Facility: Cooper Nuclear Station Date of Examination: 2014
Examination Level: RO X SRO Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations SKL034-21-131	R,D	Suppression Pool Temp Calculation K/A: 2.1.12 (2.9/4.0)
Conduct of Operations SKL034-50-XX	R,N	Determine RHR Pump NPSH Flow Limit K/A: 2.1.25 (3.9/4.2)
Equipment Control SKL034-50-78	R,D	Perform Diesel Generator Fuel Oil Availability K/A 2.2.37 (3.6/4.6)
Radiation Control SKL034-30-63	R,D	Radiation Protection Table Top K/A 2.3.13 (3.4/3.8)
Emergency Procedures/Plan		

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Facility: Cooper Nuclear Station	Date of Examination: 2014
Examination Level: RO SRO X	Operating Test Number:

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations SKL034-50-80	R,N	Determine required Actions for Plant Chemistry Out of Specification K/A 2.1.34 (SRO 3.5)
Conduct of Operations SKL034-20-114	R,D	Determine Shift Staffing Requirements for Mode Change K/A 2.1.4 (SRO 3.4)
Equipment Control SKL034-50-18	R,D	Determine Post-Maintenance Testing Requirements K/A 2.2.7 (2.0/3.2)
Radiation Control SKL034-30-63	R,D	Radiation Protection Table Top K/A 2.3.13 (3.4/3.8)
Emergency Procedures/Plan SKL034-30-61	S,D	Protective Action Recommendation (PAR) Table Top X K/A 2.4.44 (2.1 / 4.0)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Facility: Cooper Nuclear Station	Date of Examination: 2014
Exam Level: RO X SRO-I SRO-U	Operating Test No.: 1

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. Placing SDG In Service From Control Room K/A 262001.K4.06 (3.6 / 3.9) and 264000.A4.04 (3.7/3.7)	S, L, D, P	6
b. Shifting from Single Element to Auto (3 element) K/A 259002 A4.06 (3.1/3.2)	A, S, D	2
c. Recover from Manual Scoop Tube Operations K/A A.2.05 (RO 3.1 / SRO 3.1) A 2.09 (RO3.1 / SRO 3.0)	S, D	1
d. Transfer RPSPP1B from RPS MG Set B to CDP-1A K/A 212000 A1.11 (3.4 / 3.3) and 212000.A2.02 (3.7/3.9)	S, N	7
e. RPV Depressurization with RWCU K/A 204000 A4.03 (3.2 / 3.6), 204000.A1.04 (2.8/2.8)	A, S, E, L, N	3
f. Start HPCI From The ASD Room K/A 206000 A1.02 (4.2/4.2)	S, EN, D	4
g. Startup the Suppression Pool Cooling Mode of RHR (Alternate Path) K/A 219000 A4.02 (3.7 / 3.5)	A, S, D	5
h. Separation of REC Critical Loops K/A 295018 A1A.03 (3.3 / 3.4) and AK3.07 (3.1/3.2)	S, E, M	8
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Operate the Diesel Fire Pump Manually K/A 286000; A4.06(3.4/3.4)	A, E, D	8
j. Place 24 VDC Batteries and Associated Chargers in service K/A: 263000 K4.01(3.1/3.4) and 2.2.2 (4.6/4.1)	D	6
k. Conduct Alternate Rod Insertion (Vent Scram Air Header) K/A: 295037 EA1.05 (3.9/4.0)	E, R, D	1

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U

(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: Cooper Nuclear Station Date of Examination: 2014
Exam Level: RO SRO-I X SRO-U Operating Test No.: 1

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. Placing SDG In Service From Control Room K/A 262001.K4.06 (3.6 / 3.9) and 264000.A4.04 (3.7/3.7)	S, L, D, P	6
b. Shifting from Single Element to Auto (3 element) K/A 259002 A4.06 (3.1/3.2)	A, S, D	2
c.		
d. Transfer RPSPP1B from RPS MG Set B to CDP-1A K/A 212000 A1.11 (3.4 / 3.3) and 212000.A2.02 (3.7/3.9)	S, N	7
e. RPV Depressurization with RWCU K/A 204000 A4.03 (3.2 / 3.6), 204000.A1.04 (2.8/2.8)	A, S, E, L, N	3
f. Start HPCI From The ASD Room K/A 206000 A1.02 (4.2/4.2)	S, D, EN	4
g Startup the Suppression Pool Cooling Mode of RHR (Alternate Path) K/A 219000 A4.02 (3.7 / 3.5)	A, S, D	5
h. Separation of REC Critical Loops K/A 295018 A1A.03 (3.3 / 3.4) and AK3.07 (3.1/3.2)	S, E, M	8
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Operate the Diesel Fire Pump Manually K/A 286000; A4.06(3.4/3.4)	A, E, D	8
j. Place 24 VDC Batteries and Associated Chargers in service K/A: 263000 K4.01(3.1/3.4) and 2.2.2 (4.6/4.1)	D	6
l. k. Conduct Alternate Rod Insertion (Vent Scram Air Header) K/A: 295037 EA1.05 (3.9/4.0)	E, R, D	1

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U

(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: Cooper Nuclear Station — Date of Examination: 2014
Exam Level: RO SRO-I SRO-U X — Operating Test No.: 1

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a.		
b.		
c.		
d. Transfer RPSPP1B from RPS MG Set B to CDP-1A K/A 212000 A1.11 (3.4 / 3.3) and 212000.A2.02 (3.7/3.9)	S, N	7
e. RPV Depressurization with RWCU K/A 204000 A4.03 (3.2 / 3.6), 204000.A1.04 (2.8/2.8)	A, S, E, L, N	3
f. Start HPCI From The ASD Room K/A 206000 A1.02 (4.2/4.2)	S, D, EN	4
g.		
h.		
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Operate the Diesel Fire Pump Manually K/A 286000; A4.06(3.4/3.4)	A, E, D	8
j.		
k. Conduct Alternate Rod Insertion (Vent Scram Air Header) K/A: 295037 EA1.05 (3.9/4.0)	E, R, D	1

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Task No.: 200225A0501

Task Title: Suppression Pool Temp Calculation (Alternate Path)

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

ALTERNATE PATH JPM

Additional Program Information:

1. Appropriate Performance Locations: Control Room / Classroom / Simulator
2. Appropriate Trainee Levels: RO / SRO / STE
3. Evaluation Method: ___ Simulate ___ Perform
4. Performance Time: 10 minutes
5. K/A: 2.1.25 (3.9/4.2)

NOTE: THIS IS AN ALTERNATE PATH JPM. Some temperatures are upscale and an alternate method must be used to obtain the average temperature.

Directions to Examiner:

1. The intent of this JPM is to present a trainee a set of conditions for determination of average Torus temperature upon loss of SPDS and to make expected recommendations to the Control Room Supervisor, in accordance with procedure 5.8.9, Average Suppression Pool Temperature Calculation.
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
5. **IF NOT** performing in the simulator, give the trainee a copy of Attachment 3.
6. Brief the trainee and tell the trainee to begin.

Notes/Comments: _____
_____
_____
_____
_____
_____
_____

Task No.: 200225A0501

Task Title: Suppression Pool Temp Calculation (Alternate Path)

Directions to Trainee:

When I tell you to begin, you are to use the provided attachment to determine average Torus temperature and make expected recommendations to the Control Room Supervisor, in accordance with procedure 5.8.9, Average Suppression Pool Temperature Calculation.

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.

If being simulated in the 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.

General Conditions:

1. RHR “A” Loop is in Torus cooling
2. Activities have been in progress that added significant heat to the torus.
3. PMIS/SPDS is unavailable.

General References:

1. Procedure 5.8.9; Average Suppression Pool Temperature Calculations

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

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

Task No.: 200225A0501

Task Title: Suppression Pool Temp Calculation (Alternate Path)

Task Standards:

1. The examinee determines the normal temperature recorders (TR-24 and TR-25) have an upscale indication and transitions to the temperature recorder (TR-131) for the running RHR loop which is in suppression pool cooling and records the temperature of the heat exchanger inlet.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Initiating Cue(s):

You are to determine average Torus temperature per ESP 5.8.9. Average Suppression Pool Temperature Calculation.

Return the completed Attachment 1 of 5.8.9 to the Control Room Supervisor when you have completed this task.

Task No.: 200225A0501

Task Title: Suppression Pool Temp Calculation (Alternate Path)

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtains Procedure 5.8.9, SP Temperature Calculations	Obtained Procedure 5.8.9, Attachment 1.		
2. Record time.	The operator recorded the current time on Attachment 1 of 5.8.9.		
NOTE to Examiner: Examinee may not record readings once upscale temperatures are noticed.			
3. Notes that two temperatures are upscale and proceeds to Step 3.2.	The operator recorded the four (4) highest suppression pool temperatures but notes that two are upscale and proceeds to Step 3.2. CUE: When the Operator finds the correct recorders provide them with the marked up pictures of the recorders (Attachment 3) and tell him to use them instead of the values on the panel mounted recorders.		
4. Recognizes that "A" RHR is in Torus Cooling.	**The operator noted that "A" RHR is in Torus Cooling and performs step 3.2.1.** **CUE: When the Operator finds the correct recorder provide them with the marked up picture of the recorder (Attachment 3) and tell him to use them instead of the values on the panel mounted recorder.**		
5. Finds temperature on PC-TR-131 for RHR A Loop.	**The operator noted that the temperature for the suction of the RHR loop in SPC is 120°F on RHR-TR-131 CH1.** **Allowable values: 120°F**		

Task No.: 200225A0501

Task Title: Suppression Pool Temp Calculation (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
6. Returns the completed Attachment 1 to the examiner.	The operator returned the completed Attachment 1 to the Control Room Supervisor. The CRS accepts the completed form.		

Stop Time: _____ **Stop Time:** _____

Task No.: 200225A0501

Task Title: Suppression Pool Temp Calculation (Alternate Path)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials required

None

B. Initialize the Simulator in any IC that has or had the reactor at power (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	Value	Ramp
None				

4. Overrides

Task No.: 200225A0501

Task Title: Suppression Pool Temp Calculation (Alternate Path)

Instrument	Tag	Trigger	TD	Value	Ramp
PC-TR-24 Channel 1	20A1AR1 Chan 1	N/A	N/A	115.1^{0}F	N/A
PC-TR-24 Channel 2	20A1AR1 Chan 2	N/A	N/A	250.0^{0}F	N/A
PC-TR-24 Channel 3	20A1AR1 Chan 3	N/A	N/A	121.9^{0}F	N/A
PC-TR-24 Channel 4	20A1AR1 Chan 4	N/A	N/A	124.9^{0}F	N/A
PC-TR-24 Channel 5	20A1AR1 Chan 5	N/A	N/A	118.2^{0}F	N/A
PC-TR-24 Channel 6	20A1AR1 Chan 6	N/A	N/A	120.3^{0}F	N/A
PC-TR-24 Channel 7	20A1AR1 Chan 7	N/A	N/A	121.0^{0}F	N/A
PC-TR-24 Channel 8	20A1AR1 Chan 8	N/A	N/A	118.1^{0}F	N/A
PC-TR-25 Channel 1	20A1AR2 Chan 1	N/A	N/A	118.1^{0}F	N/A
PC-TR-25 Channel 2	20A1AR2 Chan 2	N/A	N/A	128.2^{0}F	N/A
PC-TR-25 Channel 3	20A1AR2 Chan 3	N/A	N/A	124.9^{0}F	N/A
PC-TR-25 Channel 4	20A1AR2 Chan 4	N/A	N/A	250.0^{0}F	N/A
PC-TR-25 Channel 5	20A1AR2 Chan 5	N/A	N/A	115.2^{0}F	N/A
PC-TR-25 Channel 6	20A1AR2 Chan 6	N/A	N/A	124.3^{0}F	N/A
PC-TR-25 Channel 7	20A1AR2 Chan 7	N/A	N/A	117.0^{0}F	N/A
PC-TR-25 Channel 8	20A1AR2 Chan 8	N/A	N/A	125.1^{0}F	N/A
RHR-TR-131 Channel 1	07A1AR6 Chan 1	N/A	N/A	120^{0}F	N/A
RHR-TR-131 Channel 2	07A1AR6 Chan 2	N/A	N/A	95^{0}F	N/A
RHR-TR-131 Channel 3	07A1AR6 Chan 3	N/A	N/A	118^{0}F	N/A
RHR-TR-131 Channel 4	07A1AR6 Chan 4	N/A	N/A	88^{0}F	N/A
RHR-TR-131 Channel 5	07A1AR6 Chan 5	N/A	N/A	98^{0}F	N/A
RHR-TR-131 Channel 6	07A1AR6 Chan 6	N/A	N/A	98^{0}F	N/A

5. Panel Set-up (suggested. Any setup is allowed that supports performance of this JPM.

   a. Place the Simulator in RUN.
   b. Insert Batch File

Note: If this JPM is to be performed more than once, snap the Simulator into an IC after the panel set-up is complete.

