 10 mile centerline only. Inform the Shift Manager when you have completed the calculations and provide him with the completed form.

NOTE: Place the Simulator in RUN and tell the trainee to begin.

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

Performance Checklist	Standards	Initials
1. Obtain release rate.	Enter the release rate from KAMAN display PARAMETER #49. CUE: (When Checked) 6.68E06	________*
2. Determine if SGT is in release path.	Record 0.01 in Blank 2.	________*
3. Determine core status, and enter appropriate Iodine/Noble gas ratio	Using degraded core and 1 hour effective age, record 3.57 E-1 in Blank 3.	________*
4. Determine energy factor.	Obtain the energy factor using an effective age of 1 hr record .60 in Blank 4.	________*
5. Obtain wind speed.	Obtain the wind speed at the 100 meter level from PMIS or the MET recorders and record in Blank 5. CUE: (When checked) 8 mph.	________*

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

Performance Checklist	Standards	Initials
6. Determine atmospheric stability class.	Obtain the atmospheric stability class from PMIS and record in Blank 6. # CUE: When an atmospheric stability class is determined, instruct operator to use class D.	________*
7. Determine if SEC. containment bypassed	Enter 1.0 in Block 7.	________*
8. Obtains conversion factor from Table 3.	Enter degraded core conversion factors in Block 8, 9, & 10. Block 8 - TEDE NG 9.19E-4 Block 9 - TEDE Iodine 2.98E-2 Block 10 - CDE Iodine 4.96E-1	________*
9. Complete TEDE sub-calculation.	Perform the indicated computation and enter 5.5 E+2 to 5.4 E+2 in Blank 11 .	________*

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

Performance Checklist	Standards	Initials
10. Determine mixing factors.	Determine the mixing factors for a ERP level release with a D stability class and enters in Blank 12 for the appropriate distance. (mixing factor) X/Q at 1 mile 8.35E-6 (mixing factor) X/Q at 2 miles 8.21E-6 (mixing factor) X/Q at 5 miles 3.77E-6 (mixing factor) X/Q at 10 miles 1.82E-6	________*
11. Compute TEDE dose rate.	Perform the indicated computations and enter the results in Blank 13 for appropriate distance. 4.65E-03 to 4.5E-03 Rem/hr at 1 mile 4.55E-03 to 4.4E-03 Rem/hr at 2 miles 2.1E-03 to 2.0E-03 Rem/hr at 5 miles 1.0E-04 to 9.8E-05 Rem/hr at 10 miles	________*
12. Determine release duration.	Record .75 hr projected release duration in Blank 14.	________*

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

Performance Checklist	Standards	Initials
13. Compute TEDE dose.	Perform the indicated computations and enter the results in Blank 15 for the appropriate distance. 3.5E-03 to 3.3E-03 Rem at 1 mile 3.4E-03 to 3.3E-03 Rem at 2 miles 1.6E-03 to 1.5E-03 Rem at 10 miles 7.55E-04 to 7.3E-04 Rem at 10 miles	________*
14. Compute CDE sub-calculation.	Perform the indicated computation and enter 1.5 E+3 to 1.4 E+3 in Blank 16.	________*
15. Compute CDE dose rate.	Perform the indicted computations and enter the results in Blank 17 for the appropriate distance. 1.3E-02 to 1.1E-02 Rem/hr at 1 mile 1.3E-02 to 1.1E-02 Rem/hr at 2 miles 5.6E-03 to 5.2E-03 Rem/hr at 5 miles 2.7E-03 to 2.5E-03 Rem/hr at 10 miles	________*

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

Performance Checklist	Standards	Initials
16. Compute CDE dose.	Perform the indicated computations and enter the results in Blank 18 for the appropriate distance. 9.3E-03 to 8.7E-03 Rem at 1 mile 9.2E-03 to 8.6E-03 Rem at 2 miles 4.2E-03 to 3.9E-03 Rem at 5 miles 2.1E-03 to 1.9E-03 Rem at 10 miles	________*
17. Inform the Shift Manager that the task is complete.	Inform the Shift Manager that the calculations are complete and provide him with 5.7.17 Attachment 3. CUE: The Shift Manager acknowledges the report.	________

Task No.: 200145P0501 and 200152P0501

Task Title: Perform Dose Assessment with ERP Effluent Monitor Release Rate

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

None

B. Initialize the Simulator in IC-18 and place in RUN.

Turn Instrument Noise OFF

C. Change the simulator conditions as follows:

1. Triggers

None

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial
RM02l	ERP NORMAL RANGE KAMAN RMP-RM-3A	none	0	88.25	N/A	88.25
RM02m	ERP HIGH RANGE KAMAN RMP-RM-3B	none	0	48.25	N/A	48.25

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Task Title: Reportable Occurrences to the NRC

3. Remotes

Number	Instrument	Title	Value	Ramp
HV01		Outside Air Temperature	25EF	N/A
HV02		Wind Speed	8 mph	N/A
HV03		Wind Direction	270E	N/A

4. Overrides

   None

5. Panel Setup

   a. Ensure that PMIS MET display indicates values displayed under Remotes".

Note: If this JPM is to be performed more than once, snap the simulator into IC-0 after the panel setup is complete.

Task No.: 341014O0303

Task Title: Reportable Occurrences to the NRC

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to perform a dose assessment. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them to perform a dose assessment. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The reactor was shutdown at 22:35 following an ATWS and LOCA.
2. The core was dry for approximately 45 minutes.

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Task Title: Reportable Occurrences to the NRC

3. Standby Liquid Control has been injected.
4. The Computerized Dose Projection (CNS-DOSE) program will not run.
5. The containment is being vented via SBGT to reduce pressure. The venting will take 45 minutes.

Initiating Cues:

The Reactor was SHUTDOWN one hour ago. The Shift Manager has directed you to perform a hand calculated dose projection for 1, 2, 5 and 10 mile centerline only. Inform the Shift Manager when you have completed the calculations and provide him with the completed form.

Trainee: ______________________ Examiner: ______________________

Pass ☐ Fail ☐ Examiner Signature: ______________________ Date: __________

Time Started: ___________ Time Finished: ____________

Additional Program Information:

1. Appropriate Performance Locations: SIM

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Task Title: Reportable Occurrences to the NRC

2. Appropriate Trainee Level: SRO / STE
3. Evaluation Method: Perform
4. Performance Time: 15 Minutes
5. NRC K/A 2.1.2; 2.1.17; 2.1.20

Directions to Examiner:

15. This JPM evaluates the trainee's ability to perform the required actions for an 8 hour non-emergency NRC notification due.
2. **Another instructor in the booth should have a copy of the notification form (Attachment 6) and complete it as the information is relayed over the phone.**
3. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space, if desired, by the examiner.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
5. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to determine NRC reportability and make any associated communications. Before you start, I will state the general plant conditions, the Initiating Cues, and

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Task Title: Reportable Occurrences to the NRC

answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Any check of your work by another person will always be in agreement, regardless of the accuracy of your information or action.

General Conditions:

36. The plant is 100% power.
37. During a Fire Barrier inspection, it was found that all the fire barriers in the North Cable Spreading Area are either missing or degraded.
38. Maintenance has been notified and a plan has been initiated to replace or repair the damaged or missing fire seals within 48 hours.
39. All other operators are unavailable to support you. The Shift Supervisor is unavailable and has delegated you to handle this situation in his place.

General References:

1. Conduct of Operations Procedure 2.0.5

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General Tools and Equipment:

1. Site communication System.
2. Communicator

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".
2. NUREG 1022

Task Standards:

22. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

Determine what notification requirements exist for the NRC (if any) and complete any forms and/or communications required by this event (if any).

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Performance Checklist	Standards	Initials
F. Refers to 2.0.5.	Refers to body of procedure, Attachment 1 and Attachment 4.	________
G. Determine appropriate reporting category per 2.0.5.	Determines an 8 hour report is required (per 50.72(b)(3)(ii)	________*
H. Determine appropriate reporting category per NUREG 1022.	Determines an 8 hour report is required.	________*
I. Performs sub step 2.4.1.1.a by documenting EVENT TIME & ZONE	Time entered on Attachment 8 is the current time. Zone is Central Standard Time (Central Daylight Savings Time). **#CUE:** If asked the event occurred 15 minutes ago.	________*

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Task Title: Reportable Occurrences to the NRC

Performance Checklist	Standards	Initials
J. Document the time that event was determined to be reportable in the EVENT DESCRIPTION section.	Include time the condition was reportable and description of the condition. **#CUE:** If asked the event occurred 15 minutes ago.	________*
K. Complete Event Classifications section of Attachment 8 Event Notification Worksheet.	Checks 50.72 Non-Emergency in the first column.	________
L. Complete Event Classifications section of Attachment 8 Event Notification Worksheet.	Checks (ii)(A) Degraded Condition in the second column.	________*
M. Complete Description section of Attachment 8 Event Notification Worksheet.	Documents system affected, Fire Seals in the North Cable Spreading area. Fire Impairments will be initiated. Plans are in place to repair and/or replace missing fire seals within 48 hours.	________*
N. Complete remaining sections of Attachment 8 Event Notification Worksheet.	Notify resident only, everything is understood, Systems functional as applicable, Mode 1, no release.	________*

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Task Title: Reportable Occurrences to the NRC

Performance Checklist	Standards	Initials
O. Complete Attachment 9.	Checklist completed as an INITIAL report.	________
P. Ensure report is accurate.	Ensures that the report is accurate and properly filled out. **#CUE**: Another qualified person has reviewed the report and has initialed Attachment 7 that the attachment has been completed and is accurate. He is now unavailable.	________*

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Task Title: Reportable Occurrences to the NRC

Performance Checklist	**Standards**	**Initials**
Q. Make the report. NOTE: The other instructor in the booth should have a copy of the notification form (Attachment 8) and complete it as the information is relayed over the phone.	Calls the NRC using a number in the Emergency Telephone Directory (301-415-0550), and provides all the information on Attachment 8. In addition he shall record the Event Number and Notification time on Attachment 8. **#CUE**: Read the information back as provided by the trainee. Then state the event number is XX-0199 (where XX is the last two digits of the current year, i.e. 2007 would be 07) and the time is (current time). I have no additional questions at this time.	________*

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine NRC reportability and make any associated communications. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

During task performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

Any check of your work by another person will always be in agreement, regardless of the accuracy of your information or action.

General Conditions:

1. The plant is 100% power.
2. During a Fire Barrier inspection, it was found that all the fire barriers in the North Cable Spreading Area are either missing or degraded.
3. Maintenance has been notified and a plan has been initiated to replace or repair the

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

damaged or missing fire seals within 48 hours.

4. All other operators are unavailable to support you. The Shift Supervisor is unavailable and has delegated you to handle this situation in his place.

Initiating Cue(s):

Determine what notification requirements exist for the NRC (if any) and complete any forms and/or communications required by this event (if any).

Trainee: ______________________ Examiner: ______________________

Pass ☐ Fail ☐ Examiner Signature: ______________________ Date: __________

Time Started: __________ Time Finished: __________

Additional Program Information:

1. Appropriate Performance Locations: Any
2. Appropriate Trainee level: SRO
3. Evaluation Method: Perform ___ Simulate ___

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

4. Performance Time: 25 minutes
5. NRC K/A 2.2.6 (2.3/3.3)

Directions to Examiner:

16. This JPM evaluates the student's ability to review a procedure change request. Specifically, to identify the requirements for a non-intent, instant change.
17. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space, if desired, by the examiner.
18. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
19. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to determine the requirements for processing a procedure change request.

==

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

General Conditions:

40. The Reactor is shutdown with an outage in progress.

General References:

1. Procedure 0.4, Procedure Change Process
2. Procedure 0.4A, Procedure Change Process Supplement

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by “*”.

Task Standards:

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

23. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

1. I&C has received a new piece of test equipment to test D/P instruments.
2. This is the first device of its kind to be used at CNS
3. They have written a new procedure to use this test equipment.
4. They would like to process the request as instant so they can use the procedure tonight on night shift.

Inform the Shift Manager when you have determined the requirements.