Task No.: 200225A0501

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to use the provided attachment to determine average Torus temperature and make expected recommendations to the Control Room Supervisor, in accordance with procedure 5.8.9, Average Suppression Pool Temperature Calculation.

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.

If being simulated in the 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.

General Conditions:

1. RHR “A” Loop is in Torus cooling
2. Activities have been in progress that added significant heat to the torus.
3. PMIS/SPDS is unavailable.

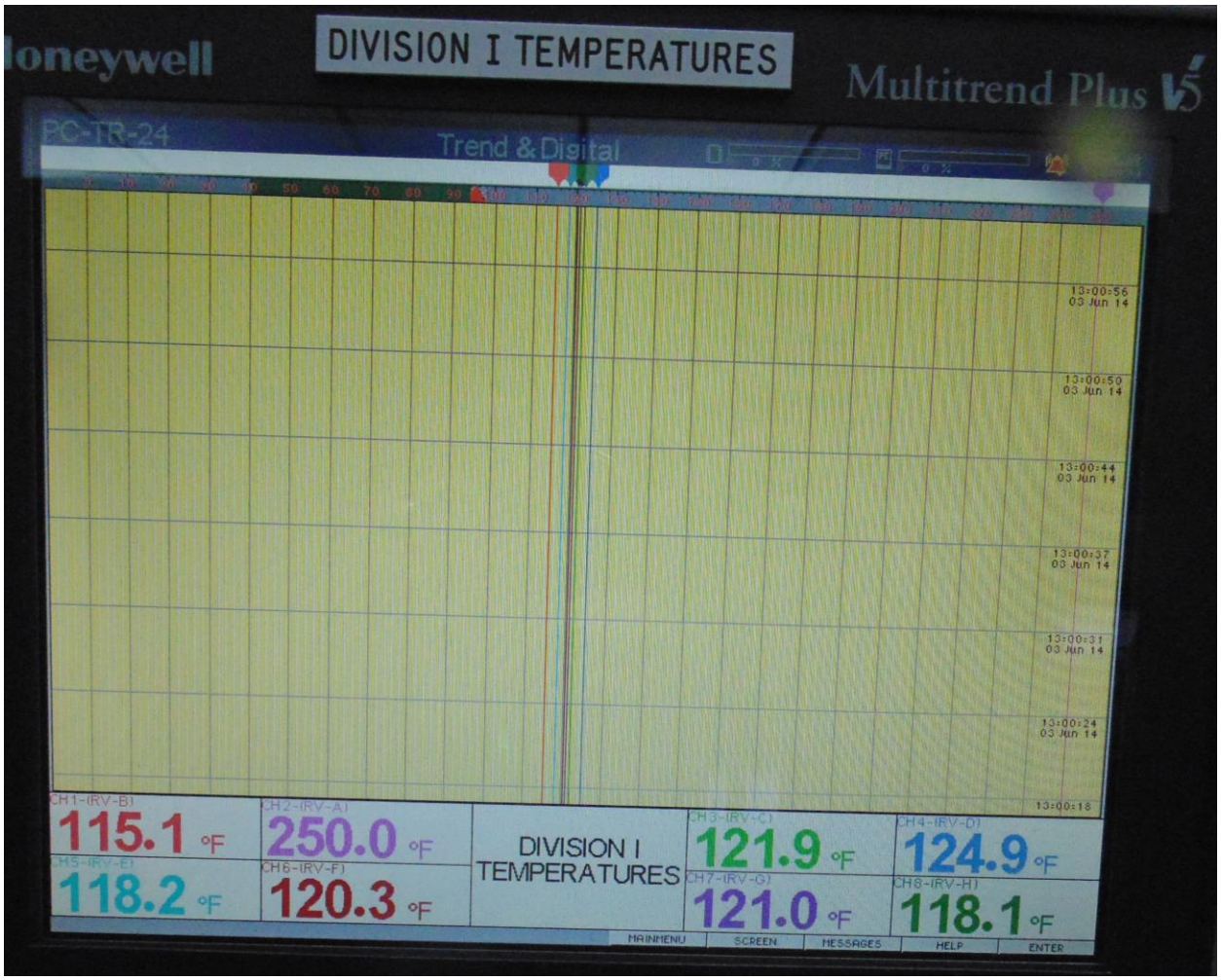
Initiating Cue:

You are to determine average Torus temperature per ESP 5.8.9. Average Suppression Pool Temperature Calculation.

Return the completed Attachment 1 of 5.8.9 to the Control Room Supervisor when you have completed this task.

Task No.: 200225A0501

ATTACHMENT 3

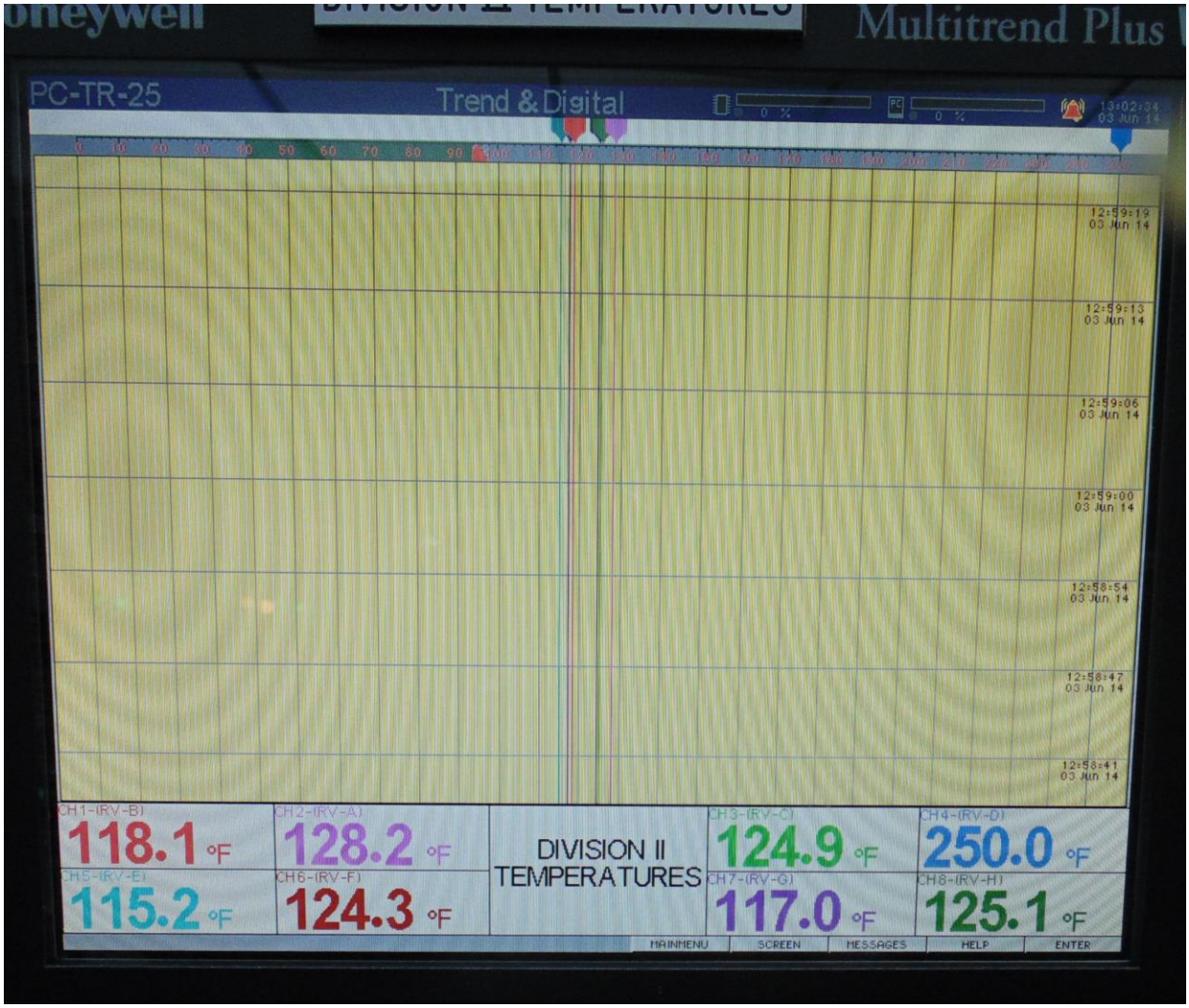


SUPPR POOL TEMP RECORDER

PC-TR-24

Task No.: 200225A0501

ATTACHMENT 3

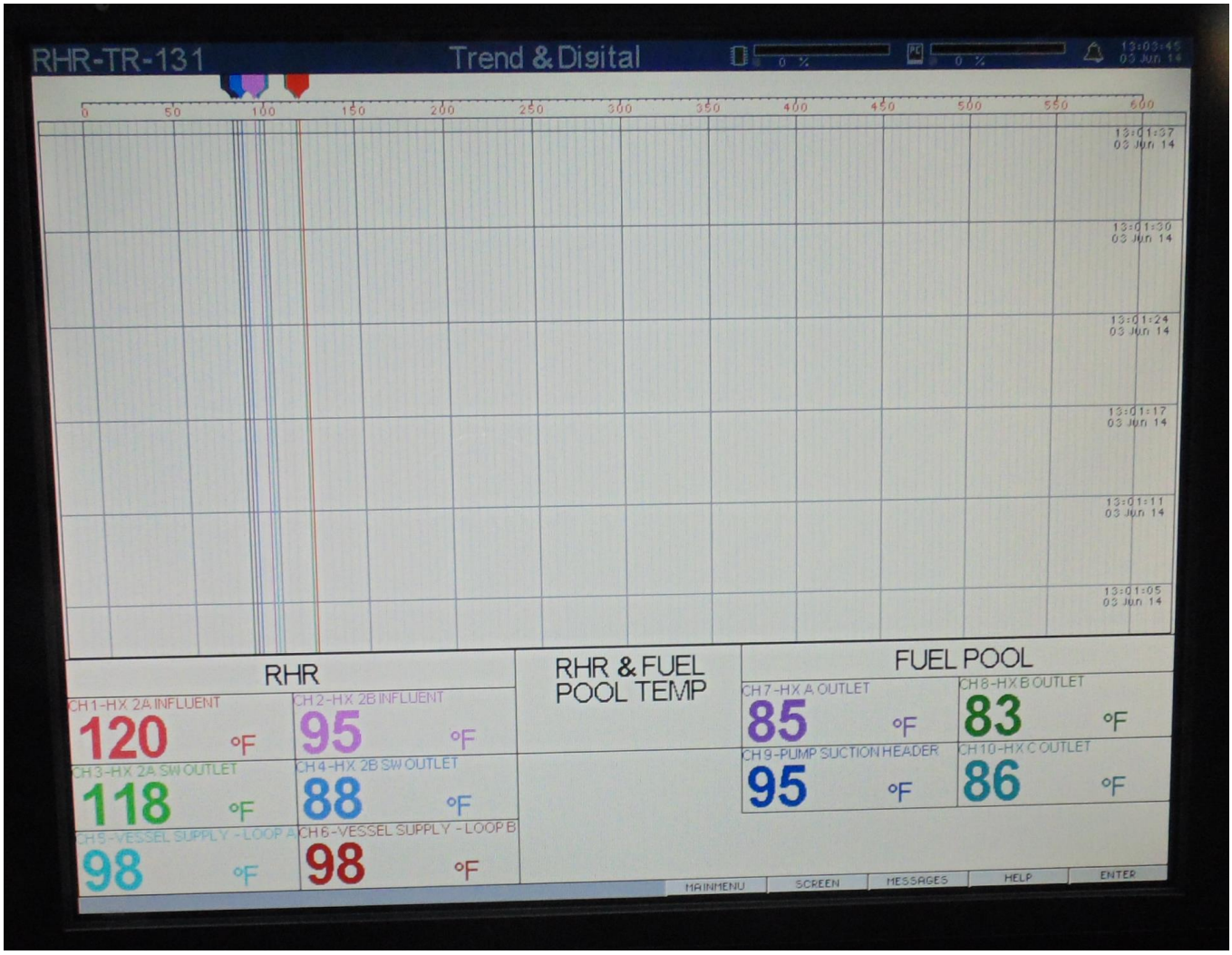


SUPPR POOL TEMP RECORDER

PC-TR-25

Task No.: 200225A0501

ATTACHMENT 3



RHR HEAT EXCHANGER TEMPERATURE RECORDER

RHR-TR-131

Task No.: 200283A0501

Title: Determine RHR Pump NPSH Flow Limit

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: Perform
4. Performance Time: 10 minutes
5. NRC K/A Rating G 2.1.25 (3.9/4.2)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to determine RHR pump NPSH flow limit based on low suppression pool level and elevated suppression pool temperature.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
5. Give the trainee Attachment 2.
6. Brief the trainee, and tell the trainee to begin.

Notes: _____

Title: Determine RHR Pump NPSH Flow Limit

Directions to Trainee:

When I tell you to begin, you are to determine the RHR pump NPSH flow limit based upon plant status. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

General Conditions:

1. RPV level is -100 inches corrected fuel zone.
2. One RHR pump is operating and RHR-FI-133A RHR-A FLOW is indicating 8000 gpm.
3. PCLRPR-1A, CNTMNT/TORUS PRESS & LVL RCDR, Channel 2, Torus LVL indicating 7.0 feet.
4. PCLRPR-1A, CNTMNT/TORUS PRESS & LVL RCDR, Channel 5, Torus Press indicating 3.7 psig.
5. Average Torus water temperature is 175°F

General References:

1. Procedure 5.8

General Tools and Equipment:

1. Scientific calculator.
2. Straight edge.

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted **in bold.**
2. Simulator cues denoted by "#".

Task Standards:

1. Correctly calculate maximum RHR flow at the current NPSH limit per Procedure 5.8.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Title: Determine RHR Pump NPSH Flow Limit

Initiating Cue(s):

An event has occurred and the CRS has asked you to determine the maximum allowable RHR flow based upon the NPSH limit for the running RHR pump. Turn in your determination to the examiner when complete.

NOTE: Tell the trainee to begin.

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtain Procedure	Obtained EOP/SAG GRAPHS flowchart.		
2. **Calculate Torus Overpressure**	**Calculated Torus Overpressure.**		
3. **Determined overpressure line**	**Determined Torus Overpressure line on Graph 5 is the 5 psig line.**		
Note to Examiner: Acceptable flow rate range is 7400 to 7600 gpm.			
4. **Determined maximum flow**	**Determined maximum RHR flow allowed is 7500 gpm.**		

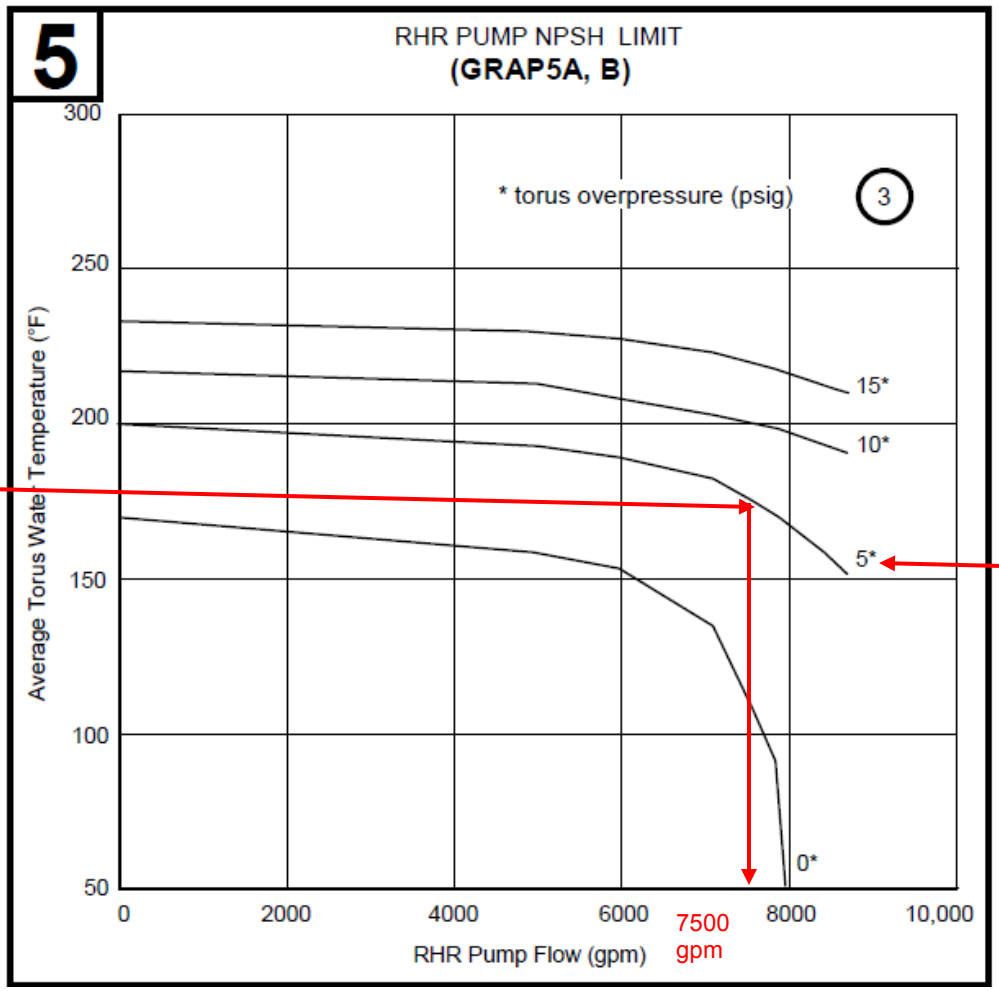
Stop Time: _____ **Total Time: _____**

ATTACHMENT 1
ANSWER KEY

NOTE 3

Torus overpressure is sum of torus pressure and hydrostatic head above suction strainer

Torus pressure (psig)			3.7
Hydrostatic head (psig)			
PC water level (ft.)	7		
Strainer level (ft.)	-4		
0.43 x	3	=	+ 1.29
Torus overpressure (psig)			4.99



ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to determine the RHR pump NPSH flow limit based upon plant status. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

General Conditions:

1. RPV level is -100 inches corrected fuel zone.
2. One RHR pump is operating and RHR-FI-133A RHR-A FLOW is indicating 8000 gpm.
3. PCLRPR-1A, CNTMNT/TORUS PRESS & LVL RCDR, Channel 2, Torus LVL indicating 7.0 feet.
4. PCLRPR-1A, CNTMNT/TORUS PRESS & LVL RCDR, Channel 5, Torus Press indicating 3.7 psig.
5. Average Torus water temperature is 175°F

.

Initiating Cues:

An event has occurred and the CRS has asked you to determine the maximum allowable RHR flow based upon the NPSH limit for the running RHR pump. Turn in your determination to the examiner when complete.

ATTCHMENT 2

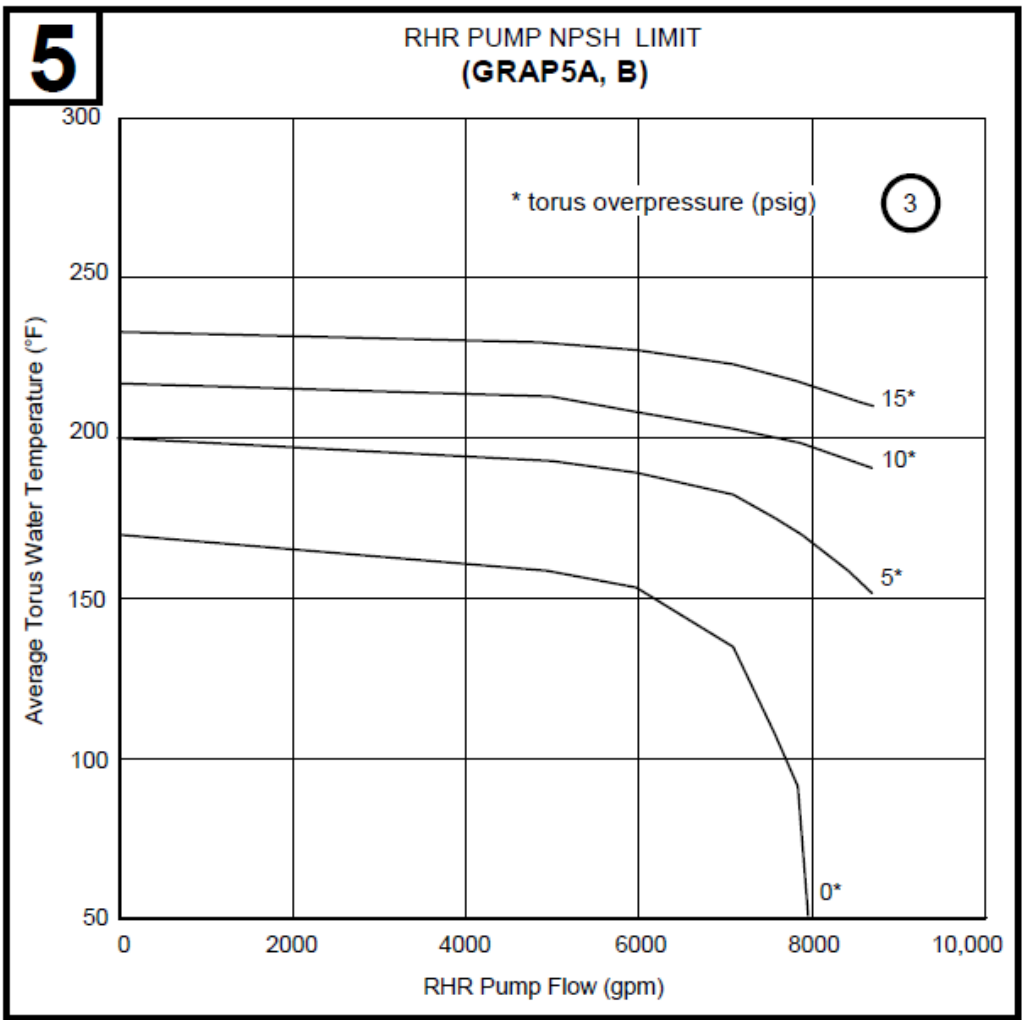
NOTE 3

Torus overpressure is sum of torus pressure and hydrostatic head above suction strainer

Torus pressure (psig)			_____
Hydrostatic head (psig)			
PC water level (ft.)	_____		
Strainer level (ft.)	-4		
0.43 x	_____	=	+ _____
Torus overpressure (psig)			_____

5

RHR PUMP NPSH LIMIT
(GRAP5A, B)



Task No.: 264029O0204

Title: Perform Diesel Generator Fuel Oil Availability

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: Perform
4. Performance Time: 16 minutes
5. K/A: 2.2.37 3.6/4.6

Directions to Examiner:

1. This JPM evaluates the trainee's ability to determine Diesel Generator fuel oil availability.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
5. Give the trainee Attachment 2.
6. Brief the trainee, and tell the trainee to begin.

Notes: _____

Task No.: 264029O0204

Title: Perform Diesel Generator Fuel Oil Availability

Directions to Trainee:

When I tell you to begin, you are to determine the availability of the Diesel Generator fuel oil storage tanks.

General Conditions:

1. A loss of off-site power event has occurred.
2. The crew has entered Procedure 5.3EMPWR.
3. Diesel Generator 1 is currently the only power source available and is powering 4160V Bus 1F.
4. NLO has reported sounding TANK A indicated 6 feet 0 inches.
5. NLO has reported sounding TANK B indicated 9 feet 7 inches.

General References:

1. Procedure 5.3EMPWR

General Tools and Equipment:

1. Calculator.

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted **in bold.**
2. Simulator cues denoted by "**#**".

Task Standards:

1. Correctly calculated total DG fuel oil storage tank availability per Procedure 5.3EMPWR.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor has directed you to determine the total DG storage tank availability so he can determine if the single DG fuel oil requirement for Design Basis Accident requirements are met per 5.3 EMPWR. Inform the CRS of the total gallons available.