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

Performance Checklist	Standards	Initials
R. Obtain a copy of procedure 0.4, Procedure Change Process.	Current revision of procedure 0.4 is obtained. **CUE:** Provide a copy of 0.4 to student. Also provide a copy of 0.4A if requested.	________
2. Student locates correct attachment for Non-Intent Screen	Student identifies Procedure 0.4, Attachment 4 as the correct attachment for non-intent screen.	________
3. Student determines the requirements for the change request.	Student determines the procedure is an intent change and can not be processed as an instant, non-intent change. It is a new procedure.	________*

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine the requirements for processing a procedure change request.

General Conditions:

1. The Reactor is shutdown with an outage in progress.

Initiating Cue(s):

I&C has received a new piece of test equipment to test D/P instruments.

This is the first device of its kind to be used at CNS

They have written a new procedure to use this test equipment.

They would like to process the request as instant so they can use the procedure tonight on night shift.

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

Inform the Shift Manager when you have determined the requirements.

Trainee: ____________________ Examiner: ____________________

Pass ☐ Fail ☐ Examiner Signature: ____________________ Date: __________

Time Started: __________ Time Finished: __________

Additional Program Information:

1. Appropriate Performance Locations: Any
2. Appropriate Trainee level: SRO / STE

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

3. Evaluation Method: Perform ___ Simulate ___
4. Performance Time: 10 minutes
5. NRC K/A 2.2.7 (2.0/3.2)

Directions to Examiner:

20. This JPM evaluates the trainee's ability to determine the post maintenance testing for RHR-MOV-MO26A following bonnet gasket replacement per Maintenance Procedure 7.0.5, Post-maintenance Testing.
21. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space, if desired, by the examiner.
22. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
23. Brief the trainee and tell the trainee to begin.

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

Directions to Trainee:

When I tell you to begin, you are to determine the post maintenance testing for RHR-MOV-MO26A following bonnet gasket replacement. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

==

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

General Conditions:

41. The Reactor is shutdown with an outage in progress.

General References:

1. Procedure 7.0.5, POST MAINTENANCE TESTING
2. Procedure 0.26, SURVEILLANCE PROGRAM

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by "*".

Task Standards:

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

24. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

The Shift Manager directs you to determine the post maintenance testing requirements to assign to RHR-MOV-MO26A following bonnet gasket replacement. Inform the Shift Manager when you have determined the requirements.

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

Performance Checklist	Standards	Initials
S. Obtain a copy of procedure 7.0.5, Post Maintenance Testing.	Current revision of procedure 7.0.5 is obtained.	
2. Identify component type for RHR-MOV-MO26A.	Determines that RHR-MOV-MO26A is a motor operated gate valve	
3. Locate the general component from Procedure 7.0.5 Attachment 1 index.	Candidate locates the Component Test Matrices for Motor Operated Valve (Gate/Globe).	
4. Identify, on the matrices, the type of corrective and/or preventive maintenance to be performed on RHR-MOV-MO26A.	Candidate Identifies Bonnet Gasket Replacement on the Matrices.	
5. Determine the test activities for the bonnet gasket replacement on RHR-MOV-MO26A.	From attachment 1, the candidate assigns Leak Test, Static VOTES test. (Open/Closed Flow test is not required for this valve.	________*

Task No.: 200302G0203

Task Title: Determine Post-Maintenance Testing Requirements

Performance Checklist	Standards	Initials
NOTE:In the following step the student MAY elect to perform only portions of the following surveillances as indicated in Procedure 0.26, Surveillance Program. 6.PC.501 is overall procedure. 6.PC.518 os the RHR LLRT procedure.		
6. Determine the test procedures indicated by Procedure 7.0.5, Attachment 2.	Candidate assigns 6.PC.501 (LLRT), 6.1RHR.201 (Timed IST FSO/FSC), and 6.MISC.401 (Position Indication) to post maintenance testing.	________*
7. Informs the Shift Manager of the post maintenance testing requirements to assign to the work package.	Shift manager informed. **#CUE: Shift Manager acknowledges the report.**	

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine the post maintenance testing for RHR-MOV-MO26A following bonnet gasket replacement. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

General Conditions:

1. The Reactor is shutdown with an outage in progress.

Initiating Cue(s):

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

The Shift Manager directs you to determine the post maintenance testing requirements to assign to RHR-MOV-MO26A following bonnet gasket replacement. Inform the Shift Manager when you have determined the requirements.

Trainee: ______________________ Examiner: ______________________

Pass ☐ Fail ☐ Examiner Signature: ____________________ Date: __________

Time Started: ___________ Time Finished: ___________

Additional Program Information:

1. Appropriate Performance Locations: Any
2. Appropriate Trainee level: SRO

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

3. Evaluation Method: Perform
4. Performance Time: 8 minutes
5. NRC K/As: 2.3.10 (2.9/3.3)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to determine the need to authorize stable iodine thyroid blocking per 5.7.14, Stable Iodine Thyroid Blocking (KI).
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space, if desired, by the examiner.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
5. Brief the trainee, place the Simulator in RUN, and tell the trainee to begin.

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

Directions to Trainee:

When I tell you to begin, you are to perform the actions of the Emergency Director. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

General Conditions:

1. The Reactor is shutdown in a refueling outage.
2. An accident due to a failure of the refuel floor crane has resulted in personnel injuries to two refuel floor workers and severe damage to several fuel bundles.
3. The two injured refuel floor workers have no immediate life threatening injuries but they are unable to leave the area on their own. No other personnel are currently present on the refueling floor.
4. The Emergency Director has declared a Site Area Emergency.
5. RMA-RA-1, FUEL POOL AREA, indicates **6E5 mrem/hr** and RMA-RA-2 FUEL POOL AREA is **upscale**.
6. No survey data or air samples are presently available from the refuel floor.
7. A Team of EMTs and RPs are standing by to evacuate the injured workers.

DOSE Projection Data				
Distance From Plant	Projected Integrated Dose (Rem)		Projected Dose Rate (Rem/hr)	
	TEDE	CDE (Thyroid)	TEDE	CDE (Thyroid)
1 Mile	2.75E-01	9.41E-07	6.88E-02	2.35E-07
2 Miles	1.33E+00	4.55E-06	3.33E-01	1.14E-06
5 Miles	1.24E+00	4.26E-06	3.11E-01	1.06E-06
10 Miles	8.36E-01	2.86E-06	2.09E-05	7.15E-07

General References:

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

1. Procedure 5.7.14, Stable Iodine Thyroid Blocking
2. Procedure 5.7.2, Shift Supervisor EPIP

General Tools and Equipment:

1. None

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by “*”.

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

Initiating Cue(s):

You are the Emergency Director, Attachment 3 of Procedure 5.7.2, Shift Supervisor EPIP, has been completed through step 1.16 (Initial Accountability complete). Continue action as Emergency Director in procedure 5.7.2.

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

Performance Checklist	Standards	Initials
1. Obtain copy of Procedure 5.7.2 Attachment 3.	Current revision of Procedure 5.7.2, Shift Supervisor EPIP, Attachment 3 obtained.	______
2. Evaluate Attachment 3 Step 1.17 of 5.7.2, Shift Supervisor EPIP.	Determines that Stable Iodine Thyroid Blocking is indicated for the emergency workers involved in the rescue and Procedure 5.7.14 is required to be entered. **CUE: After 5.7.14 has been entered, as the candidate "Who should KI be authorized for?"**	______*
3. Obtain the current copy of Procedure 5.7.14 Stable Iodine Thyroid blocking.	Current revision of Procedure 5.7.14, Stable Iodine Thyroid Blocking is obtained. **CUE: If asked by candidate, the Radiological Control Manager (or Chem/RP Coordinator) recommends KI distribution.**	______

Task No.: 344022O0303

Authorize Stable Iodine Thyroid Blocking

Performance Checklist	**Standards**	**Initials**
NOTE: This JPM is not intended to evaluate the candidate distributing KI, ONLY to authorize the distribution of KI.		
NOTE: The candidate may or may not authorize distribution of KI to the injured personnel on the refuel floor.		
4. Authorizes Stable Iodine Thyroid Blocking.	Radiological Manager is directed to distribute KI to the following: – Rescue personnel that will enter the refuel floor area. – Injured personnel on the refuel floor. (Authorization of KI to injured personnel not required to complete this critical step) **CUE: If asked by candidate, the Radiological Control Manager (or Chem/RP Coordinator) recommends KI distribution.** **CUE: Radiological Manager acknowledges the order.**	______*

Task No.: 344018O0303

Classify Emergency Events Requiring Emergency Plan Implementation

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to perform the actions of the Emergency Director. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

When simulating, physically point to any meters, gauges, recorders and controls you would be using. State the position of controls as you would have manipulated them in order to complete the assigned task.

General Conditions:

1. The Reactor is shutdown in a refueling outage.
2. An accident due to a failure of the refuel floor crane has resulted in personnel injuries to two refuel floor workers and severe damage to several fuel bundles.
3. The two injured refuel floor workers have no immediate life threatening injuries but they are unable to leave the area on their own. No other personnel are currently present on the refueling floor.
4. The Emergency Director has declared a Site Area Emergency.
5. RMA-RA-1, FUEL POOL AREA, indicates **6E5 mrem/hr** and RMA-RA-2 FUEL POOL AREA is **upscale**.

Task No.: 344018O0303

Classify Emergency Events Requiring Emergency Plan Implementation

6. No survey data or air samples are presently available from the refuel floor.
7. A Team of EMTs and RPs are standing by to evacuate the injured workers.

DOSE Projection Data				
Distance From Plant	Projected Integrated Dose (Rem)		Projected Dose Rate (Rem/hr)	
	TEDE	CDE (Thyroid)	TEDE	CDE (Thyroid)
1 Mile	2.75E-01	9.41E-07	6.88E-02	2.35E-07
2 Miles	1.33E+00	4.55E-06	3.33E-01	1.14E-06
5 Miles	1.24E+00	4.26E-06	3.11E-01	1.06E-06
10 Miles	8.36E-01	2.86E-06	2.09E-05	7.15E-07

Initiating Cue(s):

You are the Emergency Director, Attachment 3 of Procedure 5.7.2, Shift Supervisor EPIP, has been completed through step 1.16 (Initial Accountability complete). Continue action as Emergency Director in procedure 5.7.2.

Trainee: ________________ Examiner: ________________

Pass ☐ Fail ☐ Examiner Signature: ________________ Date: ________

Task No.: 344018O0303

Classify Emergency Events Requiring Emergency Plan Implementation

Time Started: ____________ Time Finished: _____________

Additional Program Information:

1. Appropriate Performance Locations: Classroom / Simulator
2. Appropriate Trainee Levels: SRO / STE
3. Evaluation Method: Perform
4. Performance Time: 10 minutes
5. NRC K/A: 2.4.44 (2.1 / 4.0)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to determine the Emergency Classification in accordance with Procedure 5.7.1
2. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space, if desired, by the examiner.

Task No.: 344018O0303

Classify Emergency Events Requiring Emergency Plan Implementation

3. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
4. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to determine Emergency Classification for the provided conditions. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

General Conditions:

1. All information was provided during the Scenario that you just finished.

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General References:

1. Procedure 5.7.1, EAL Matrix

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".

Task Standards:

1. 100% of critical elements successfully completed without error.
2. 100% of safety and radiological work practices.

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Initiating Cue(s):

You are to determine the Emergency Classification for the scenario that you just finished.

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Performance Checklist	Standards	Initials
NOTE: Per 5.7.1, is on a Hard Card as will in binders in the Simulator.		
1. Refer to Procedure 5.7.1.	The operator refers to Procedure 5.7.1.	________
2. Evaluates the event of the Scenario	The SRO reviews the scenario and determines that the plant experienced an unisolable HPCI steam line break, and some fuel cladding failure.	________
3. Establishes Category	The SRO determines that the category was "Fission Product Barrier Threat or Loss	________

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4. Establishes Classification.	The SRO determines that there was a loss of two fission product barriers with the potential to lose the third.	________
5. Uses Attachment 3 of Procedure 5.7.1 to help clarify Fission Product Barrier Threat or Loss.	The SRO refers to Procedure 5.7.1 Attachment 3 and determines that there was a loss of two fission product barriers when there was an unisolable HPCI steam line break. Determines that there was also some fuel element failure.	________

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6. Determines Highest Classification	Classifies the Event as a General Emergency in accordance with 2.4.1. Loss of any TWO of THREE fission product barriers AND the potential exists for loss of the THIRD. The fission product barriers are defined as follows (refer to Attachment 3 for indication): A. Fuel Cladding. B. Primary Coolant Boundary. C. Primary Containment.	________*

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine Emergency Classification for the provided conditions. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

General Conditions:

1. All information was provided during the Scenario that you just finished.

Initiating Cue(s):

You are to determine the Emergency Classification for the scenario that you just finished.

Classification:

Name: ____________________________________

Facility:	Cooper Nuclear Station	Scenario No.:	NRC 1	Op-Test No.:	

Examiners:	Operators:	
	IC-211	

Initial Conditions: The plant is operating at approximately 85% power with RCIC out of service to replace the shaft coupling. IRM A is out of service and bypassed due to failing upscale last shift.

Turnover: Raise power when requested by the load dispatcher and facilitate the return of RCIC to operability. Maintenance will call early during the shift and request the swapping of the "B" and "D" SW Pumps for monitoring.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R	Raise power to 95%
2	N/A	N	Swap SW pumps for maintenance
3	3	C	CRD Flow Controller Failure
4	4	I	APRM A fails upscale with failure of rod block to occur
5	5	C	HPCI inadvertent initiation
6	6	M	HPCI un-isolable steam line break.
7	7	C	SGT failure to automatically initiate/Manual initiation of SGT.
8	N/A	M	Depressurize the RPV Due to 2 areas > Max Safe Temp.
9	9	C	ADS valve failure/opening of SRV valves

*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Objective

When two areas in Secondary Containment reach max safe operating temperatures the crew emergency depressurizes the Reactor to limit release of steam into the Reactor Building.

Scenario Summary

Initial Conditions:

- The plant is operating at approximately 85% power
- RCIC out of service to replace shaft coupling and is under a 14 Day LCO.
- It is a red light day because record grid loads are expected.

Events:

- Raise power to 95%
- Swap SW pumps for maintenance
- CRD Flow Controller Failure
- APRM A fails upscale with failure of rod block to occur
- HPCI inadvertent initiation
- HPCI un-isolable steam line break.
- SGT failure to automatically initiate/Manual initiation of SGT.
- Depressurize the RPV Due to 2 areas > Max Safe Temp.
- ADS valve failure/opening of SRV valves

Scenario Sequence

- Raise power to 95% using Recirc Flow only.
- Swap SW pumps for maintenance; Start “B” and secure “D”.
- CRD Flow Controller Failure; recognize the failure and respond in accordance with the Annunciator Procedures and 2.4CRD.
- APRM A fails upscale with failure of rod block to occur; this results in APRM A being declared inoperable.
- HPCI inadvertent initiation results in a small amount of fuel failure.
- HPCI un-isolable steam line break; starts small and increases causing temperatures and radiation levels to rise in the reactor building. The control switch malfunctions

for the inboard isolation and the outboard valve starts closing but trips in the throttled position.

- SGT failure to automatically initiate/Manual initiation of SGT.
- Depressurize the RPV Due to 2 areas > Max Safe Temp.
- ADS valve failure/opening of SRV valves. Three valves fail to open requiring the operator to place other valves to open.

Event One: Raise Power to 95%

Malfunction Required:

No malfunction required, this is a normal reactivity manipulation for the RO.

Objective:

The RO adjust Reactor Recirc Pump flows to make power increase from ~85% to ~95%.

Success Path:

Both Reactor Recirc Pump's speeds are raised from ~65 to ~80, maintaining them within the required 5% allowed by Tech Specs, and it is done in accordance with Procedure 2.1.10.

Event Two: Swap SW Pumps

Malfunction Required:

No malfunction required, this is a normal manipulation for the BOP.

Objective:

The BOP operator starts SW Pump "B" and Secures Pump "D" in accordance with Procedure 2.2.71 Section 13.

Success Path:

The CRS directs the BOP to start the "B" SW pump and secure the "D" pump, after maintenance calls requesting the swap. The B pump must be started before D is secured to maintain Loop pressure in the green band. The Mode Selector Switches need to be realigned so that there is no white light illuminated above the switches.

Event Three: CRD Controller Failure

Malfunction Required:

Override 03A35A1 CRD-FC-301 CRD System Flow Control – Setpoint; Event 3 Final value 0.

Objective:

The in-service CRD flow controller fails low in Auto. The crew diagnoses the failure and takes manual control of the CRD Flow Controller and re-establishes CRD parameters in accordance with Abnormal Procedure 2.4CRD.

Success Path:

CRD parameters are re-established to their normal values by manually controlling the CRD Flow Controller.

Event Four: APRM Fails Upscale

Malfunction Required:

Malfunction NM09A APRM Signal Failure Channel A; Event 4 Final value 100.

Objective:

APRM A fails upscale resulting in a half scram, but no control rod block. The crew bypasses the failed APRM, resets the half scram and addresses Technical Specifications for the failed APRM and the failure of the APRM upscale to generate a rod block.

Success Path:

APRM A is bypassed, the half scram is reset, recognizes that the Rod Block failed to come in, and the CRS initiates a potential LCO on APRM A in accordance with Technical Specifications 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 2 and TRM 3.3.1 (Rod Block Instrumentation) Table 3.3.1-1 Function 3.

Event Five: HPCI Inadvertent Initiation

Malfunction Required:

Malfunction HP05 HPCI Inadvertent Initiation, Event 5 Final TRUE.

Objective:

The HPCI system inadvertently initiates. The crew enters 2.4CSCS and secures the HPCI system. The CRS evaluates Technical Specifications for HPCI and RCIC out of service. The cold water injected by the HPCI system results in a small fuel element failure.

Success Path:

HPCI is secured and the Auxiliary Oil Pump is placed in the pull to lock position. The CRS recognizes that both HPCI and RCIC are inoperable and addresses Technical Specifications 3.5.1 and 3.5.3. With both inop, the plant is required to shutdown and be in Mode 3 in 12 hours.

Event Six: HPCI Steam Line Break

Malfunction Required:

Malfunction HP06 HPCI Steam Line Break, Event 6 Final value is 40 ramped in over a five minute period.

Objective:

The Crew recognizes a steam leak in the reactor building and then diagnoses that it is coming from the HPCI system and attempts to isolate it. There are entry conditions into EOP 5A Secondary Containment, and the CRS enters the EOP and starts directing the crews actions.

Success Path:

Enters EOP 5A and attempts to isolate the HPCI Steam Line. Also recognizes that the steam line is not isolated and takes appropriate actions to limit the release of steam into the reactor building.

Event Seven: Failure of SBGT to start.

Malfunction Required:

Malfunctions PC18A and PC18B SGT Fan A and B Auto Start Failures, Active from start of scenario.

Also Malfunction RD02 ATWS in at the beginning of the scenario, Final Value is 100.

Objective:

When the group 6 isolation occurs the SGT system fails to initiate resulting in reactor building pressure going positive and the radiation release is unfiltered and unmonitored. The crew manually starts SGT to restore reactor building pressure.

Success Path:

The crew manually starts SGT to restore reactor building pressure. Also the crew manually scrams the reactor (All auto scrams and ARI functions have failed. This malfunction is transparent to the crew if they manually scram the reactor when the first area reaches max safe.)

<u>Event Eight: Two (2) Areas above Max Safe Operating Limits</u>

Malfunction Required:

None

Objective:

Two areas reach max safe operating temperature (295ºF) requiring the crew to emergency depressurize the Reactor to limit the release of radioactive steam into the Reactor Building.

Success Path:

When the second area reaches 295ºF the Crew will recognize it and initiate an Emergency Depressurization of the Reactor. The second area should not be above 295ºF for more than 5 minutes before it is recognized.

Event Nine: Three ADS Valves fail to open

Malfunction Required:

Malfunctions AD06B, AD06E, AD06G, Reactor Pressure Relief Valve complete, Active from the beginning of the scenario set to a final value of 0. Also Malfunctions TC07A, B, C Bypass Valve #1,#2, #3 Failure active from the beginning of the scenario final value set at 0.

Objective:

If the crew attempts to use the BPVs to depressurize the BPV faile to respond to operator inputs. When the crew attempts to Emergency Depressurize and only 3 ADS valves open requiring the crew to open additional SRVs.

Success Path:

Crew recognizes that the Bypass valves are not working and that three ADS valves are malfunctioning. The Crew opens additional SRVs to establish the greatest amount of blowdown that they can achieve.

Scenario Termination:

When the reactor is depressurized (50 psig above Torus pressure) and level is being maintained between +3” to +54” and the lead examiner has seen enough the scenario may be terminated.

Op-Test No.:	Scenario No.: 1	Event No.: 1	Page 1 of 2
Event Description:	Raise power to 95%		
When to initiate:	Once the crew identifies that they have the watch and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	CRS	After receiving the call from the load dispatcher to raise power to 95%, conducts a crew briefing about the method and final outcome of the power ascension.
	CRS, RO, BOP	Participates in the crew briefing, and the RO maintains his monitoring of the plant while listening.
	RO	RO reviews Procedure 2.1.10 for load changes and request the BOP to peer check his work. (procedure is normally located on the RO's Desk)
	CRS	Monitors the power change as the reactivity manager.
	RO	RO will alternately raise the speed on the Reactor Recirc Pump Controllers by rotating the speed potentiometers clockwise until power is at ~95%.
	BOP	Peer Checks the movements of the Reactor Recirc Pump Controller's potentiometers in the clockwise direction to raise power.
	RO	Checks that the plant is responding appropriately to the change in speed of the Reactor Recirc Pumps.

	RO	Notifies the CRS when the requested power level is obtained.

Op-Test No.:		Scenario No.:	1	Event No.:	1	Page	2	of 2

	CRS	May contact the Load Dispatcher to inform them that the station is at the desired load.
		END OF EVENT
	Notes:	

Op-Test No.:	Scenario No.: 1	Event No.: 2	Page 1 of 2
Event Description:	Swap SW pumps for maintenance		
When to initiate:	Once the crew has completed the power ascension and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	Roll Play	At the direction of the lead examiner contact the CRS as the Maintenance Supervisor and request that the "B" Service Water Pump be started and the "D" pump started, so they can monitor the "B" Pump for pre-maintenance data. It will be run all shift, if asked.
	CRS	The CRS receives a call from Maintenance to Start the "B" Service Water Pump and secure the "D" SW Pump, so that monitoring of the pump can occur.
	CRS	Directs the BOP to swap "B" Loop Service Water Pumps in accordance with the procedure.
	BOP	Pulls Procedure **2.2.71** Service Water and performs **Section 13** Swapping SW Pumps.
	BOP	Contacts Station Operator to Check out SW Pump B and ensure selected SW pump(s) ready for operation.
	Roll Play	As the Station Operator; report that operating Zurn strainer D/P is **0.1** psid, and the "B" Service Water Pump is ready to start.
	BOP	Request a Peer Check for starting the "B" SW Pump from the RO.

	RO	Performs the peer check as the BOP starts the Pump.
	BOP	Makes an announcement over the Gaitronics about the starting of the pump and then starts the "B" SW Pump by placing its control switch to the Start Position and releases.

Op-Test No.:		Scenario No.:	1	Event No.:	2	Page	2	of	2

	BOP	The BOP then secures the "D" pump, by placing its control switch to the Stop Position.
	BOP	Repositions the MODE SELECTOR switches for the "B" and "D" Pumps (located directly below the Pump Switches) to where the OFF Pump is in AUTO and the RUNNING Pump is in STANDBY. The white light above the "D" SW MODE SELECTOR switch will extinguish.
	BOP	Monitors System Discharge Pressure and pump amps when the pump is started. Pump amps will be in the green band and discharge pressure will be maintained within the green band on the meters directly above the pump control switches.
	BOP	Notifies the CRS that the "B" SW Pump is running and "D" has been secured.
	CRS	May contact the Maintenance person that called him to start the pump swap, and tell him that the swap is completed.
	Roll Play	If contacted by the CRS, respond to the report that the Service Water Pumps have been swapped.
		END OF EVENT.
	Notes:	

Op-Test No.:	Scenario No.: 1	Event No.: 3	Page 1 of 2
Event Description:	CRD Flow Control Valve Failure		
When to initiate:	Once the crew has completed the swap of the Service Water Pumps and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	RO	Notices Annunciator (9-5-2 E-6) "CRD Charging Header High Pressure" or indicators on the CRD system reading abnormally. Updates Crew on event.
	RO	Enters Annunciator Procedure 9-5-2 E-6 and reports to the CRS his observations of the system: Cooling flow low, Charging pressure high, Drive Water d/p and Cooling Water d/p falling.
	CRS	Responds to the report.
	RO BOP	Reports that this is an entry into 2.4CRD.
	CRS	Announces the entry into the Abnormal Procedure and assigns the RO as the lead on the problem.
	RO	Obtains Procedure 2.4CRD and performs Attachment 5 "Cooling Water Trouble".
	CRS	Contacts Work Control about the problem and request assistance in repairs.