NOTE: Tell the trainee to begin.

Title: Perform Diesel Generator Fuel Oil Availability

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtain Procedure	Obtained Procedure 5.3EMPWR.		
2. **Calculate total gallons.**	**Calculated total gallons using Attachment 4, Table 1 and Table 2.**		
3. Hand in work	Signed and handed in completed Attachment 2.		
Note to Examiner: Total gallons determined must be exact. There is no interpretation required for Attachment 4,Table 2 of 5.3EMPWR.			
4. **Total gallons agree with Answer Key (Attachment 1)**	**The calculated Total Gallons was 42,111.**		

Stop Time: _____ **Total Time: _____**

Title: Perform Diesel Generator Fuel Oil Availability

ATTACHMENT 1
ANSWER KEY

TABLE 1

	TANK A			TANK B			
DATE/ TIME	LEVEL (FT/IN)	CORRECTED LEVEL (FT/IN)	VOLUME (GAL)	LEVEL (FT/IN)	CORRECTED LEVEL (FT/IN)	VOLUME (GAL)	TOTAL (GAL)
Current	**6’0”**	**5’11”**	**15,088**	**9’7”**	**9’6”**	**27,023**	**42,111**

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to determine the availability of the Diesel Generator fuel oil storage tanks.

General Conditions:

1. A loss of off-site power event has occurred.
2. The crew has entered Procedure 5.3EMPWR.
3. Diesel Generator 1 is currently the only power source available and is powering 4160V Bus 1F.
4. NLO has reported sounding TANK A indicated 6 feet 0 inches.
5. NLO has reported sounding TANK B indicated 9 feet 7 inches.

.

Initiating Cues:

The Control Room Supervisor has directed you to determine the total DG storage tank availability so he can determine if the single DG fuel oil requirement for Design Basis Accident requirements are met per 5.3 EMPWR. Inform the CRS of the total gallons available.

_____Gallons Total Fuel Oil currently available.

_____

Signature

Task No.:

Task Title: Radiation Protection Table Top

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: CR, SIM, Classroom
2. Appropriate Trainee level: RO, SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 10 minutes
5. NRC K/A 2.3.13 (3.4/3.8)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to determine if certain work can be performed within the confines of the Code of Federal Regulations and CNS procedures.
2. This JPM can be performed any place the operator can access appropriate procedures.
3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
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.

Notes: _____
_____
_____
_____
_____
_____
_____
_____
_____

Directions to Trainee:

When I tell you to begin, you are to determine whether John Doe can perform RHR valve work. **If you find he cannot perform the work state the reason why**. **If John Doe can perform the work, state what authorization, if any is required prior to performing the work.** Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

Task No.:

Task Title: Radiation Protection Table Top

General Conditions:

1. The plant is shutdown to perform RHR valve work.
2. John Doe has been selected to repair the valve.

General References:

1. 10CFR20
2. 9.ALARA.1, PERSONNEL DOSIMETRY AND OCCUPATIONAL RADIATION EXPOSURE PROGRAM.

General Tools and Equipment:

1. None.

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted **in bold**.

Task Standards:

1. The student determines the work can be performed and the department personnel that must approve the dose.
2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

John Doe has been selected to perform work on an RHR valve. Performance of the work is expected to result in a whole body dose of 550 mRem. The Shift Manager directs you to determine based on John Doe's dose history, whether he is capable of performing this work. When I tell you to begin, you are to determine whether John Doe can perform the valve work. **If you find he cannot perform the work state the reason why**. **If John Doe can perform the work, state what authorization, if any is required prior to performing the work.** Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

Task No.:

Task Title: Radiation Protection Table Top

Time Start: _____

Performance Checklist	Standards	Sat	Unsat
1. Refer to 9.ALARA.1	Procedure 9.ALARA.1 referenced.		
2. Pertinent personal Dose history is reviewed.	9.ALARA.1 step 6.7.2.1 Dose History was reviewed.		
3. Pertinent job dose projections for the job are reviewed.	Dose projections were reviewed.		
4. Compares the job requirements to the amount of dose that can be received.	Job requirements were reviewed.		
5. Calculates expected cumulative dose.	**9.ALARA.1 step 6.2.1.2. Expected cumulative dose was calculated at 2.050 Rem on-site and 3.250 Rem total.**		
6. Off-site dose verified within limit.	**9.ALARA.1 step 6.2.1.2. Verified off-site dose did not exceed 1.5 Rem (1500 mrem).**		
7. Informs the SM that he can perform this job.	**9.ALARA.1 step 6.2.1.2. Informed Shift Manager the work could be done, but the Department Manager, RP Technical Supervisor, Radiation Protection Manager, and the GMPO must authorize the dose extension above 2,000 mRem.**		

Time Stop: _____ **Total Time: _____**

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine whether John Doe can perform RHR valve work. **If you find he cannot perform the work state the reason why**. **If John Doe can perform the work, state what authorization, if any is required prior to performing the work.** 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 shutdown to perform RHR valve work.
2. John Doe has been selected to repair the valve.

Initiating Cue(s):

John Doe has been selected to perform work on an RHR valve. Performance of the work is expected to result in a whole body dose of 550 mRem. The Shift Manager directs you to determine based on John Doe's dose history, whether he is capable of performing this work. When I tell you to begin, you are to determine whether John Doe can perform the valve work. **If you find he cannot perform the work state the reason why**. **If John Doe can perform the work, state what authorization, if any is required prior to performing the work.** Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

ATTACHMENT 1

Your Pertinent Statistics	
John Doe's Age: **35 years**	**Lifetime TEDE**: **32 Rem**
On-Site TEDE so far this year: 1.5 Rem **Off-Site TEDE so far this year: 1.2 Rem**	

Pertinent Job Dose Projections for the one individual performing this job
Projected Whole Body Dose: 550 mRem

Results:

Perform the Job: Yes No
Circle one

If allowed to perform the work, who's authority is needed first?

_____
_____
_____
_____
_____
_____

_____
Signature

Task No.: 344077S0403

Title: Determine the Action for Plant Chemistry Out of Specification

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: Classroom
2. Appropriate Trainee level: SRO
3. Evaluation Method: Simulate
4. Performance Time: 20 minutes
5. NRC K/A 2.1.34 (SRO 3.5)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to review Reactor Coolant Chemistry parameters and take actions for plant chemistry out of specifications in accordance with Procedure 2.4CHEM.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
5. Brief the trainee and tell the trainee to begin.

Notes/Comments: _____

Title: Determine the Action for Plant Chemistry Out of Specification

Directions to Trainee:

When I tell you to begin, you are to perform a review of Reactor Coolant Chemistry data and inform me when actions are complete. 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 has been Operating at 100% power for the past 120 days.

General References:

1. Procedure 2.4 CHEM, Chemistry Parameter Out of Limit
2. TRM Section 3.4.1, Reactor Coolant System
3. Chemistry Procedure 8.3, Control Parameters and Limits

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

Procedure 2.4 CHEM, Chemistry Parameter Out of Limit
TRM Section 3.4.1, Reactor Coolant System
Chemistry Procedure 8.3, Control Parameters and Limits
Critical checks denoted **in bold.**
Simulator cues denoted by "#".

Task Standards:

1. The operator recognizes that plant chemistry is out of specification and determines that TLCO 3.4.1 has been exceeded and TRM entry is required. The operator records the actions to be taken per Procedure 2.4CHEM Attachment 2 for out of specification conductivity conditions.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Title: Determine the Action for Plant Chemistry Out of Specification

Initiating Cue(s):

The Shift Manager directs you, as the CRS, to review Reactor Coolant Chemistry sample parameters below and record any action(s) taken, if required.

Chemistry has conducted a reactor coolant sample in accordance with Chemistry Procedure 8.3, Control Parameters and Limits, and notified you of the following results:

Boron	Non Detectable
Calcium	2.0 ppb
Conductivity	10.0 umho/cm
Chlorides	12.0 ppb
pH	6.9
Silica	25 ppb
Sodium	2.1 ppb
Sulfates	0.77 ppb
Tritium	Non Detectable
Zinc	2.6 ppb

Record your findings on Attachment 1 and return the results in to the Proctor when complete.

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Reviews data.	**Recognized conductivity is out of specification and entered Procedure 2.4CHEM.**		
2. Obtain Procedure.	Obtained the current revision of Procedure 2.4CHEM. Selects Section 1.0.		
3. Entry Condition met.	1.1.1 Recognized Reactor power > 10% RTP and Reactor water conductivity > 1.0 μmho limit was exceeded and continued to Section 4.0 Subsequent Operator Actions.		
4. Date and Time entered.	4.1 Recorded the current date and time.		
5. TRM limit exceeded.	**4.2 Determined the TRM limit for TLCO 3.4.1 are exceeded and refers to TRM condition "B" and determines Action B.1 is required 72 hours from the time the limits were exceeded for required condition.**		
NOTE to Examiners: Step 4.2 states to ensure actions of TLCO are met if they become more restrictive than 2.4CHEM. The TRM allows 72 hours and 2.4CHEM is more restrictive.			
6. Notify Chemistry.	4.3 Notified Chemistry that Conductivity is out-of-limit.		
7. Enter Attachment 2	Entered 2.4CHEM, Attachment 2		
NOTE to Examiner: Examinee records actions below to be taken per Procedure 2.4CHEM, Attachment 2.			
8. Lower power	1.1.1 **Lower power per Procedure 2.1.10 until conductivity stabilized ≤ 1.0 μmho.**		
9. Ensure F/Ds in service.	1.1.2 **Ensure both RWCU F/Ds in service.**		

Performance Checklist	Standards	Sat	Unsat
10. If not<1.0 in 24 hrs shut down.	1.1.3 **If limit not restored in 24 hours then go to Step 1.5 and immediately shutdown per Procedure 2.1.4.1 to establish Mode 4.**		
11. If not < 5.0 in 6 hours, shut down.	1.4.1 **If Conductivity not restores to < 5.0 µmho within 6 hours go to Step 1.6 and immediately shut down per Procedure 2.1.2.1 to establish Mode 4.**		
4 Handed in Att 1.	**Handed in Attachment 1 to proctor and the recorded actions agree with the critical steps listed in the Standards. (Verbatim recording not required).**		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to perform a review of Reactor Coolant Chemistry data and inform me when actions are complete. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

General Conditions:

The Plant has been Operating at 100% power for the past 120 days.

Initiating Cue(s):

The Shift Manager directs you, as the CRS, to review Reactor Coolant Chemistry sample parameters below and record any action(s) taken, if required.

Chemistry has conducted a reactor coolant sample in accordance with Chemistry Procedure 8.3, Control Parameters and Limits, and notified you of the following results:

Boron	Non Detectable
Calcium	2.0 ppb
Conductivity	10.0 umho/cm
Chlorides	12.0 ppb
pH	6.9
Silica	25 ppb
Sodium	2.1 ppb
Sulfates	0.77 ppb
Tritium	Non Detectable
Zinc	2.6 ppb

Record your findings on Attachment 1 and return the results in to the Proctor when complete.

Record your actions/findings below:

_____
_____
_____
_____
_____
_____
_____

_____
Signature

Task No.: 341033W0303

Title: Determine Shift Staffing Requirements for Mode Change

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: CR / SIM / Classroom
2. Appropriate Trainee level: RO / SRO / STE
3. Evaluation Method: **Perform**
4. Performance Time: 10 minutes
5. K/A 2.1.4 (3.4)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to determine shift staffing requirements for a mode change.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
4. Give the examinee Attachment 1.
5. Brief the trainee, and tell the trainee to begin.

Notes: _____

Title: Determine Shift Staffing Requirements for Mode Change

Directions to Trainee:

When I tell you to begin, you are to evaluate the staff available and determine if a change in Modes is allowed. 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 conditions are as follows:
   - Reactor Pressure is 0 psig and steady.
   - Coolant temperature is 200°F and steady.
   - All reactor vessel head closure bolts are fully tensioned.
   - Mode Switch is in Shutdown

2. Your Shift complement is comprised of:
   - One SRO (you)
   - Two ROs
   - Three Non-Licensed Nuclear Plant Operators
   - One RP/Chem Tech

General References:

1. Conduct of Operations Procedure 2.0.3

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted **in bold**.

Task Standards:

1. Determines current staffing is inadequate, and additional staffing will be required plus more staffing is required when the mode change is made per Procedure 2.0.3.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Title: Determine Shift Staffing Requirements for Mode Change

Initiating Cue(s):

During your shift Reactor Coolant temperature is expected to rise to 215°F as a result of Shutdown Cooling being removed from service. As the Senior Licensed person on your shift, you are to determine **two** things;

1. Per administrative requirements, do you have sufficient staff now? If not determine how many additional staff types are needed and document your findings on Attachment 1.

2. Per administrative requirements, will you have sufficient staff to allow you to raise Coolant Temperature to 215°F during your shift? If not determine how many additional staff types are needed and document your findings on Attachment 1.

NOTE: Tell the trainee to begin.

Title: Determine Shift Staffing Requirements for Mode Change

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtain Procedure 2.0.3.	Current revision of 2.0.3 obtained.		
2. Determines the current mode.	The SRO may use Tech Specs to confirm that the Unit is in MODE 4.		
3. Determines the mode to be entered when temperature rises to 215ºF.	The SRO may use Tech Specs to confirm that the Unit will be entering Mode 3 within the shift.		
4. Determines that the current shift staff is inadequate**.**	Your Shift complement is comprised of: • One SRO (you) • Two ROs • Three Non-Licensed Nuclear Plant Operators • One RP/Chem Tech • Dose Assessor		
5. **Records the needed Staff on Attachment 1.**	**SRO records the additional needed staff on Attachment 1.** • **One SRO (so there is a SM and a CRS** • **One more active license (RO or SRO)** • **One person trained and qualified Dose Assessor.**		
6. Determines which staff types are required.	For Mode 3 the SRO determines the following staff types are needed: • Two SRO (so there is a SM and a CRS) • Three RO (RO, BOP, WCO) • Three Non-Licensed Nuclear Plant Operators • One STE • One RP/Chem Tech • One person trained and qualified Dose Assessor.		

Title: Determine Shift Staffing Requirements for Mode Change

Performance Checklist	Standards	Sat	Unsat
7. **Records the needed Staff on Attachment 1.**	**SRO records the additional needed staff on Attachment 1.** • **One STE** • **One SRO** • **One licensed operator (RO or SRO).** • **One person qualified as Dose Assessor.**		
8. Turns in completed paperwork.	Returns completed Attachment 1 to evaluator**.**		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to evaluate the staff available and determine if a change in Modes is allowed. 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 conditions are as follows:
   - Reactor Pressure is 0 psig and steady.
   - Coolant temperature is 200°F and steady.
   - All reactor vessel head closure bolts are fully tensioned.
   - Mode Switch is in Shutdown

3. Your Shift complement is comprised of:
   - One SRO (you)
   - Two ROs
   - Three Non-Licensed Nuclear Plant Operators
   - One RP/Chem Tech

Initiating Cue(s):

During your shift Reactor Coolant temperature is expected to rise to 215°F as a result of Shutdown Cooling being removed from service. As the Senior Licensed person on your shift, you are to determine **two** things;

1. Per administrative requirements, do you have sufficient staff now? If not determine how many additional staff types are needed and document your findings on Attachment 1.

2. Per administrative requirements, will you have sufficient staff to allow you to raise Coolant Temperature to 215°F during your shift? If not determine how many additional staff types are needed and document your findings on Attachment 1.

Current Staff:
(Check one) ☐ Adequate in current mode ☐ Inadequate in current mode

Additional needed staff:_____

Staff required at 215ºF:
(Check one) ☐ Current staff adequate ☐ Additional staff needed.

Additional needed staff: _____

Task No.: 200302G0203

Title: Determine Post-Maintenance Testing Requirements

Trainee: _____ Examiner: _____

Pass:____ Fail:____ Examiner Signature:_____ Date:_____

Additional Program Information:

1. Appropriate Performance Locations: Classroom
2. Appropriate Trainee level: SRO / STE
3. Evaluation Method: Perform _____Simulate _____
4. Performance Time: 10 minutes
5. NRC K/A 2.2.7 (2.0/3.2)

Directions to Examiner:

1. This JPM evaluates the examinees ability to determine the post maintenance testing for HPCI-V-282, DOWNSTREAM TEST LINE DRAIN ROOT following valve repair per Maintenance Procedure 7.0.5, Post-maintenance Testing.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
5. If examinee requests Burns and Roe P&ID Drawing 2044, provide a copy to him/her.
6. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to determine the post maintenance testing for HPCI-V-282, DOWNSTREAM TEST LINE DRAIN ROOT following valve repair. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

General Conditions:

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

Task No.: 200302G0203

Title: Determine Post-Maintenance Testing Requirements

General References:

1. Procedure 7.0.5, POST MAINTENANCE TESTING

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted in **bold text.**

Task Standards:

1. Determine the correct post maintenance test requirements include stroke test, leak test, and open/close flow test per Procedure 7.0.5 for HPCI manual valve HPCI-V-282.
2. 100% of critical elements successfully completed without error.
3. 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 HPCI-V-282 following valve repair. Record your findings on Attachment 1 and hand in to proctor when complete.

Task No.: 200302G0203

Title: Determine Post-Maintenance Testing Requirements

Start Time: _____

Performance Checklist	Standard	SAT	Unsat
1. Obtains Procedure 7.0.5, Post Maintenance Testing.	The Operator obtained the current revision of 7.0.5.		
2. Identify component type for HPCI valve.	Determines that HPCI-282 is a manual valve.		
3. Locate the general component from Procedure 7.0.5 Attachment 1 index.	**Candidate locates the Component Test Matrices for Manual Valves.**		
4. Identify, on the matrices, the type of corrective maintenance performed on HPCI-282.	Candidate Identifies repair/replace on the Matrices.		
5. **Determine the test activities.**	**From attachment 1, the candidate assigns Stroke Test.**		
6. Determine the test activities.	**From attachment 1, the candidate assigns Leak Test.**		
7. Determine the test activities.	**From attachment 1, the candidate assigns Flow Test Open/Closed.**		
NOTE to Examiner: The Position Verification Test is not required because there is no remote indication of HPCI-V-282.			
8. Shift manager informed.	Informs the Shift Manager of the post maintenance testing requirements to assign to the work package		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine the post maintenance testing for HPCI-V-282, DOWNSTREAM TEST LINE DRAIN ROOT following valve repair. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

General Conditions:

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

Initiating Cue(s):

The Shift Manager directs you to determine the post maintenance testing requirements to assign to HPCI-V-282 following valve repair. Record your findings on Attachment 1 and hand in to proctor when complete.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

_____
Signature

Task No.:

Task Title: Radiation Protection Table Top

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: CR, SIM, Classroom
2. Appropriate Trainee level: RO, SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 10 minutes
5. NRC K/A 2.3.13 (3.4/3.8)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to determine if certain work can be performed within the confines of the Code of Federal Regulations and CNS procedures.
2. This JPM can be performed any place the operator can access appropriate procedures.
3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
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.

Notes: _____
_____
_____
_____
_____
_____
_____
_____
_____

Directions to Trainee:

When I tell you to begin, you are to determine whether John Doe can perform RHR valve work. **If you find he cannot perform the work state the reason why**. **If John Doe can perform the work, state what authorization, if any is required prior to performing the work.** Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

Task No.:

Task Title: Radiation Protection Table Top

General Conditions:

1. The plant is shutdown to perform RHR valve work.
2. John Doe has been selected to repair the valve.

General References:

1. 10CFR20
2. 9.ALARA.1, PERSONNEL DOSIMETRY AND OCCUPATIONAL RADIATION EXPOSURE PROGRAM.

General Tools and Equipment:

1. None.

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted **in bold**.

Task Standards:

1. The student determines the work can be performed and the department personnel that must approve the dose.
2. 100% of critical elements successfully completed without error.

Initiating Cue(s):

John Doe has been selected to perform work on an RHR valve. Performance of the work is expected to result in a whole body dose of 550 mRem. The Shift Manager directs you to determine based on John Doe's dose history, whether he is capable of performing this work. When I tell you to begin, you are to determine whether John Doe can perform the valve work. **If you find he cannot perform the work state the reason why**. **If John Doe can perform the work, state what authorization, if any is required prior to performing the work.** Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

Task No.:

Task Title: Radiation Protection Table Top

Time Start: _____

Performance Checklist	Standards	Sat	Unsat
1. Refer to 9.ALARA.1	Procedure 9.ALARA.1 referenced.		
2. Pertinent personal Dose history is reviewed.	9.ALARA.1 step 6.7.2.1 Dose History was reviewed.		
3. Pertinent job dose projections for the job are reviewed.	Dose projections were reviewed.		
4. Compares the job requirements to the amount of dose that can be received.	Job requirements were reviewed.		
5. Calculates expected cumulative dose.	**9.ALARA.1 step 6.2.1.2. Expected cumulative dose was calculated at 2.050 Rem on-site and 3.250 Rem total.**		
6. Off-site dose verified within limit.	**9.ALARA.1 step 6.2.1.2. Verified off-site dose did not exceed 1.5 Rem (1500 mrem).**		
7. Informs the SM that he can perform this job.	**9.ALARA.1 step 6.2.1.2. Informed Shift Manager the work could be done, but the Department Manager, RP Technical Supervisor, Radiation Protection Manager, and the GMPO must authorize the dose extension above 2,000 mRem.**		

Time Stop: _____ **Total Time: _____**

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to determine whether John Doe can perform RHR valve work. **If you find he cannot perform the work state the reason why**. **If John Doe can perform the work, state what authorization, if any is required prior to performing the work.** 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 shutdown to perform RHR valve work.
2. John Doe has been selected to repair the valve.

Initiating Cue(s):

John Doe has been selected to perform work on an RHR valve. Performance of the work is expected to result in a whole body dose of 550 mRem. The Shift Manager directs you to determine based on John Doe's dose history, whether he is capable of performing this work. When I tell you to begin, you are to determine whether John Doe can perform the valve work. **If you find he cannot perform the work state the reason why**. **If John Doe can perform the work, state what authorization, if any is required prior to performing the work.** Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

ATTACHMENT 1

Your Pertinent Statistics	
John Doe's Age: **35 years**	**Lifetime TEDE**: **32 Rem**
On-Site TEDE so far this year: 1.5 Rem **Off-Site TEDE so far this year: 1.2 Rem**	

Pertinent Job Dose Projections for the one individual performing this job
Projected Whole Body Dose: 550 mRem

Results:

Perform the Job: Yes No
Circle one

If allowed to perform the work, who's authority is needed first?

_____
_____
_____
_____
_____
_____

_____
Signature

Task No.: 200335G0503

Title: PAR Table Top X

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

This is a Time Critical JPM the trainee must determine the correct PARs within 15 minutes of reviewing plant status as stated on Attachment 2.

Additional Program Information:

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

Directions to Examiner:

1. This JPM evaluates the trainee's ability to make a PAR Recommendation.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
4. Brief the trainee, and tell the trainee to begin.

Notes: _____

Title: PAR Table Top X

Directions to Trainee:

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

This is a time critical JPM. The PARs must be determined within a pre-determined time limit after plant status is reviewed.

During task performance, it is recommended that you limit your discussion/demonstration to the minimum required. The examiner may ask questions of you if necessary to understand your actions.

General Conditions:

1. A General Emergency (GE) has been declared under EAL 2.4.1.
2. There IS a radioactive release in excess of ODAM limits at this time.
3. ERP release rate is 1.33E9 µCi/sec
4. A steam leak from HPCI is occurring.
5. CNS-DOSE is NOT available due to software error.
6. The core is degraded.
7. The stability class is “F”.
8. The wind is at 5 mph.
9. The wind is from 270°
10. There is NO precipitation
11 The below information has been determined a using hand calculation from EPIP 5.7.17

DOSE Projection Data				
Distance From Plant	Projected Integrated Dose (Rem)		Projected Dose Rate (Rem/hr)	
	TEDE	CDE (Thyroid)	TEDE	CDE (Thyroid)
Site Boundary	1.63E-05	4.39E-05	4.08E-6	1.10E-05
2 Miles	5.64E-02	1.52E-01	1.41E-02	3.80E-02
5 Miles	7.57E-01	2.04E-00	1.89E-01	5.10E-01
10 Miles	1.25E-00	2.69E-00	205E-01	6.73E-01

Title: PAR Table Top X

General References:

1. Procedure 5.7.1, EAL Matrix
2. Procedure 5.7.6, Attachment 3
3. Procedure 5.7.20

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted **in bold**.