	Roll Play	As work control center, acknowledge the report of the CRD Flow Controller Failure in Auto, and notify the CRS that a work order will be initiated and a team formed to investigate the problem.

Op-Test No.:		Scenario No.:	1	Event No.:	3	Page	2	of	2

	RO	Takes manual control of CRD-FC-301 and returns the parameters to their pre-failure values.
	RO	Reports that all CRD parameters have returned to normal and that annunciator 9-5-2 E-6 has cleared.
	CRS	Announces exiting the Abnormal.
		END OF EVENT.
	Notes	

Op-Test No.:	Scenario No.: 1	Event No.: 4	Page 1 of 2
Event Description:	APRM A fails upscale with failure of rod block to occur		
When to initiate:	Once the crew has completed the CRD Flow controller failure and CRD parameters are back to their normal values and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	RO	Reports ½ Scram and its cause to the Crew.
	RO	Diagnoses that APRM "A" has failed upscale causing the ½ scram. Also that it was the only one.
	RO	Pulls Annunciator cards for the "A" RPS Trip and APRM Upscale and reports the actions to the CRS.
	RO	Reports that the **Rod Block Alarm** did not come in with the failure of the APRM. The Rod Block Alarm should have alarmed with the others.
	BOP	Checks the APRM in the back panels and reports finding to the crew.
	CRS	Directs the RO to bypass the APRM and reset the ½ Scram.
	RO	Selects "A" APRM joy stick and places it to the "A" position to bypass the failed APRM. Following the instructions in the APRM Upscale Alarm Procedure, Selects the appropriate Joy Stick and places it to the "A" position.

	BOP	Peer checks bypassing the APRM.
	RO	Selects the Scram Reset switch and places it momentarily in the 1-4, then the 2-3 positions and lets it return to the neutral position.

Op-Test No.:		Scenario No.:	1	Event No.:	4	Page	2	of	2

	RO	Reports that the ½ has been reset and that the annunciators have cleared.
	CRS	Evaluates TS and determines that potential LCOs exists for T.S. 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 2 and TRM 3.3.1 (Rod Block Instrumentation) Table 3.3.1-1 Function 3.
	CRS	Notifies work control of the failures and request repair.
	Roll Play	As the work control center, respond to the report and let the CRS know that a work order will be initiated and a team put together to investigate the failure of the APRM.
		END OF EVENT.
	Notes	

Op-Test No.:	Scenario No.: 1	Event No.: 5		Page 1 of 2
Event Description:	HPCI inadvertent initiation			
When to initiate:	Once the crew has completed the actions to recover from the Failed APRM and the CRS has addressed Technical Specifications and at the direction of the lead examiner			

Time	Position	Applicant's Action or Behavior
	BOP	Identifies HPCI initiation by observing the initiation alarm and the system valve and parameter indications on Panel 9-3.
	BOP	Observes drywell pressure and reactor water level to determine that it is an inadvertent start. A lack of a high drywell pressure and low level alarms are an appropriate way to quickly verify this is inadvertent.
	RO	Checks drywell pressure and reactor water level to ensure that HPCI start was inadvertent. Typically the second check will be done by looking at the instruments for High Drywell Pressure and Low Reactor Water Level.
	BOP	Secures HPCI and places it in Pull To Lock (PTL).This is a from-memory task, however the hard card may be used.
	RO	Monitors for signs that HPCI injected into the vessel. This is done by checking for level swings, power spikes or increased rad level on the MSL Rad monitors or the SJAE Rad monitors.
	CRS	Confirms HPCI is in PTL. Determines that HPCI is inoperable in accordance with T.S. 3.5.1. Recognizes that with HPCI and RCIC Inop that LCO 3.5.1 and 3.5.3 requires that the unit be placed in MODE 3 in 12 hours and Rx Steam Dome Pressure is $\leq$ 150 psig in 36 hours.

	BOP	Notes that radiation levels have increased slightly in the MSLs and SJAE Rad monitors.

Op-Test No.:		Scenario No.:	1	Event No.:	5	Page	2	of	2

	CRS	Notifies Work Control and Plant management for HPCI and RCIC status.
	Roll Play	As either Work Control or Management, respond to the report about the Inadvertent Initiation of HPCI and the fact that both HPCI and RCIC are inoperable.
	CRS	Updates Crew with status of HPCI and RCIC and prepares them for a unit shutdown. The procedure for that evolution is 2.1.4.1, Unit Shutdown.
		END OF EVENT.
	Notes	

Op-Test No.:	Scenario No.: 1	Event No.: 6	Page 1 of 3	
Event Description:	HPCI un-isolable steam line break.			
When to initiate:	Once the crew has completed the actions to secure HPCI and the CRS has addressed Technical Specifications for both HPCI and RCIC being Inoperable at the same time and at the direction of the lead examiner			

Time	Position	Applicant's Action or Behavior
	BOP	Reacts to the Reactor Building High Rad Alarm and pulls Annunciator Card. The Annunciator Card will have the Person reading it, make an announcement about high radiation conditions in the Reactor Building.
	BOP	Checks and reports that the SW Quad and HPCI Room Temperatures are raising On the process computer the Secondary Containment screen is displayed and the Operator Monitors the temperatures for TS-99Ga and TS-105B. Those temperatures are also available in the back panels.
	RO	Confirm HPCI steam line break by checking steam pressures on both HPCI and RCIC and comparing them. The one with lower pressure will be the one with the steam leak.
	BOP	Attempt to isolate HPCI by placing the Control Switches for the MO-15 and MO-16 to the closed position. The Operator will place the control switches for the MO-16 and MO-15 to the closed position one at a time watching the indicating lights for each valve.

	RO	Performs peer check for isolating HPCI. If asked, the other operator will peer check the placement for each valve control switch.
	BOP	Notices HPCI did not isolate and updates the crew. The operator will watch the indicating lights and notice that the MO-15 lights did not change, and that the MO-16 valve lights went dual for about 15 seconds and then both went out. That along with the annunciator for the MO-16 valve motor overload will be enough indication that the steam line is not isolated.

Op-Test No.:	Scenario No.:	1	Event No.:	6	Page	2	of	3

	BOP	Makes an update to let the crew know that Area temperatures and radiation levels are rising and that is an entry into EOP 5A.
	CRS	Enters EOP-5A on rising RX Building Temperatures and Rads. The CRS will use different color markers for each time an entry into the EOP is made. This will allow him to determine which questions in the flowchart have been answered for which event.
	CRS	Directs BOP to operate all available area coolers and Rx Bldg HVAC. This is the first step in EOP 5A concerning elevated temperatures. He will assign someone to monitor both temperatures and radiation levels.
	BOP / RO	Monitors Area temperatures and radiation levels on PMIS (computer).
	BOP / RO	Notifies CRS when one area is above Maximum Normal Temp or Rad This is indicated by a high temperature or high radiation alarm in the reactor building.

	CRS	Directs the RO to Scram the reactor. This is a step on EOP 5A flowchart, if there is an un-isolatable primary system discharging into the reactor building and one area above maximum safe operating value in one area. The maximum safe operating temperature is 295ºF.
	CRS	Directs both the RO and BOP to monitor radiation levels and temperatures and report when a second area is approaching its maximum safe operating value.
	CRS	Enters EOP 1A and directs the RO to maintain water level +3 to 54 using the Feed System.
	CRS	Directs the BOP to control pressure Less than 1050 psig with the bypass valves.
	BOP	Reports that the Bypass valves are not working.
	CRS	Redirects the use of the SRVs for pressure control.
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: 1	Event No.: 7	Page 1 of 1
Event Description:	Standby Gas Train failure to automatically initiate/Manual initiation of SGT.		
When to initiate:	During the radiation level increase in the reactor building, the plant will experience a group 6 isolation which isolates Reactor Building ventilation and starts Standby Gas Trains. Once this has occurred this event is active.		

Time	Position	Applicant's Action or Behavior
	CRS	Directs one of the board operators to verify Group Isolations, which will include a group 6. The first override in EOP 5A states IF Rx Bldg exhaust plenum radiation level exceeds 10 mr/hr THEN ensure isolation of Rx Bldg HVAC and initiation of SGT. This is an override and at anytime during the time EOP 5A is active this will apply.
	CRS, RO, BOP	Notices that the Reactor Building d/p is at or above 0 inches of Hg. One of the crew should notice that if SGTs failed to initiate but Rx Bldg HVAC is isolated, the d/p in the Rx Bldg should be rising from > -0.25 inches Hg and approaching 0.0 inches of Hg. This would cause an unmonitored release of radioactive gasses.
	RO, BOP	Reports that the Group 6 has occurred but the Standby Gas Trains did not auto start as they should have. If one of the board operators is directed to verify group isolations they would have to initially check the white group lights located in the vertical section of Panel 9-5. Then the group hard card should be used to verify containment isolation valves did actually close. On the hard card is a step to check that SGT is running.

	RO, BOP	Manually starts the SGTs and verifies proper operation.
	RO, BOP	Reports that the Standby Gas Trains are running and that Reactor Building d/p is being maintained below -0.25 inches of Hg.
		END OF EVENT
	Notes	

Op-Test No.:		Scenario No.: 1	Event No.: 8	Page 1 of 2		
Event Description:		Depressurize the RPV Due to 2 areas > Max Safe Temp.				
When to initiate:		During the reactor building temperature increase, one additional area will reach and then exceed the Max Safe Operating value of 295ºF. When this happen this even is active.				

Time	Position	Applicant's Action or Behavior
	CRS, RO, BOP	One of the crew notices and updates the rest of the crew that there are now two areas above their maximum safe operating temperatures of 295ºF. There are a couple of ways that the crew could make this discovery; PMIS, Back Panel instruments.
	CRS	The CRS follows EOP-5A and answers the WHEN block SC-13 yes and then accesses whether a primary system is discharging into secondary containment. The CRS will determine that HPCI is still discharging into secondary containment and activate the step to EMERGENCY DEPRESSURIZE the reactor.
	CRS	The CRS transitions to EOP 2A and address the two overrides and note that neither apply. An announcement will be made by the CRS when he changes EOPs to keep the crew aware.

	CRS	The CRS will determine that a High Drywell Pressure signal does not exist. This will be done by checking the alarms, PMIS or asking the board operators.
	BOP, RO	Will announce that Primary Containment Water Level is around 13 feet. If one of the board operators does not announce this, the CRS will ask what the value is so he can answer the next step in the EOP.
	CRS	Will direct one of the operators to open 6 SRVs.

Op-Test No.:		Scenario No.:	1	Event No.:	8	Page	2	of	2

	BOP, RO	Uncovers the switches for the ADS valves and then selects them to open, verifying that they do come open. This is done by checking the amber tailpipe pressure light above each switch illuminates.
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: 1	Event No.: 9	Page 1 of 2
Event Description:	ADS valve failure/opening of SRV valves		
When to initiate:	As the board operator opens the SRVs only 3 will open. Once this happens this event is active.		

Time	Position	Applicant's Action or Behavior
	BOP, RO	Will report that only 3 SRVs are open.
	CRS	Will direct the opening of additional SRVs. The board operator may elect to open additional valves on his own, that is okay.
	BOP, RO	Announces that RPV Pressure is dropping rapidly. The board operators will monitor either, PMIS or the indicators located on the vertical portion of the board to determine that the pressure is dropping.
	BOP, RO	Reports when RPV pressure is 50 psig above Torus pressure or that Depressurization is completed. At this time the CRS will address cleanup activities in the other EOPs and or AOPs.

		END OF EVENT
		END OF SCENARIO
	Notes	

Op-Test No.:		Scenario No.:	1	Event No.:	9	Page	2	of	2

Op-Test No.: ______	Scenario No.: ________	Event No.: _____	Page ____	of ____

Event Description: ________________________________

Time	Position	Applicant's Action or Behavior

Examiners: ____________ ____________ ____________

Operators: IC-212 ____________ ____________ ____________

Initial Conditions: The plant is operating at 100% power with Circ Water Pump C out of service for maintenance.

Turnover: Today is a red light day. Maintain full power, conduct CS surveillance and facilitate the return of CW pump C when called by maintenance later in the shift.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Conduct CS Subsystem "A" Surveillance (Pump Fails to develop required flow)
2	2	C	Grid Instabilities Shift Voltage Regulator to Manual and Adjust VARS.
3	3	C	CW pump Trip
4	N/A	R	Emergency Power Reduction
5	5	C	Inadvertent Group 3 Isolation with failure of one valve to close (Address Technical Specifications for INOP Group 3)
6	6	C	Reactor Recirc pump runaway
7	7	M	Small Earthquake
8	8	C	Suppression Pool Leak / Reactor Scram
9	9	C	LOOP Failure of DG to Tie to automatically tie to bus.
10	10	M	Emergency Depressurize on Low SP level

Scenario Objective

When Torus level can no longer be maintained greater than 9.6 feet, the Reactor is depressurized to ensure long-term containment integrity.

Scenario Summary

Initial Conditions:

- The plant is operating at approximately 100% power
- Circ Water Pump C is out of service following maintenance.
- Core Spray Surveillance 6.2CS.101 is in progress.
- It is a red light day because record grid loads are expected.

Events:

- Complete CS Subsystem “A” Surveillance (Pump Fails to develop required flow)
- Grid Instabilities Shift Voltage Regulator to Manual and Adjust VARS.
- CW pump Trip
- Emergency Power Reduction
- Start Standby CW pump
- Inadvertent Group 3 Isolation with failure of one valve to close (Address Technical Specifications for INOP Group 3)
- Reactor Recirc pump runaway/scoop Tube Lockout.
- Earthquake (minor)
- Suppression Pool Leak/Reactor Scram
- LOOP Failure of DG to automatically tie to bus.
- Emergency Depressurize on Low SP level

Scenario Sequence

- Complete CS Subsystem “A” Surveillance (Pump Fails to develop required flow)
- Grid Instabilities Shift Voltage Regulator to Manual and Adjust VARS.
- CW pump Trip
- Emergency Power Reduction
- Start Standby CW pump
- Inadvertent Group 3 Isolation with failure of one valve to close (Address Technical Specifications for INOP Group 3)
- Reactor Recirc pump runaway/scoop Tube Lockout.
- Earthquake (minor)
- Suppression Pool Leak/Reactor Scram
- LOOP Failure of DG to automatically tie to bus.
- Emergency Depressurize on Low SP level

Event One: Core Spray Surveillance

Malfunction Required:

01DS321 CS Suction Valve 14-7B, final value 75, active.

CS Suction valve 7B red light on. ?

Remote Required:

CS10B CS-MO-7B Manual Position, final value 75.

CS10A CS-MO-7B Power Control, De-energized.

Objective:

The crew continues scheduled surveillance 6.2CS.101 Core Spray Test Mode Surveillance Operation (IST) (DIV2) while flow is being adjusted the crew recognizes that the Core Spray Pump does not develop sufficient flow in accordance with the surveillance and declares the pump inoperable in accordance with Technical Specifications 3.5.1, Action A; Seven Day LCO.

Success Path:

The crew recognizes insufficient system flow and addresses TS for the CS pump being inoperable.

Event Two: Grid instabilities

Malfunction Required:

ED20 MAPP Grid Instability, final value 15%.

Objective:

The crew recognizes Grid Instabilities and takes appropriate actions to stabilize the grid.

Success Path:

The crew takes the appropriate actions to stabilize the grid. The voltage swings experienced, are reduced.

Event Three: Circulating Water Pump Trip

Malfunction Required:

MC05B Circulating Water Pump Trip 1B, True.

Objective:

The crew responds to a CW pump trip. This will require an emergency power reduction to prevent loss of condenser vacuum.

Success Path:

Condenser vacuum is restored to within an inch of hg vacuum from the onset of the transient.

Event Four: Circulating Water Pump Start-up

Malfunction Required:

None

Objective:

Maintenance availability is expedited and crew starts Circulating Water Pump 1C.

Success Path:

Three Circulating Water Pumps are running allowing vacuum to be stabilized.

Event Five: Inadvertent Group Three

Malfunction Required:

RP12 RWCU Group 3 Failure, True

RP10A RWCU Spurious Group 3, True

RP10B RWCU Spurious Group 3, True

ZDIPCISSWS18[1], Close

ZDIPCISSWS15[1], Open

Objective:

The crew responds to a loss of Reactor Water Cleanup due to an inadvertent Group 3 isolation.

Success Path:

Crew verifies the Group 3 isolation and identifies that the inboard PCIV valve failed to close and declares PCIV Inoperable in accordance with Technical Specifications 3.6.1.3 PCIVs, Action A, Isolate within 4 hours.

Event Six: Reactor Recirc Pump runaway / scoop tube lock

Malfunction Required:

02A8M1 RRP A Percent Speed Demand, Final Value 100, Ramp over 2 Minutes.

Objective:

The crew responds to one of the Reactor Recirc pumps running away (speed increase) requiring entry into Abnormal 2.4RR and a locking of the scoop tube to prevent total increase in speed.

Success Path:

The crew notices the Reactor Recirc Pump runaway and locks the scoop tube to limit speed increase.

Event Seven: Minor Earthquake

Malfunction Required:

HV02A Minor Earthquake Simulation, Final Value 20.

Objective:

The crew responds to the earthquake in accordance with 5.3QUAKE and monitors plant.

Success Path:

The crew responds to the minor earthquake and monitors the plant.

Event Eight: Suppression Pool Leak – Reactor Scram

Malfunction Required:

PC08 Suppression Pool Water Leak, final value 20, ramp over 4 minutes.

Objective:

The crew responds to a lowering torus level iaw EOP 3A and rising Reactor Building Quad level iaw EOP 5A.

Success Path:

The crew notices the Suppression Pool level loss and increase in Reactor Building Quad levels and scrams the reactor before level drops to 9.6 feet.

Event Nine: Loss of Off-site Power

Malfunction Required:

ED05 Loss of Power (Startup Transformer), True

ED06 Loss of Power (Emergency Transformer), True

ED07 Loss of Power (Normal Transformer), True

DG01A Diesel Generator Fails To Start DG1, True, Active

DG03B Diesel Generator Breaker Fails to Close, True, Active

Objective:

The crew responds to a loss of off-site power and notices that DG 1 failed to Start and DG 2 failed to automatically tie to its respective emergency bus.

Success Path:

The crew manually starts and ties the DGs to their busses and restores emergency power to the station.

Event Ten: Emergency Depressurization on low Suppression Pool Level

Malfunction Required:

Objective:

The crew responds to a lowering torus level and Emergency Depressurizes the Reactor on low Suppression Pool Level of 9.6 feet. During the depressurization a small tailpipe leak develops, causing a slow rise in Drywell pressure to above the 1.84 scram and auto start signals for ECCS.

Success Path:

The crew Emergency Depressurizes the reactor when Suppression Pool level reaches 9.6 feet.

Scenario Description

The plant is operating at 100 with 1C Circulating Water Pump out of service for maintenance. It is a red light day because record grid loads are expected.

After taking the watch the crew continues the Core Spray surveillance. During the Surveillance the CS pump fails to develop the required flow. The crew addresses TS for the INOP CS pump.

After TS are addressed for the INOP Core Spray grid instabilities required the crew ot enter the appropriate Abnormal Procedure and take manual control of the Main Generator Voltage regulator. When the crew has transferred voltage control to manual the load dispatcher directs that MVARs be raised, both these actions stabilize the instabilities in the grid. After these actions are complete the B CW pump trips requiring the crew to conduct an emergency power reduction to prevent loss of condenser vacuum. After power is reduced and conditions stabilize the crew starts a standby CW pump.

After the CW pump is started, an inadvertent group 3 isolation occurs. Both logics actuate but the RWCU inboard isolation valve does not close. The crew addresses TS for the failed PCIS logic.

After the TS are addressed for PCIS an unisolable leak occurs on the CS pump suction pipe. The crew raises takes action per EOP-3A and EOP-5A and attempts to refill the SP. All actions are inadequate and SP level continues to lower. Before SP level lowers to 11 ft. the crew stops and prevent HPCI. The crew scrams the reactor and when SP level approaches 9.6 feet. Shortly after the reactor scram offsite power is lost. DG-1 fails to start and DG-2 starts but fails to automatically tie to its respective bus. The crew manually ties DG-2 to its bus and restores power. The restoration of power also restores sources of injection to the reactor. Eventually an ED is required when level cannot be maintained greater than 9.6 ft. When the crew emergency depressurizes a very small leak is present on the tail pipe of one ADS valves that elevates DW pressure slightly above 2 psig. (Note: If the crew fails to terminate HPCI, the HPCI system actuates at 2 psig drywell pressure and HPCI exhaust pressurizes containment.)

When the reactor is depressurized and level is being maintained at 3” to 54” the scenario may be terminated.

Op-Test No.:	Scenario No.: NRC 2	Event No.: 1	Page 1 of 2
Event Description:	Continue Core Spray Surveillance 6.2CS.101 at step 4.1.4		
When to initiate:	After the crew has assumed the watch and at the direction of the lead examiner.		

Time	Position	Applicant's Action or Behavior
	Roll Play	Contact the BOP and inform him that all appropriate people are standing by for the start of the 1B CS Pump.
	BOP	Obtains permission to start the pump and informs him that Core Spray is inoperable for testing.
	CRS	Acknowledges the information and tells the BOP to continue with the surveillance. The CRS will address Tech Specs and declare the CS Pump Inop for testing. TS 3.5.1.
	BOP	Announces the starting of the Core Spray Pump over the gaitronics.
	BOP	Request peer check from the RO on the Core Spray Pump start.
	RO	Performs the peer check and informs the BOP that he is starting the correct pump.
	BOP	Places the control switch for the 1B CS Pump to the start position and releases.
	BOP	Monitors the minimum flow valve CS-MO-5B and ensures that it does not close within 40 seconds.

	BOP	Cracks open the Test Line Return Valve, CS-MO-26B for ½ a second and allows the system to run in this condition for 10 seconds.
	BOP	**Slowly jogs the CS-MO-26B full open and checks flow >5000 gpm. The system will not develop more than about 4000 gpm and the BOP should report this to the CRS.**
Op-Test No.:		Scenario No.: NRC 2 Event No.: Page 2 of 2
	CRS	Acknowledges the report that flow did not raise over 4000 gpm. And tells the BOP to secure the pump.
	BOP	Secures the B Core Spray Pump. Also may call the Station Operator in the Core Spray Quad that the pump is being secured. Makes an announcement over the gaitronics that the pump is being secured. Takes the control switch for the pump to Stop or PTL.
	Roll Play	As the Station Operator, if called, respond to the report and say that the pump did not sound right, not normal.
	CRS	Contacts Work Control and reports that the B Core Spray Pump is inoperable.
	Roll Play	As Work Control, respond to the report and inform the CRS that a team is being assembled and a work order will be generated.
		END OF EVENT
	Notes	

Op-Test No.: ______	Scenario No.: NRC 2	Event No.: 2	Page 1 of 2

Event Description: Grid Instabilities, Manual control of Voltage Regulator.

When to initiate: Once the crew has secured Core Spray testing and the CRS has addressed Tech Specs and at the direction of the lead examiner

Time	Position	Applicant's Action or Behavior
	CRS, RO, BOP	Notices either voltage swings or Voltage regulator trouble alarm eventually.
	CRS	Updates crew on entry conditions to 5.3GRID and 2.4GEN-H2.
	CRS	Enters 5.3GRID and 2.4GEN-H2 and directs the BOP to perform applicable steps. The applicable steps are 5.3GRID step 4.3 Monitor 345V, 69, and 161 KV line voltages and contact Load Dispatcher.
	BOP	Enters 5.3GRID and 2.4GEN-H2 and contacts the Load Dispatcher and Station Operator. From the Load Dispatcher, request guidance for grid disturbance. From the Station Operator sends him up to the voltage regulator cabinet to investigate.
	Roll Play	As the Load Dispatcher, report that the grid is unstable, but it appears that it might be coming from Cooper. Ask the status of the voltage regulating system.
	Roll Play	As SO, respond to being sent to the Voltage Regulator Panel and report that there is a strange humming from the voltage regulator potentiometer motor.