Task Standards:

1. The trainee correctly determines affected Sectors and determines evacuation and sheltering Sectors.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Initiating Cue(s):

You are to determine the appropriate Protective Action Recommendations (PARs) for the provided conditions. Complete the PAR table and return it to the examiner when you have completed this task.

NOTE: Tell the trainee to begin.

Task No.: 200335G0503

Title: PAR Table Top X

Start Time (Plant Status of Attachment 1 reviewed): _____

Performance Checklist	Standards	Sat	Unsat
1. Refer to Procedure 5.7.2.	The operator may refer to Procedure 5.7.2. Determines 5.7.20 must be used for PARs.		
2. Refer to Procedure 5.7.20.	The operator refers to Procedure 5.7.20.		
3. **Determines affected sectors.**	**The operator determines the affected sectors for wind direction of 270°. Sectors D, E, F**		
4. **Determine Sectors that must be evacuated.**	**EVACUATE** **0-2 miles ALL** **2-5 miles Sectors D,E,F** **5-10 miles Sectors D,E,F**		
5. **Determines Sectors that must Go Indoors and monitor EAS/EBS.**	**The Operator determines the following GO INDOORS sectors:** **GO INDOORS** **2 - 5 miles All Remaining Sectors** **5-10 miles All Remaining Sectors**		
6. **PAR from CR so must evacuate out to 15 miles.**	**Add remarks/notes to recommend evacuation in Sectors D, E, F out to 15 miles.**		
7. **Turns in completed paperwork.**	**Returns completed Attachment 1 to evaluator within 15 minute time limit.**		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1 (Page 1 of 2)

Directions to Trainee:

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

This is a time critical JPM. The PARs must be determined within a pre-determined time limit after plant status is reviewed.

During task performance, it is recommended that you limit your discussion/demonstration to the minimum required. The examiner may ask questions of you if necessary to understand your actions.

General Conditions:

1. A General Emergency (GE) has been declared under EAL AG1.1.
2. There IS a radioactive release in excess of ODAM limits at this time.
3. ERP release rate is 1.33E9 µCi/sec
4. A steam leak from HPCI is occurring.
5. CNS-DOSE is NOT available due to software error.
6. The core is degraded.
7. The stability class is “F”.
8. The wind is at 5 mph.
9. The wind is from 270°
10. There is NO precipitation
11 The below information has been determined a using hand calculation from EPIP 5.7.17

DOSE Projection Data				
Distance From Plant	Projected Integrated Dose (Rem)		Projected Dose Rate (Rem/hr)	
	TEDE	CDE (Thyroid)	TEDE	CDE (Thyroid)
Site Boundary	1.63E-05	4.39E-05	4.08E-6	1.10E-05
2 Miles	5.64E-02	1.52E-01	1.41E-02	3.80E-02
5 Miles	7.57E-01	2.04E-00	1.89E-01	5.10E-01
10 Miles	1.25E-00	2.69E-00	2.05E-01	6.73E-01

.

Initiating Cue(s):

You are to determine the appropriate Protective Action Recommendations (PARs) for the provided conditions. Complete the PAR table and return it to the examiner when you have completed this task.

ATTACHMENT 1 (Page 2 of 2)

Protective Action Recommendations (PARS)			
	None	**Evacuate Sectors**	**Go indoors and monitor EAS/EBS in Sectors**
0-2 Miles			
2-5 Miles			
5-10 Miles			

REMARKS for 5.7.6 Attachment 3:

_____
_____
_____
_____
_____
_____
_____

_____
Signature

Task No.: None

Title: Placing SDG In Service From Control Room

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 262001.K4.06 (3.6 / 3.9) and 264000.A4.04 (3.7/3.7)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to start and place in service the Supplemental Diesel Generator from the Control Room in accordance with Procedure 2.2.99.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Task No.: None

Title: Placing SDG In Service From Control Room

Directions to Trainee:

When I tell you to begin, you are to place the Supplemental Diesel Generator in service from the Control Room. 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.

If being simulated in the 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.

General Conditions:

1. The Plant is Shutdown.
2. Critical 4160 Bus 1F is de-energized
3. Emergency Diesel Generator #1 is Inoperable and cannot be placed in service.
4. The Emergency Transformer is Unavailable.

General References:

1. Procedure 2.2.99 Supplemental Diesel Generator System

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

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

Task Standards:

1. The operator starts the Supplemental Diesel Generator and ties it to Critical Bus 1F and re-energizes the bus per Procedure 2.2.99.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Title: Placing SDG In Service From Control Room

Initiating Cue(s):

The Control Room Supervisor directs you to place the Supplemental Diesel Generator in service from the Control Room in accordance with Procedure 2.2.99 Supplemental Diesel Generator System and supply Critical Bus 1F.

Notify the CRS when the SDG is running and has energized the Bus.

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

Title: Placing SDG In Service From Control Room

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtain Procedure	Obtained the current revision of Procedure 2.2.99 Supplemental Diesel Generator System. Selects Section 5.		
2. Place the SDG switch to Start	**5.1 Placed the SUPPLEMENTAL DIESEL GENERATOR control switch to START.**		
3. Close the SDG Output breaker	**5.2 After GENERATOR ENERGIZED light was lit, closed SDG OUTPUT BKR SG1 and checked following.** **5.2.1 Switch spring returns to NORMAL AFTER CLOSE (red flagged).** **5.2.2 4160V BUS 1S BUS ENERGIZED light is lit.**		
4. Open Breaker 480S(12.5)	**5.3 On Switchgear Display Screen, transferred Bus 480S to the SDG** **5.3.1 Opened Breaker 480S (12.5).** **5.3.1 Closed Breaker 480S-(4160S).**		
5. Record data	5.4 Record data on Attachment 1 twice per shift while engine is running. #CUE: Another operator will record data.		
Note to Examiner: The student will transfer to Section 8 to energize the 4160F Bus.			
6. Checks annunciators in section 8	Ensured following Annunciators clear: 8.2.1 C-1/C-6, 4160V BUS 1F BKR 1FA 8.2.2 C-1/C-7, 4160V BUS 1F BKR 1FS 8.2.3 C-1/E-7, 4160V BUS 1F BKR 1FE LOCKOUTs.		

Performance Checklist	Standards	Sat	Unsat
7. Pulls to lock the pumps on 9-3.	**8.3 At Panel 9-3, placed the following switches to PULL-TO-LOCK:** • **RHR PUMP A.** • **CS PUMP A.** • **RHR PUMP B.**		
8. Pulls to lock the pumps on Panel A	**8.4 At Panel A, placed the following switches to PULL-TO-LOCK:** • **SERVICE WATER PUMP A.** • **Ensured SERVICE WATER PUMP A MODE SELECTOR switch in MANUAL.** • **SERVICE WATER PUMP C.** • **Ensured SERVICE WATER PUMP C MODE SELECTOR switch in MANUAL.**		
9. Pulls to lock the breakers on Panel C	**8.5 At Panel C, placed the following breaker switches to PULL-TO-LOCK:** • **BUS 1A TIE BKR 1FA.** • **EMERGENCY XFMR BKR 1FS.** • **DIESEL GEN 1 BKR EG1.** • **EMERGENCY XFMR BKR 1GS.**		
10. Places MODS Power to ON	**8.6.1 At SUPPLEMENTAL DIESEL GENERATOR PANEL placed the MODS POWER switch to ON.**		
11. Places XFMR MODS switch to Open	**8.6.2 Placed EMERGENCY XFMR MODS switch to OPEN.**		
12. Places SDG MODS switch to Close	**8.6.3 Placed SDG MODS switch to CLOSE.**		

Performance Checklist	Standards	Sat	Unsat
13. Places MOD POWER to OFF	**8.6.4 Placed MODS POWER switch to OFF.**		
14. Close Breaker 1SS	**8.6.5 Closed BUS 1S TIE BKR 1SS and check switch spring returns to NORMAL AFTER CLOSE (red flagged).**		
15. Closes Emergency XFRM BKR 1FS	**8.7 At Panel C; placed EMERGENCY XFMR BKR 1FS to CLOSE, then released and checked switch spring returns to NORMAL AFTER CLOSE (red flagged).**		
16. Notifies the CRS	The Operator informed the CRS that the Supplemental Diesel Generator has been started and is aligned to the bus. **#CUE:** As the CRS, acknowledge the report.		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required	None
B. Initialize the Simulator in IC	IC 1 (IC-240)
C. Run Batch File	
D. Change the simulator conditions as follows:	

1. Triggers

Number	File Name	Description

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial
DG02A	Diesel Generator #1Trip	N/A	0	N/A	0	N/A
ED06	Loss of Emergency Transformer	N/A	0	N/A	0	N/A

3. Remotes

Number	Title	Trigger	TD	Value	Ramp
			0		N/A

4. Overrides

Instrument	Tag	Trigger	TD	Value	Ramp
None					

5. Panel Setup	Ensure Breaker 1FA is open.

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 Supplemental Diesel Generator in service from the Control Room. 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.

If being simulated in the 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.

General Conditions:

1. The Plant is Shutdown.
2. Critical 4160 Bus 1F is de-energized
3. Emergency Diesel Generator #1 is Inoperable and cannot be placed in service.
4. The Emergency Transformer is Unavailable.

Initiating Cue(s):

The Control Room Supervisor directs you to place the Supplemental Diesel Generator in service from the Control Room in accordance with Procedure 2.2.99 Supplemental Diesel Generator System and supply Critical Bus 1F.

Notify the CRS when the SDG is running and has energized the Bus.

Task No: 259042P0101

SHIFTING FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL (Alternate Path) #1

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

THIS IS AN ALTERNATE PATH JPM

Additional Program Information:

1. Appropriate Performance Locations: CR / SIM
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 15 minutes
5. NRC K/A 259002 A4.06 (3.1/3.2)

Directions to Examiner:

Note: This JPM is an Alternate Path JPM. This JPM requires restoring 3 steam flow signals to RVLC.

1. This JPM evaluates the trainee's ability to SHIFT FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL in accordance with Procedure 4.4.1, Reactor Level Control System. (Alternate Path)
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes comments section below.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Task No: 259042P0101

SHIFTING FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL (Alternate Path) #1

Directions to Trainee:

When I tell you to begin, you are to SHIFT FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL on the RVLC System. 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.

General Conditions:

1. The plant is stable at 100% Power.
2. Single Element Control due to RVLC Maintenance that is complete.

General References:

1. Procedure 4.4.1 Reactor Vessel Level Control System, Rev. 06

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical checks denoted by **BOLD** text.
3. Simulator cues denoted by "**#**".
4. Alternate path denoted by♦.

Task Standards:

1. The operator attempts to shift Reactor Water Level Control from one element to three element control but must first clear the bypass on at least one steam flow input signal to the RVLCS (expectation is all three since cue is that maintenance is complete but not required by procedure) and then shift from one element to three element control per procedure 4.4.1, Reactor Water Level Control System.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Task No: 259042P0101

SHIFTING FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL (Alternate Path) #1

Initiating Cue(s):

The CRS Orders you to SHIFT RVLC FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL per procedure 4.4.1, Reactor Vessel Level Control System.

Notify the CRS when Reactor Water Level Control is in three element control.