		Enters 2.4GEN-H2 and performs Attachment 5 VOLTAGE REGULATOR TROUBLE, and confirms alarm 4021 Volt/Hz Excessive and sends SO to Turbine 903 foot South to check alarm drop 1 on Protective Equipment Drawer.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:		Page	2 of 2

	Roll Play	As SO, report that Alarm Drop 1 is in.
	BOP	**Takes control of Generator Voltage Adjuster and raises voltage and MVARs.** May request a peer check from RO. Ro provides the check if asked.
	CRS	Contacts Load Dispatcher to determine source of problem. Also contacts Work Control to investigate the problem.
	Roll Play	Respond as the Load Dispatcher, and tell him that the problem appears to be with Cooper's voltage regulator and that MVARs should be raised to correct the problem. Respond as the Work Control SRO and tell him that a team of electricians and I&C are being formed and that a work order will be generated.
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: NRC 2	Event No.: 3	Page 1 of 2
Event Description:	Circulating Water Pump Trip		
When to initiate:	Once the crew has stabilized voltage and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	BOP	Responds to Annunciator A-4 B-1 Circ Water Pump B Trip, and checks Condenser vacuum on Panel B.
	BOP	Notes Condenser vacuum is degrading and updates the crew that there is an entry condition into 2.4VAC.
	CRS	Directs BOP to enter 2.4VAC and perform applicable sections. Attachment 1 is performed.
	CRS	Directs RO to commence a rapid power reduction to maintain condenser vacuum > 23 in Hg. **This is the next event**. Also updates the crew that there are SCRAM ACTIONS in the Abnormal.
	BOP	Sends Station Operator to the Intake to investigate the B CW Pump. Will also send someone to check the breaker.
	Roll Play	As the SO, respond to being sent to investigate the tripping of the B CW Pump. As the other SO, report that there is an overload ground flag on the breaker.

	BOP	Updates the crew with the values of Condenser Vacuum. Will have action points and critical parameter of vacuum assigned to him. Vacuum should be reported at 1” increments or less.
	CRS	Contacts Work Control to initiate investigation and repairs.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:		Page	2	of	2

	Roll Play	When contacted by the CRS, respond as the WCC and report that a team is being assembled and a work order is being initiated.
	BOP	Updates the crew that vacuum is stabilizing and/or has stabilized.
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: NRC 2	Event No.: 4	Page 1 of 2

Event Description: Emergency Power Reduction

When to initiate: ascension and at the direction of the lead examiner

Time	Position	Applicant's Action or Behavior
	RO	Reduces Reactor Recirc Pump A and B speeds to maintain condenser vacuum. Both speeds are reduced one at a time in accordance with Procedure 2.1.10 while checking with the BOP on the status of vacuum.
	RO	Monitors RR Pump speeds and parameters on RR Speed controller along with reactor power as the speeds are reduced.
	CRS	Directs that the RO and BOP coordinate actions to maintain condenser vacuum.
	CRS	Contacts Load dispatcher that an emergency load reduction is in progress due to a CW Pump trip.
	Roll Play	As the Load Dispatcher, respond to the report and remind the CRS that voltage is critical and that their voltage regulator is malfunctioning.
	CRS	Informs the BOP to monitor Generator Voltage along with Condenser Vacuum, because the voltage regulator is in manual.

	BOP	Monitors and adjust Main Generator Voltage, as load is reduced.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	4	Page	2 of 2

	RO	When condenser vacuum has stabilized the RO discontinues lowering RR Pump speeds. Ensures that pump speeds are matched.
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: NRC 2	Event No.: 5	Page 1 of 2
Event Description:	Inadvertent Group 3 Isolation, failure of one valve to close.		
When to initiate:	When Reactor power and condenser Vacuum have stabilized and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	BOP	Responds to Annunciators on Panel 9-4; 9-4-2 B-4 and E-5 RWCU Pump Low Flow and Demin Filter Failure.
	BOP	Notices that there was a Group 3 isolation, by observing the Group 3 lights extinguished on the group display on Panel 9-5.
	BOP	Throttles open the RWCU-MO-74 Filter Bypass Vlv as an immediate action to an isolation of Clean-up. If the valve is not throttled open, the system will over-pressurize due to mini-purge.
	BOP	**Notes that the RWCU-MO-15 Inboard Isolation Valve did not close and attempts to close it.** (An Automatic Action that didn't happen) sees that it will not close when the control switch is taken to close.
	BOP	Updates the crew to the isolation and the failure of RWCU-MO-15 to close.

	CRS	Pulls Tech Specs and determines that there was a failure of one PCIV to actuate on a valid signal and declares the RWCU-MO-15 Inoperable iaw TS 3.6.1.3 PCIVs, Action A, Isolate within 4 hours. Action is met with the MO-16 closed. It will still need to be de-energized.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	5	Page	2 of 2

	CRS	Contacts the Work Control Center on the failure of the RWCU-MO-15 to close and the inadvertent Group 3 and request that both be investigated and resolved.
	Roll Play	Respond as the Work Control Center SRO and report that a work order will be written and a team formed to investigate.
		END OF EVENT
	Notes	

Op-Test No.: ______	Scenario No.: NRC 2	Event No.: 6	Page 1 of 2

Event Description: Reactor Recirc Pump Speed increase, lock scoop tube.

When to initiate: When the CRS has addressed TS for the failure of the PCIV and at the direction of the lead examiner.

Time	Position	Applicant's Action or Behavior
	CRS, RO, BOP	Notices Reactor Power and/or Generator Output rising.
	RO	Identifies that Reactor Recirc Pump A speed is increasing by observing the rise on A and that B is steady.
	RO	Updates the Crew of the cause of the power increase.
	RO	**Depresses the Scoop Tube Lock pushbutton for the A Recirc Pump on vertical Panel 9-4.**
	BOP	Checks Generator Voltage and makes necessary adjustments in Manual.
	RO	Observes that the speed of the pump stops rising.
	BOP	Checks Condenser vacuum and notes its degrading again. If power was stabilized just below the point that vacuum stabilized in the event before, then this rise in power will cause them to have to lower power by running the other Recirc pump back.

	CRS	Contacts WCC to report problem with Reactor Recirc Pump A speed increase.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	6	Page	2	of	2

	Roll Play	Respond to the report of the speed increase. Tell him that a work order will be initiated and that A team will investigate it.
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: NRC 2	Event No.: 7	Page 1 of 2
Event Description:	Small Earthquake		
When to initiate:	When the crew has addressed the speed increase of the A RR Pump and the plant is stable and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	BOP	Responds to Annunciator B-3 B-1 Seismic Event
	BOP	Update Crew that this is an entry condition into 5.1QUAKE.
	CRS	Enters 5.1QUAKE and assigns it to the BOP Operator.
	Roll Play	Inform the Crew that the White Event Indicator and the Yellow Event Alarm light is illuminated on Panel SMA-3. This panel is not simulated in the Simulator and in the actual control room it is visible behind the CRS's desk.
	BOP	BOP validates the alarm, by verifying physical movement felt. May contact Fort Calhoun or the National Earthquake Information Center iaw 5.1QUAKE.
	Roll Play	Respond to the call as either Fort Calhoun and tell them that they also received a Seismic Alarm. Or as the National Earthquake Center, and tell the caller that there was a small earthquake in Southwestern Iowa, actual epicenter location unknown.

	RO, BOP	Walks down the Control Room and calls the Station Operators to walk down their respective areas lo0king for damage, concentrating on ECCS systems.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	7	Page	2	of	2

	Roll Play	After time elapses for checking other areas first: Report that there is a small leak on the B Core Spray suction from the torus. Through wall leak weld where the pipe penetrates the Torus wall, un-isolatable. About 1 gpm.
	CRS	**Contacts WCC to report earthquake and entry into 5.1QUAKE and the leak on the suction of the B CS Pump.**
		END OF EVENT
	Notes	

Op-Test No.: ______	Scenario No.: NRC 2	Event No.: 8	Page 1 of 3
Event Description:	Suppression Pool Leak / Reactor Scram		
When to initiate:	Once the crew has carried out the actions of 5.1QUAKE and have found the small leak on the Torus and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	CRS, RO, BOP	Responds to the report that there is a small leak on the torus suction pipe weld for Core Spray B.
	BOP, RO	Notices Torus level lowering on Panel 9-3 Torus Level PC-LI-13 (Torus Narrow Range), or on PMIS.
	BOP	At – 2 inches in the Torus updates the crew that there is an entry condition into EOP-3A. The Suppression Pool Level Low Alarm is set to alarm at -1.5 inches and the Crew my enter EOP at that point.
	CRS	Updates crew on entry into EOP-3A. Enters EOP and addresses all five categories paying particular attention to the Torus Water Level. Leg and transitions to M.
	CRS	Directs the BOP to maintain the Torus above 11 feet using one of the systems listed in Procedure 5.8.14 kept in a binder at the RO Desk. RCIC, HPCI, RHR-A, RHR-B, CS-A, or CS-B. there is no order or preference specified in the procedure, the BOP can choose any system at his discretion.

	BOP	Starts filling the Torus from one of the systems listed in procedure 5.8.14. This makes little or no noticeable change in torus level decrease. The leak will progress form small to large over a few minutes as the weld continues to fail.

Op-Test No.:	Scenario No.:	NRC 2	Event No.:	8	Page	2 of 3

	BOP	Monitors Torus level on PMIS or on instruments located on the Panels. Updates crew as to the level periodically.
	CRS	**When Torus level cannot be maintained above 11 feet, Directs the BOP to Stop and Prevent HPCI.**
	BOP	Takes HPCI Aux Oil Pump to pull to lock. This will prevent HPCI from starting if it gets an auto initiation.
	CRS	Directs BOP to monitor Torus level and notify him when it lowers to 10 feet.
	CRS	**Order the Reactor Scrammed when torus level is just above 9.6 feet iaw EOP-3A Step SP/L-12.**
	RO	Depresses both Scram Pushbuttons on Panel 9-5, and performs his mitigating scram actions of tripping one feed pump, and placing the Reactor Mode Switch to the Shutdown position.
	CRS	Enters EOP-1A and directs one of the board operators to maintain RPV Pressure less than 1050 psig using bypass valves.

	CRS	Directs the other board operator to restore and maintain reactor water level between +3 and +54 inches. He may specify a tighter band here.
	BOP	BOP goes to DEH system and ensures that the bypass valves are maintaining pressure at 960 psig.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	8	Page	3	of	3

	RO	RO controls RVLCS or RCIC to maintain level in the specified band. +3 to +54 is the specified band, but the RO is expected to maintain it on the narrow range instruments located on panel 9-5 within the normal green band if possible.
	BOP	Reports when Torus level is 9.6 feet.
	CRS	**Directs that the RPV be depressurized. Actually the step says when PC water level cannot be maintained above 9.6 feet ED. So the CRS may elect to perform this step at a value greater than 9.6 feet.**
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: NRC 2	Event No.: 9	Page 1 of 3
Event Description:	Loss of Off-site Power; Failure of DGs to load.		
When to initiate:	This is an automatic event when the Turbine Trips.		

Time	Position	Applicant's Action or Behavior
	CRS, BOP, RO	Crew notes that the Startup and Emergency busses are lost when the Turbine Trips and the Normal Transformer losses power. All control room lights extinguish and the emergency lights light.
	CRS	Enters 5.3SBO because there is a total loss of AC Power.
	CRS	Assigns 5.3SBO to the BOP Operator and directs him to start with the electrical system and restore a source of AC Power, preferably the Diesel Generators.
	BOP	Works his way through 5.3SBO to Attachment 3 for the electrical system. Notes that DG #1 is not running and that DG #2 is running but the discharge breaker did not close in.
	BOP	Closes Breaker EG2. This is an auto action that should have happened but didn't so the Operator will perform this action without reference to procedure. This will restore power to Emergency Bus G and with power on Bus G that is an exit condition for 5.3SBO and an entry condition into 5.3EMPWR.
	CRS	Contacts Load Dispatcher to implement Energy Control Center Instructions, Cooper Nuclear Station – Black Plant Procedure.

	Roll Play	As Load Dispatcher, inform the CRS that they are implementing Energy Load Center Instructions, Cooper Nuclear Station – Black Plant Procedure.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	9	Page	2	of	3

	CRS	Updates Crew about 5.3SBO exit and entry into 5.3EMPWR.
	CRS	Assigns BOP Attachments 2 and 3 BOP and Electrical Power Attachments. Assigns RO Attachment 1 RPV and Containment.
	BOP	Continues in 5.3EMPWR to attempt to restore DG 1 to running status.
	BOP	After DG 1 activities, will restore REC. Located in back panels and will follow hard card to recover the system following the loss of power.
	BOP	After REC is completed, will start one Air Compressors to restore instrument air to the plant. Located on Panel A.
	RO	Restarts CRD System. Located on Panel 9-5.
	RO	RO updates Torus level as it lowers to 9.6 feet
		END OF EVENT
	Notes	

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	9	Page	3	of	3

Op-Test No.:	Scenario No.: NRC 2	Event No.: 10	Page 1 of 2
Event Description:	Emergency Depressurize RPV		
When to initiate:	When it has been determined that PC Level cannot be restored and maintained above 9.6 feet.		

Time	Position	Applicant's Action or Behavior
	CRS	Briefs Crew on Emergency Depressurization.
	CRS	Enters EOP 2A from 3A and emergency depressurizes the RPV.
	CRS	Directs one of the board operators to open six SRVs.
	BOP, RO	**Uncovers the switches for the ADS valves and then selects them to open, verifying that they do come open. This is done by checking the amber tailpipe pressure light above each switch illuminates.**
	BOP, RO	Announces that RPV Pressure is dropping rapidly. The board operators will monitor either, PMIS or the indicators located on the vertical portion of the board to determine that the pressure is dropping.

	BOP, RO	Reports that Drywell Pressure is rising. The tailpipe leak is on one of the open SRVs. This will pressurize the DW to approximately 3 psig.
	CRS, RO, BOP	Notes Auto Start of ECCS again and secures non-needed system.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	10	Page	2	of	2

	BOP, RO	Reports when RPV pressure is 50 psig above Torus pressure or that Depressurization is completed. At this time the CRS will address cleanup activities in the other EOPs and or AOPs.
		END OF EVENT
		END OF SCENARIO
	Notes	

Malfunction	Description	Delay	Ramp	Event	Value	Final
DG01A	Diesel Generator Fails to Start DG-1			Active	True	True
DG03B	Diesel Generator Breaker Fails to Close			Active	True	True
RP12	Group 3 Isolation Failure			Active	True	True
ED20	MAPP Instability			2	0	15
MC05B	Circulating Water Pump Trip 1B			3	False	True
RP10A	Spurious PCIS Group 3 Isolation Signal			5	False	True
RP10B	Spurious PCIS Group 3 Isolation Signal			5	False	True
RR17A	Recirc A Jordan Failure		00:02:00	6	N/A	100
HV02A	Minor Earthquake Simulation			7	False	True
PC08	Suppression Pool Water Leak		00:06:00	8	0	30
ED05	Loss Of Power (Start-up Transformer)			9	False	True
ED06	Loss Of Power Emergency 69KV Transformer)			9	False	True
AD05G	SRV Tailpiece Vacuum Breaker Failure RV-71G			10	0	30

Remotes	Description	Delay	Ramp	Event	Value	Final

YPXRCS10	Core Spray B Pump Suction 7B				75	75

Overrides	**Description**	**Delay**	**Ramp**	**Event**	**Value**	**Final**
02S40	CU-MO18 Outbd Isol Control Switch			5	Normal	Close
02S18	Inboard Isolation Vlv MO-15			5	Normal	Open
04S059	Circulating Water Pump Discharge Valve Con			Active	PTL	PTL

Event	Event Action	Command
9	RA:MUX12C035 == 1	
10	ZLOMSSWS1E[3] ==1	
21	ZDIEGCS90[2] == 1	DMF ED20

Set CS Suction valve to 75% OPEN

Hang tag on 1C CW Pump control switch.

Examiners:

Operators:

IC-213

Initial Conditions: A plant startup is in progress with APRM A and IRM A is out of service and bypassed.

Turnover Today is a red light day, continue the startup, transfer to RUN, and start the main generator.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R	Raise power with control rods
2	1	I	IRM fails downscale
3	2	C	CRD pump Trip
4	N/A	N	Transfers Mode to RUN
5	3	C	REC pump Trip
6	4	C	CW System Leak/Flooding in the Condenser area
7	5	M	Loss of Vacuum / Scram / ATWS
8	6	C	Failure of Group 1 isolation
9	7	C	Remaining CRD pump Trips

Scenario Objective

The crew enters ESP 5.8.3 and inserts the control rods. When the crew gets all control rods inserted and level is being maintained 3” to 54” the scenario may be terminated

Scenario Summary

Initial Conditions:

- A plant startup is in progress with APRM A and IRM A is out of service and bypassed.

Events:

- Raise power with control rods
- IRM fails downscale
- CRD pump Trip
- Transfers Mode to RUN
- REC pump Trip
- CW System Leak/Flooding in the Condenser area
- Loss of Vacuum / Scram / ATWS
- Failure of Group 1 isolation
- Remaining CRD pump Trips

Scenario Sequence

- Raise power with control rods
- IRM fails downscale
- CRD pump Trip
- Transfers Mode to RUN
- REC pump Trip
- CW System Leak/Flooding in the Condenser area
- Loss of Vacuum / Scram / ATWS
- Failure of Group 1 isolation
- Remaining CRD pump Trips

Event One: _ Raise power with control rods _

Malfunction Required:

Objective:

The crew withdraws control rods to raise power in order to transfer the mode switch to RUN.

Success Path:

Event Two: IRM fails downscale

Malfunction Required:

Objective:

Shortly after rod withdrawal begins IRM B fails upscale resulting in a rod block and half reactor scram. The crew addresses Technical Specifications and determines that sufficient instrumentation is available to continue the startup and transfer to RUN. The IRM is bypassed and the half scram is reset and the startup continues.

Success Path:

Event Three: CRD pump Trip

Malfunction Required:

Objective:

The running CRD pump trips requiring the standby pump to be started in order to continue the startup.

Success Path:

Event Four: Transfers Mode to RUN

Malfunction Required:

Objective:

After the CRD system is restored power is raised and mode switch is placed to RUN.

Success Path:

Event Five: REC pump Trip

Malfunction Required:

Objective:

After the reactor is in RUN REC pump “A” REC pump trips. The crew will respond per alarm cards and Technical Specifications.

Success Path:

<u>Event Six: CW System Leak/Flooding in the Condenser area</u>

Malfunction Required:

Objective:

After the REC system is restored a CW leak is reported in the condenser area. After the crews initial response to the flooding the CW pipe completely ruptures resulting in a complete loss of CW flow to the condenser. The crew responds per 2.4VAC.

Success Path:

<u>Event Seven: Loss of Vacuum / Scram / ATWS</u>

Malfunction Required:

Objective:

The crew initiates a manual scram (no control rods insert when the scram is initiated) and the crew enters EOP-7A.

Success Path:

Event Eight: Failure of Group 1 isolation

Malfunction Required:

Objective:

As the vacuum degrades the crew closes the MSIVs (automatic group 1 isolation fails and the bypass valves fail to close as vacuum degrades below 7"Hg). As power cycles after the MSIVs are closed several fuel rods fail increasing reactor coolant activity. Pressure control transitions to SRVs/then HPCI and/or RCIC. If the crew starts SLC both SLC squib valves fail to fire.

Success Path:

Event Nine: Remaining CRD pump Trips

Malfunction Required:

Objective:

Success Path:

Scenario Description

A startup is in progress following a refueling outage. APRM A and IRM A are inoperable Reactor power is at 4%. The crew withdraws control rods to raise power in order to transfer the mode switch to RUN. Shortly after rod withdrawal begins IRM B fails upscale resulting in a rod block and half reactor scram. The crew addresses Technical Specifications and determines that sufficient instrumentation is available to continue the startup and transfer to RUN. The IRM is bypassed and the half scram is reset and the startup continues. The running CRD pump trips requiring the standby pump to be started in order to continue the startup. After the CRD system is restored power is raised and mode switch is placed to RUN.

After the reactor is in RUN REC pump “A” REC pump trips. The crew will respond per alarm cards and Technical Specifications. After the REC system is restored a CW leak is reported in the condenser area. After the crews initial response to the flooding the CW pipe completely ruptures resulting in a complete loss of CW flow to the condenser. The crew responds per 2.4VAC.

The crew initiates a manual scram (no control rods insert when the scram is initiated) and the crew enters EOP-7A. As the vacuum degrades the crew closes the MSIVs (automatic group 1 isolation fails and the bypass valves fail to close as vacuum degrades below 7”Hg). As power cycles after the MSIVs are closed several fuel rods fail increasing reactor coolant activity. Pressure control transitions to SRVs/then HPCI and/or RCIC. If the crew starts SLC both SLC squib valves fail to fire.

The crew enters ESP 5.8.3 and inserts the control rods. When the crew gets all control rods inserted and level is being maintained 3” to 54” the scenario may be terminated

Op-Test No.:		Scenario No.:	NRC	Event No.:	1	Page 1 of 2
Event Description:	Raise power with control rods to 8% power.					
When to initiate:	When the crew is ready and has assumed the watch.					

Time	Position	Applicant's Action or Behavior
	CRS	Holds a reactivity brief with the members of the crew and covers responsibilities during the startup and the importance of conservative actions when it comes to reactivity management.
	RO	Reviews Procedures 2.1.1, 2.1.10 and 10.13 and determines that control rod withdrawal can continue. Procedure 2.1.1 step 4.17 is performed along with 2.1.10 Section 4 and procedure 10.13 step 4.1
	RO	Ask for second checker for rod pulls.
	Roll Play	Inform the RO that the second checker was to be simulated.
	RO	Reviews Rod Pull Sheets and ensures that the rods listed as being pulled before he took watch are consistent with the pull sheets.

	RO	Verifies that Rod 14-23 is to be pulled from 04 to 08. And that it is the only rod selected.
Op-Test No.:	Scenario No.: NRC	Event No.: 1 Page 1 of 2
	RO	Using the Rod Control Switches notches Rod 14-23 from position 04 to 08 and watches that it settles at that position before continuing.
	RO	Then selects the next rod (38-31) and pulls it from 04 to 08 following the same actions for the first rod.
	RO	Monitors Nuclear Instrumentation between each rod withdrawal.
	BOP	Verifies that the Balance of the plant is responding to the rise in power.
		Continues pulling rods in accordance with the pull sheets of Procedure 10.13 until Reactor power is approximately 8%.
		END OF EVENT
	Notes	

Op-Test No.:		Scenario No.: NRC	Event No.:	2	Page	1 of 2
Event Description:	IRM B fails upscale					
When to initiate:	Once power is between 5% and 8% and at the direction of the lead examiner.					

Time	Position	Applicant's Action or Behavior
	RO	Stops pulling rods.
	RO	Announces that IRM B failed upscale and that the annunciators for it have alarmed. 9-5-1 E-7 IRM Upscale, 9-5-1 A-4 Rod Withdrawal Block. Also on panel 9-5-2 A-3 and B-1. Pulls alarm cards and performs the required actions.
	CRS	Responds to the report and directs the RO to discontinue the power ascension.
	RO	Verifies that IRM has failed by attempting to up range it.
	BOP	Checks the instrument around on the back panel, and reports that it is upscale there as well.
	RO	Verifies that it would be only one IRM per RPS channel is upscale, bypass affected IRM to clear RPS Trop and rod block. And informs the CRS that IRM B is to be bypassed.