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

Task No: 259042P0101

SHIFTING FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL (Alternate Path) #1

Start Time: _____

Performance Checklist	Standards	SAT	UNSAT
1. Select RVLC system	**12.1 At RVLC/RFPT HMI, selected RVLC system.** #CUE: RVLC Selected		
2. Select CONTROL screen	12.2 Select CONTROL screen and verify on Master Controller that the PERMISSIVE ball is yellow. CUE: The PERMISSIVE ball is NOT yellow.		
NOTE to Examiner: Examinee must return at least one Steam Flow element to service to have the PERMISSIVE ball turn yellow.			
3. ♦ Check Conditions	**12.3 If PERMISSIVE ball is not YELLOW, ensured the following conditions are met:** 12.3.1 Master Level Controller is in AUTO. 12.3.2 Wide range FW flow transmitter is valid when associated RFP is in AUTO. **12.3.3 At least two steam flow elements are valid.** **Note: This step will NOT be met and will require contacting system engineer.** 12.3.4 Turbine 1st stage flow is valid if less than four steam flow elements are valid 12.3.5 At least one individual RFP controller is in AUTO 12.3.6 Total steam flow greater than 1 Mlbm. 12.3.7 At least one Reactor Vessel Level indicator is valid. CUE: Three steam flow elements are invalid		
4. ♦ Contact System	**12.4 If PERMISSIVE ball is still not YELLOW,**		

Task No: 259042P0101

SHIFTING FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL (Alternate Path) #1

Performance Checklist	Standards	SAT	UNSAT
Engineer or CRS	**contacted System Engineer.** #CUE: When asked by the applicant, the examiner (role playing as System Engineer/CRS) should ask "What do you recommend so that we can get the system back to three element control?" #CUE: As System Engineer, agree with applicant to restore bypassed steam flow elements.		
5. Restoring Input	Referred to section 9 Restoring RVLC Input To Service		
6. Select RVLC system	**9.1 At a RVLC/RFPT HMI, selected RVLC system** CUE: RVLC system selected		
7. Select MIMIC screen	**9.2 Selected MIMIC screen and verified affected parameters are ready to be returned to service** CUE: All four Steam flows are reading ~ the same		
8. Select MAINT Screen	**9.3 Selected MAINT screen** CUE: MAINT screen selected.		
9. **Select Steam Flow parameter**.	**9.4 On MAINT. screen, selected desired parameter** CUE: One Steam flow selected		
10. **Press RESET button**.	**9.5 On pop-up menu, pressed RESET button** CUE: Reset button depressed		

Task No: 259042P0101

SHIFTING FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL (Alternate Path) #1

Performance Checklist	Standards	SAT	UNSAT
11. Verify affected parameter tile green	**9.6 Verified steam flow parameter tile turned green.** CUE: Selected steam flow parameter turned GREEN.		
12. Repeat Steps 9.5 and 9.6 for the other 2 Steam Flows	Repeats Steps 9.5 and 9.6 for the other 2 Steam Flows CUE: The Other two Steam flows are reset		
13. Returns to section 12 of procedure	Returned to section 12.5 of procedure to complete actions.		
14. Check RFC-SW-S2 Position	12.5 Placed RFC-SW-S2, 1 OR AUTO ELEMENT LEVEL CONTROL SWITCH in "1" position (Panel 9-5). CUE: In “1” position		
15. Place RFC-SW-S2 in Auto.	**12.6 Placed RFC-SW-S2, 1 OR AUTO ELEMENT LEVEL CONTROL SWITCH to AUTO position.** CUE: In Auto Position		
16. Check Control Screen	12.7 At CONTROL screen, verified THREE ELEMENT ball is yellow CUE: THREE ELEMENT ball is yellow #CUE: If asked, state the desired RPV level is 35 inches.		
17. Informs CRS	Informed CRS The RVLC system is in AUTO (3 ELEMENT) CONTROL.		

Stop Time: _____ **Total Time: _____**

Task No: 259042P0101

SHIFTING FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL (Alternate Path) #1

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None					
B. Initialize the Simulator in IC		IC-234					
C. Run Batch File		None					
D. Change the simulator conditions as follows:	Number	Title	TRG	TD	Sev	Ramp	Initial
1. Triggers	None						
2. Malfunctions	None	N/A	N/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	Place simulator in Run and Bypass 3 of 4 Steam Flows from the Maintenance Screen						
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.							

Task No.: 259042P0101

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to SHIFT FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL on the RVLC System. 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.

General Conditions:

1. The plant is stable at 100% Power.
2. Single Element Control due to RVLC Maintenance that is complete.

Initiating Cue(s):

The CRS Orders you to SHIFT RVLC FROM SINGLE ELEMENT TO AUTO (3 ELEMENT) CONTROL per procedure 4.4.1, Reactor Vessel Level Control System.

Notify the CRS when Reactor Water Level Control is in three element control.

Task No. 200182A0501:

Recover From Manual Scoop Tube Operations

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: 10 minutes
5. NRC K/A 202002 A2.05 (3.1/3.1)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to recover from manual scoop tube operations in accordance with 2.2.68.1, Reactor Recirculation System.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Task No. 200182A0501:

Recover From Manual Scoop Tube Operations

Directions to Trainee:

When I tell you to begin, you are to RESET the SCOOP TUBE LOCKOUT in accordance with 2.2.68.1, Reactor Recirculation System Operations from the Control Room. 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 is operating at 100% power.
2. The “A” Reactor Recirc Pump is being controlled locally.
3. All repairs are completed and the Scoop Tube is available.

General References:

1. Procedure 2.2.68.1, Rev. 74, Reactor Recirculation System Operations

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

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

Task No. 200182A0501:

Recover From Manual Scoop Tube Operations

Task Standards:

1. The operator adjusts the manual control knob until L and S signals are within 2 and then resets the SCOOP TUBE LOCKOUT in accordance with 2.2.68.1, Reactor Recirculation System Operations from the control room per procedure.
2. 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 recover from manual scoop tube operations on the “A” Reactor Recirc Pump controller. Inform the CRS when the MG Set control has been restored the “A” Reactor Recirculation Pump.

Task No. 200182A0501:

Recover From Manual Scoop Tube Operations

Start Time: _____

Performance Checklist	Standards	SAT	UNSAT
1. Obtain procedure 2.2.68.1 Section 16.	The Operator obtained a copy of procedure 2.2.68.1 Section 16.		
2. Ensures "S" is selected.	**16.1 Selected Parameter "S" on RRFC-SIC-16A.** Cue: "S" is displayed in the window.		
3. Adjust "S" to make "S" and "L" lights are off.	**16.2 Adjusted RRFC-SIC-16A manual control knob (Parameter S), as necessary, until "S" and "L" lights are off.** Cue: Both "S" and "L" lights are off.		
4. Verify Parameter V value is within 2.0 of Parameter P.	16.3 Verified that Parameter V and P are within 2.0 of each other, by selecting each parameter one at a time. Cue: The values are within 2.0 of each other.		
5. Press Scoop Tube Lock Reset.	**16.4 Pressed RRMG Set A Scoop Tube Lockout Reset button.** Cue**:** The lockout light and alarms clear.		
6. Notifies the CRS.	Notified the CRS that the "A" RR Pump Scoop Tube Lockout has been reset. #Cue: Respond as the CRS.		

Stop Time: _____ **Total Time: _____**

Task No. 200182A0501:

Recover From Manual Scoop Tube Operations

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None					
B. Initialize the Simulator in IC		IC-234					
C. Run Batch File		None					
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	None						
2. Malfunctions	RR17A	Recirc Pump A Runback	1	0	78	0	84
	N/A	N/A					
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					
5. Panel Setup	a. Place the simulator to RUN. b. Insert “A” RR MG Set Runback (Trg 1) c. Lock out the “A” RR MG Set at 78%. d. Rotate the controller for the RR Pump a few rotations to ensure a mismatch between parameters.						
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.							

Task No.: 200182A0501

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to RESET the SCOOP TUBE LOCKOUT in accordance with 2.2.68.1, Reactor Recirculation System Operations from the Control Room. 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 is operating at 100% power.
2. The “A” Reactor Recirc Pump is being controlled locally.
3. All repairs are completed and the Scoop Tube is available.

Initiating Cue(s):

The Control Room Supervisor directs you to recover from manual scoop tube operations on the “A” Reactor Recirc Pump controller. Inform the CRS when the MG Set control has been restored the “A” Reactor Recirculation Pump.

Task No.: 262072P0101

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

FerTrainee: _____ 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: 25 minutes
5. NRC K/A 212000 A1.11 (3.4 / 3.3) and 212000.A2.02 (3.7/3.9)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to Transfer RPSPP1B from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

Directions to Trainee:

When I tell you to begin, you are to Transfer RPSPP1B from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System. 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.

If being simulated in the 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.

General Conditions:

1. The Plant is operating at 100% steady state power.
2. RPS MG Set “B” has an acrid odor around it and could fail at any time.
3. RWCU has been removed from service.

General References:

1. Procedure 2.2.22, Vital Instrument Power System.
2. Procedure 2.2.47, HVAC Reactor Building.

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

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

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

Task Standards:

1. The operator transfers RPSPP1B from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to Transfer RPSPP1B from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System.

Notify the CRS when RPSPP1B has been transferred from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System

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

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtain Procedure.	The Operator obtained the current revision of Procedure 2.2.22, Vital Instrument Power System. Selected Section 7.		
2. Determines the task begins at step 7.6.	7.6 Operator determined that step 7.6 is the beginning step for this task.		
3. Determine alt power source is available.	7.6.1 At Panel 9-16 (Control Room), checked white ALT SOURCE AVAIL light above RPS BUS B POWER TRANSFER switch is on CUE: The white light is on.		
4. Step 7.6.1.1 is N/A.	7.6.1.1 Operator determined that this step is not applicable due to white light being lit.		
5. Verify MSIV DC Solenoids are energized.	7.6.2 In Panel 9-42 (Auxiliary Relay Room), for each open MSIV, checked MSIV DC solenoid ammeters are in green band. #CUE: All solenoids are in green band.		
6. Step 7.6.3 is N/A.	Operator determined this step is not applicable due to RWCU being removed from service. (initial conditions)		

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

Performance Checklist	Standards	Sat	Unsat
7. Secure Rx. Bldg. Ventilation.	7.6.4 Operator Obtained procedure 2.2.47 to secure Reactor Building Ventilation.		
8. Notify RP Dept.	9.3 Operator notified the RP Dept. that ventilation was being secured. #CUE: RP acknowledges Rx Bldg. Ventilation is being secured and will perform necessary controls.		
9. Notify Safety Dept.	9.4 Operator notified the Safety Dept. that ventilation was being secured. #CUE: Safety representative acknowledges Rx Bldg. Ventilation is being secured and will perform necessary monitoring and controls.		
10. Secure Exhaust Fume Hoods.	9.5 – 9.7 Operator dispatched an operator to secure local Hood Exhaust Fans HF-R-1A, HF-R-1B, and HF-R-1C. #CUE: Operator has been dispatched and secured the local Hood Exhaust Fans.		
11. N/A step	Determined Step 9.8 is N/A.		
NOTE to Examiner: Next Steps are from Procedure 2.2.47.			
12. Start SGT per procedure 2.2.73.	9.9 Start SGT System per Procedure 2.2.73 to maintain Reactor Building pressure negative.		

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

Performance Checklist	Standards	Sat	Unsat
13. Selects section 6.0 to start SGTS.	Selected Section 6 to start SGTS		
14. Select control setting.	6.1 At VBD-R, placed SGT-DPIC-546, RX BLDG/SGT DP, in AUTO with setpoint adjusted to maintain ≤ -0.25" wg. CUE: SGT-DPIC-546 is in AUTO and setpoint is adjusted.		
15. **Places SGT train in service.**	**6.2 At VBD-K, placed SGT in service:** **6.2.1 SGT A** **a. Started EF-R-1E, SGT A EXHAUST FAN** **b. Checked SGT-AO-249, SGT A INLET, opened.** **c. Checked SGT-AO-251, SGT A DISCHARGE, opened.**		
16. Remove RX Bldg H&V from service.	6.3 At VBD-R, removed Reactor Building H&V System from service per Procedure 2.2.47.		
NOTE to Examiner: Next Steps are from Procedure 2.2.47.			
17. Continue in 2.2.47 to secure Rx. Bldg. Ventilation.	9.10 Placed control switches for the following fans to OFF in order listed: a. EXHAUST FAN selected to STBY, EF-R-1A or EF-R-1B b. EXH BSTR FAN selected to STBY, BF-R-1A or BF-R-1B c. SUPPLY FAN selected to STBY, SF-R-1A-A or SF-R-1A-B CUE: Fans are OFF		

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

Performance Checklist	Standards	Sat	Unsat
18. Secure Rx Bldg Fans.	9.11Performed the following in rapid succession: a. Place control switch for operating EXH BSTR FAN to OFF b. B. Place control switch for operating SUPPLY FAN to OFF c. C. Place control switch for operating EXHAUST FAN to OFF d. Close AO-257, HV-R-1A DISCH VLV e. Close AO-259, EXH FANS DISCH VLV f. Close AO-261, EXH FANS DISCH VLV CUE: Fans are OFF and valves are CLOSED.		
19. Close Secondary Containment Isolation Valves.	9.12 Closed the following Secondary Containment Isolation Valves: a. MO-272, HV-R-1A DISCH VLV b. MO-258, EXH FANS DISCH VLV c. MO-260, EXH FANS DISCH VLV CUE: Valves are CLOSED **#CUE: Another operator will perform the remaining steps in Procedure 2.2.73**		
NOTE to Examiner: Next Steps are from Procedure 2.2.22.			
20. Returned to 2.2.22 Prevent AOG from Isolating.	7.6.5 If AOG in service, then prevent AOG isolation by performing following: 7.6.5.1 Notified SM that RHR-MO-921 will be inoperable. #CUE: SM acknowledges RHR-MO-921 will be INOP. 7.6.5.2 At Panel BB3, open breaker 7 for RHR-MO-921. #CUE: Another operator will open breaker 7 at BB3, and the action is complete.		