	CRS	Directs the RO to bypass the failed IRM.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:		Page	2	of	2

	RO	Resets the half scram by placing the scram reset switch to 1-4 then to 2-3 positions and verifies that the associated alarms clear.
	CRS	Researches the failure in Tech Specs and determines that in accordance with TS 3.3.1.1 Function 1 that three IRMs are required per channel and that Channel B has three therefore this is a potential LCO for Spec 3.3.1.1 and that TRM 3.3.1 Function 2 applies as well and that it is a potential TLCO per spec T3.3.1.
	CRS	Contacts the work control center to inform them of the IRM B failure.
	Roll Play	Respond to the report and tell the CRS that a work order will be initiated,
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: NRC	Event No.: 3	Page 1 of 2
Event Description:	CRD pump Trip		
When to initiate:	Once the RO has completed the actions for the IRM failure and has recommenced pulling rods and at the direction of the lead examiner.		

Time	Position	Applicant's Action or Behavior
	RO	Responds to the CRD Pump Trip annunciator, Panel 9-5-2 C-6 CRD Pump B Breaker Trip.
	RO	In accordance with the annunciator procedure for the pump trip, the RO places CRD-FC-301 in MAN. And asks the BOP for a peer check.
	BOP	Performs the peer check.
	RO	The RO then adjusts CRD-FC-301 to minimum. And asks the BOP for a peer check.
	BOP	Performs the peer check.
	RO	Then by selecting the pump start switch to Start, the RO starts CRD Pump A. Also he asks the BOP for a peer check.

	BOP	Performs the peer check.
	RO	Slowly adjusts the CRD-FC-301 to obtain flow of 50 gpm and asks the BOP for a peer check.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	3	Page	2 of 2

	BOP	Performs the peer check.
	RO	Places the CRD-FC-301 to balance and asks the BOP for a peer check.
	BOP	Performs the peer check.
	RO	Reports that 1A CRD Pump has been started in accordance with the Annunciator Procedure.
	CRS	Contacts the Work Control Center to report the tripping of the CRD Pump.
	Roll Play	Respond to the report of the B CRD Pump tripping and that a work order would be initiated for it.
		END OF EVENT
	Notes	

Op-Test No.: ____	Scenario No.: NRC	Event No.: 4	Page 1 of 3
Event Description:	Transfers Mode to RUN		
When to initiate:	Once the RO has re-established CRD flow to normal and at the direction of the lead examiner.		

Time	Position	Applicant's Action or Behavior
	RO	Reports that Reactor Power is approximately 8% and that the plant is in a position to be placed into the Run Mode.
	CRS	Directs the RO to verify Reactor Pressure and alarms on panel 9-51 and 9-5-1.
	RO	Once the RO has verified that there should be no reason that the Reactor Mode Switch can be placed into the Run Position, he request the BOP to peer check him moving the Mode Switch to Run. He turns the switch clockwise from Startup to Run.
	RO	Verifies that all systems, PCIS and RPS responded correctly to the change of the mode switch to run. No RPS or PCIS actuation should happen.
	RO	Updates the crew that the mode switch is in the run position.

Op-Test No.:	Scenario No.: NRC	Event No.: 4 Page 2 of 3
		END OF EVENT
	Notes	

Op-Test No.: ______	Scenario No.: NRC	Event No.: 5	Page 1 of 2
Event Description:	REC pump Trip		
When to initiate:	Once the Reactor Mode Switch is in Run, and at the direction of the lead examiner.		

Time	Position	Applicant's Action or Behavior
	BOP	Reports that the 1B REC Pump has tripped.
	BOP	Monitors REC Parameters on panel M. Pressures, temperatures and flows.
	BOP	Follows the guidance in the Annunciator card M-1 B-4 and starts REC Pump 1C.
	BOP	After starting the third pump the BOP monitors REC pump discharge pressures and ensure valve line-up is correct.
	CRS	References Tech Specs 3.7.3 Condition A, Required Action, A.1 Restore the A REC Subsystem to operable status within 30 days.

		Updates the crew with the Tech Spec Call.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	5	Page	2	of	2

	CRS	Contacts the Work Control Center and informs them of the failure.
	Roll Play	Respond to the report and inform the CRS that a work order is being initiated and a team is being formed to investigate the trip.
		END OF EVENT
	Notes	

Op-Test No.:	Scenario No.: NRC	Event No.: 6	Page 1 of 3

Event Description: CW System Leak/Flooding in the Condenser area

When to initiate: Once the BOP has controlled REC and restored the system to normal and the Tech Spec call has been made, and at the direction of the lead examiner.

Time	Position	Applicant's Action or Behavior
	BOP	Responds to a S-1 Alarm, on Turbine Building Sump Level High and High High.
	BOP	Sends Station Operator to investigate.
	Roll Play	Report that there is a leak on the CW piping in the condenser bay and there is standing water on the floor and it is rising
	BOP	Updates the crew with the report of the leak. And states that it is an entry condition into 5.1BREAK.
	CRS	Enters 5.1BREAK and assigns it to the BOP.
	BOP	Concurrently enter Procedure 2AVAC.

	BOP	Since the flooding is from circulating water the BOP will try to isolate the leak. The leak cannot be isolated by the BOP. The CW system must be removed from service.
	Roll Play	Report that the leak is not able to be isolated.

Op-Test No.:	Scenario No.:	NRC 2	Event No.:	6	Page	2 of 3

	BOP	Tells the CRS that the leak is unisolable and that they need to enter Procedure 2.1.5 and shutdown the plant.
	CRS	Briefs the crew on the need to shutdown the plant.
	BOP	After reactor has been scrammed the BOP trips the two running CW pumps. This ties to the next event.
	BOP	After the CW Pumps are off the BOP closes the MSIVs. This will be coordinated with the RO to monitor RPV Pressure.
	BOP/RO	Establish reactor vessel level and pressure control using HPCI/RCIC/SRVs. The RO and BOP will start either HPCI or RCIC in pressure control.
	BOP	Isolate condenser water box(es) per Attachment 4 of 5.1BREAK.

	Roll Play	Notify the BOP as the Turbine Building Station Operator and report that the flooding is backing up and is starting to approach the sump pump motors.
	BOP	The BOP it told that the flooding is exceeding the Turbine Building sump pumps capacity. Once the report is received, the BOP places all sump pumps to OFF.
		END OF EVENT
	Notes	

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	6	Page	3 of 3

Op-Test No.:	Scenario No.: NRC	Event No.: 7	Page 1 of 5
Event Description:	Loss of Vacuum / Scram / ATWS		
When to initiate:	When the crew has identified that the leak in the Turbine Building is unisolable and the Crew has entered Procedure 2.1.5, and at the direction of the lead examiner		

Time	Position	Applicant's Action or Behavior
	CRS	Directs the RO to Scram the unit when it is determined that the CW system must be shutdown.
	BOP	Notes that Condenser vacuum is degrading and hastens the closure of the MSIVs. The group 1 on low vacuum will not occur at 10" Vac. The Operator must close the valves manually.
	RO	Depresses both Reactor Scram Pushbuttons on Panel 9-5.
	RO	Performs the mitigating actions for the scram. Places the Reactor Mode Switch to Shutdown, and notes that an ATWS has occurred.
	RO	Provides the scram report, ATWS Conditions, Reactor Power is 8%.
	CRS	Enters EOP 1A and transitions to EOP 6A and 7A. And updates the crew as to which EOPs are being entered.

	CRS	Directs the RO to ensure ARI is initiated.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	7	Page	2	of	5

	RO	Reports that ARI is not functioning.
	CRS	**Directs the RO to trip the Reactor Recirc Pumps.**
	RO	Trips the RR Pumps and reports Reactor Power still at 8%.
	CRS	Directs the RO to Reset ARI and Insert Control Rods using one or more Alternate Rod Insertion Methods in ESP 5.8.3
	CRS	Directs the BOP to stabilize Reactor Pressure less than 1050#
	BOP	Allows Low Low Set to control SRV opening.
	CRS	Directs the BOP to Inhibit ADS.

	BOP	Places both ADS inhibit switches on Panel 9-3 to the inhibit position. Reports that ADS is inhibited.
	CRS	Follows the L leg of EOP 7A and directs the BOP to lower water level by stopping and preventing all injection into the vessel except Boron Injection Systems, RCIC, and CRD.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	7	Page	3	of	5

	BOP	Places HPCI in PTL, Secures Feed and Condensate and Booster Pumps, Pulls to lock the CS and LPCI Pumps control switches. Once all systems are "stopped and prevented" he reports that to the CRS.
	CRS	Directs the BOP to maintain water level between 100" and LL.
	RO	Defeats Auto RPS Scrams by installing PTM Jumpers 31 through 34 in the back panels 9-15 and 9-17. Follows all electrical safety precautions, Safety Glasses, No metal (Rings and watches)
	RO	Contacts Station Operator to install EOP PTMs 61 and 62.
	Roll Play	As Station Operator, respond to the direction to install EOP PTMs 61 and 62**. Wait a couple minutes and install PTMs 61 and 62.** Once they are installed, contact the RO and inform him that the PTMs are installed.
	RO	Raises CRD Pressure and bypasses RWM by placing a key in the switch and placing it to bypass.

	RO	Using Rod Drive Switches and Rod Select Switches on the select matrix, Selects and emergency inserts the withdrawn control rods in the order specified on Attachment 2 of 5.8.3.
	RO	As soon as the report is received Resets ARI and RPS and waits 3 minutes or when the not drained alarm clears for the SDV to inset another scram.

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	7	Page	4 of 5

	RO	Rescrams the reactor and reports that Most of the rods inserted.
	RO	Resets the scram again and waits the three minutes or when the SDV drains to insert another scram. Between those times will be manually inserting control rods with emergency in control switch.
	RO	Reports ALL RODS IN. When all control rods have been inserted either by repeating the scrams or driven by RMCS.
	CRS	Exits EOPs 6A and 7A and reenters EOP1A.
		END OF EVENT
	Notes	

Op-Test No.:		Scenario No.:	NRC 2	Event No.:	7	Page	5	of	5

Op-Test No.: ______	Scenario No.: NRC	Event No.: 8	Page 1 of 2
Event Description:	Failure of Group 1 isolation		
When to initiate:	When condenser vacuum reaches 10 inches Hg.		

Time	Position	Applicant's Action or Behavior
	BOP	Updates the Crew that a Group 1 has failed. The MSIVs should have closed when condenser vacuum drops to 10 inches.
	BOP	Closes the MSIVs one at a time while monitoring Reactor Pressure and the indicating lights.
	BOP	As the last Steam line is isolated updates the RO who is driving rods. Reactor Pressure and power will spike.
	BOP	The BOP also closes the Steam Line Drains MO-74 and MO-77 or 78.
	BOP	Updates crew that the MSIVs are closed.

Op-Test No.:		Scenario No.: NRC 2 Event No.: 8 Page 2 of 2
		END OF EVENT
	Notes	

Op-Test No.: ______	Scenario No.: NRC	Event No.: 9	Page 1 of 2
Event Description:			
When to initiate:			

Time	Position	Applicant's Action or Behavior

Op-Test No.:	Scenario No.: NRC 2	Event No.: 10 Page 2 of 2
		END OF EVENT
		END OF SCENARIO
	Notes	

Task No.: 241011O0101

Malfunction	Description	Delay	Ramp	Event	Value	Final
NM05B	IRM CHANNEL FAILURE CHANNEL B			2		100
RD08B	CRD HYDRAULIC PUMP TRIP CRD PUMP B			3	FALSE	TRUE
SW11B	REC PUMP TRIP 1B			5	FALSE	TRUE
RP04	GROUP 1 ISOLATION FAILURE			ACTIVE	FALSE	TRUE
RD02	ATWS			ACTIVE		100
CR03	GROSS FUEL CLADING FAILURE			15	0	2

Task No.: 241011O0101

Remotes	Description	Delay	Ramp	Event	Value	Final

Overrides	Description	Delay	Ramp	Event	Value	Final
03A23	ROD SELECT SWITCH 14-23				SELECT	
03S30	APRM CH A/C/E BYPASS SELECTOR SWITCH				A	
03S38	IRM BYPASS SELECTOR SWITCH CH A/C/E/G				A	

Task No.: 241011O0101

Event	Event Action	Command
15	RRPI90A > 900	Insert trigger 15 (gross fuel cladding failure) when reactor pressure is greater than 900 psig