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

Performance Checklist	Standards	Sat	Unsat
21. Notify SM of systems INOP due to group isolations.	7.6.6. Notified SM that Drywell Vent Monitor and Reactor water conductivity monitoring will be INOP due to group isolations. #CUE: SM acknowledges Drywell Vent Monitor and Rx. Water conductivity monitoring are INOP.		
22. Step 7.6.7 is N/A.	7.6.7 Determined this step is not applicable due to RWCU being removed from service. (initial conditions) #CUE: RWCU has been removed from service.		
23. Station Operator at RPS MG Set B Room.	7.6.8 Requested another operator be stationed at the RPS MG Set B Room, to perform step 7.6.9.3. #CUE: Another operator is stationed at the RPS MG Set B Room.		
24. **Transfer power to alternate source.**	**7.6.9 At panel 9-16, placed RPS BUS B POWER TRANSFER switch to ALT FEED, and verified:** 7.6.9.1 Checked Red ALT SOURCE ON light is on. 7.9.6.2 Checked Red GEN B ON light is off 7.6.9.3 Checked with operator at RPS MG SET ROOM B that Red LOAD CONNECTED TO EMERGENCY light is on, and Red LOAD CONNECTED TO NORMAL light is off. #CUE: Red LOAD CONNECTED TO EMERGENCY light is on, and Red LOAD CONNECTED TO NORMAL light is off.		
25. Release Transfer Switch.	7.6.10 Released RPS BUS B POWER TRANSFER switch.		

Title: Transfer RPSPP1B from RPS MG Set B to CDP-1A

Performance Checklist	Standards	Sat	Unsat
26. Notifies the CRS.	Informed the CRS the RPSPP1B has been transferred from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System. #CUE: Respond as CRS.		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required	None
B. Initialize the Simulator in IC	IC 234
C. Run Batch File	
D. Change the simulator conditions as follows:	

1. Triggers

Number	File Name	Description

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial
None		N/A	0	N/A	0	N/A

3. Remotes

Number	Title	Trigger	TD	Value	Ramp
None			0		N/A

4. Overrides

Instrument	Tag	Trigger	TD	Value	Ramp
None					

5. Panel Setup	1. Place simulator in RUN. 2. Remove RWCU from service 3. Ensure SGT A, is PREFERRED.

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 Transfer RPSPP1B from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System. 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.

If being simulated in the 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.

General Conditions:

1. The Plant is operating at 100% steady state power.
2. RPS MG Set “B” has an acrid odor around it and could fail at any time.
3. RWCU has been removed from service

Initiating Cue(s):

The Control Room Supervisor directs you to Transfer RPSPP1B from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System.

Notify the CRS when RPSPP1B has been transferred from RPS MG Set B to CDP-1A in accordance with Procedure 2.2.22, Vital Instrument Power System.

Task No.: 200185A0501

Title: RPV Depressurization with RWCU (Alternate Path)

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

ALTERNATE PATH

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 204000 A4.03 (3.2 / 316) and 204000 A1.04 (2.8/2.8)

Directions to Examiner:

Note: This JPM is an Alternate Path JPM. The valve will not operate when aligning blowdown to the condenser and blowdown to Radwaste must be used.

1. This JPM evaluates the trainee's ability to perform RPV Depressurization with RWCU from the Control Room in accordance with Procedure 5.8.2.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Title: RPV Depressurization with RWCU (Alternate Path)

Directions to Trainee:

When I tell you to begin, you are to perform RPV Depressurization with RWCU to the main condenser from the Control Room in accordance with Procedure 5.8.2., RPV Depressurization Systems (Table 2) from the Control Room. 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.

If being simulated in the 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.

General Conditions:

1. The Plant has scrammed.
2. EOPs have been entered.
3. Reactor Depressurization is required per the EOPs.

General References:

Procedure RPV Depressurization with RWCU from the Control Room in accordance with Procedure 5.8.2., RPV Depressurization Systems (Table 2).

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical checks denoted by **bold text.**
3. Simulator cues denoted by "**#**".
4. Alternate path denoted by♦.

Title: RPV Depressurization with RWCU (Alternate Path)

Task Standards:

1. The operator performs RPV depressurization with RWCU by attempting to blow down to the main condenser and transition to blowing down to Radwaste in accordance with Procedure 5.8.2., RPV Depressurization Systems (Table 2) from the control room.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to depressurize the RPV with RWCU to the main condenser from the control room in accordance with procedure 5.8.2, RPV Depressurization Systems (Table 2).

Notify the CRS when you are depressurizing the RPV with RWCU.

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

Title: RPV Depressurization with RWCU (Alternate Path)

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtain Procedure	The Operator obtained the current revision of Procedure 5.8.2, RPV Depressurization Systems. Selected Section 15.		
2. Refer to Section 3 for dispatching personnel	15.1 Operator referred to Section 3 for dispatching personnel when actions outside the Control are required.		
3. N/A Steps	15.2 Operator determined that Step 15.2 can be N/A'd since it is not required by plant conditions. CUE: If Operator chooses to install PTMs, respond that another operator will install the PTMs and they are complete.		
4. Verify Group 3 Isolation	15.3 Operator verified Group 3 Isolation was present per procedure 2.1.22. (Hard Card) CUE: Group 3 Channel A and B lights are out on Panel 9-5. RWCU-MO-15, INBD ISOL VLV indicates CLOSED on Panel 9-4. RWCU-MO-18, OUTBD ISOL VLV indicates CLOSED on Panel 9-4.		

Title: RPV Depressurization with RWCU (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
5. Reset Group 3 Isolation Signal	**15.3.1-3 Operator reset Group 3 Isolation signal by** **a. turning GROUP ISOL RESET CHANNEL A and CHANNEL B, switches to the right RESET position and then releasing to NOR at panel 9-5.** **b. Opened RWCU-MO-15, INBD ISOL VLV, at panel 9-4,and** **c. Opened RWCU-MO-18, OTBD ISOL VLV, at panel 9-4.** CUE: Group 3 Channel A and B lights are ON at Panel 9-5. RWCU-MO-15, INBD ISOL VLV, indicates OPEN at panel 9-4. RWCU-MO-18, OTBD ISOL VLV, indicates OPEN at panel 9-4.		
6. Stop Running RWCU Pump	15.4 Placed running RWCU PUMP switch to STOP, if running. CUE: RWCU pumps are not running.		
7. Closes return to RPV	15.5 Closed RWCU-MO-68, RETURN LINE TO RX VLV. CUE: RWCU-MO-68 is CLOSED.		
8. Verify RWCU F/Ds in Hold	15.6 Verified RWCU F/Ds are in hold by having operator at local F/D panel 12-4-98A/B place the F/D in Hold. #CUE As local operator acknowledge the direction to place F/Ds in Hold until the action is complete. If asked, steps 15.6.1.1 through 15.6.2.4 are complete.		

Title: RPV Depressurization with RWCU (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
9. Verify Flowpath	15.7 Operator ensured the following: a. RWCU-RMC-143, BD VLV 55 FLOW CONTROL, was adjusted to zero. b. RWCU-MO-74, DEMIN SUCTION BYPASS VLV, was open. c. RWCU-MO-53, BLOWDOWN ORIFICE BYPASS VLV was open. CUE: a. RWCU-RMC-143, BD VLV 55 FLOW CONTROL, is set to zero. b. RWCU-MO-74, DEMIN SUCTION BYPASS VLV, is open. c. RWCU-MO-53, BLOWDOWN ORIFICE BYPASS VLV is open.		
10. ♦Align Blowdown Flowpath to Main Condenser	15.8 Operator aligned blowdown to the Main Condenser by opening RWCU-MO-56. CUE: RWCU-MO-56 will NOT OPEN.		
Note to Examiner: Operator may choose to continue and redirect blowdown to Radwaste without CRS approval but will inform CRS afterward.			
11. Report failure of MO-56 to open.	Operator reports failure of MO-56 to open to the CRS. CUE: CRS acknowledges. #CUE: If asked what to do, the examiner should ask the applicant what he/she recommends. The operator should recommend to blowdown to Radwaste. If the applicant doesn't have a recommendation, the examiner should role play as the CRS and inform the applicant that we need to blowdown.		

Title: RPV Depressurization with RWCU (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
12. ♦Align Blowdown Flowpath to Radwaste	**15.8 Operator aligns blowdown to Radwaste by opening RWCU-MO-57.** **CUE: RWCU-MO-57 is OPEN.**		
NOTE to Examiner: If asked, tell the examinee two handed operation is permitted for the next step. The operator will be required to hold the start switch for the pump while throttling flow to approximately 70 gpm, then they can let go of the pump start switch.			
13. Start RWCU Pump	**15.9 Placed and held RWCU Pump A(B) switch to START at panel 9-4.** CUE: RWCU pump is running.		
14. Set Blow down Flow rate	**15.12 Throttled RWCU-FCV-55, BLOWDOWN FLOW CONTROL VLV, using RWCU-RMC-143, BD VLV 55 FLOW CONTROL to achieve desired cooldown rate and did <u>not</u> exceed 70 GPM, and maintain >200 psig above RPV pressure by throttling RWCU-MO-68, RETURN LINE TO RX VLV.** CUE: Pressure on RWCU-PI-131 indicates approximately 220 psi above reactor pressure. Blowdown flow is less than 70 gpm.		
15. Notifies the CRS	15.13 Inform CRS that RWCU is being utilized to depressurize the RPV.		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required	None
B. Initialize the Simulator in IC	IC-237
C. Run Batch File	None

D. Change the simulator conditions as follows:

1. Triggers

Number	File Name	Description

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial
None		N/A	0	N/A	0	N/A
		N/A	0	N/A	0	N/A

3. Remotes

Number	Title	Trigger	TD	Value	Ramp
CU16	PTM 44 &45	N/A	0		N/A

4. Overrides Override RWCU-MO-56 in the CLOSED position.

Instrument	Tag	Trigger	TD	Value	Ramp
None					

5. Panel Setup	1. Ensure reactor is scrammed and a Group 3 is present 2. Throttle open RWCU-MO-74 3. Ensure the simulator is in RUN and PTMs are active.

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 perform RPV Depressurization with RWCU to the main condenser from the Control Room in accordance with Procedure 5.8.2., RPV Depressurization Systems (Table 2) from the Control Room. 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.

If being simulated in the 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.

General Conditions:

1. The Plant has scrammed.
2. EOPs have been entered.
3. Reactor Depressurization is required per the EOPs.

Initiating Cue(s):

The Control Room Supervisor directs you to depressurize the RPV with RWCU to the main condenser from the control room in accordance with procedure 5.8.2, RPV Depressurization Systems (Table 2).

Notify the CRS when you are depressurizing the RPV with RWCU.

Task No.: 206033P0201

Task Title: START HPCI FROM THE ASD ROOM

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: Plant/SIM
2. Appropriate Trainee Level: RO / SRO
3. Evaluation Method __ Simulate __ Perform
4. Performance Time: 20 minutes
5. NRC K/As: 295016 AK2.01 4.4/4.5

Directions to Examiner:

1. This JPM evaluates the trainee's ability to start HPCI from the ASD room.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
5. Give the trainee Attachment 2.
6. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Task No.: 206033P0201

Task Title: START HPCI FROM THE ASD ROOM

Directions to Trainee:

When I tell you to begin, you are to start HPCI from the ASD room. 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 start HPCI from the ASD room. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. 0% Reactor Power, Reactor Scrammed
2. Main turbine tripped.
3. Control Room is filled with toxic gas, non-fire source.
4. CSCS systems are all in standby status.
5. The RCIC system is INOPERABLE for a maintenance outage.
6. The Control Room has been evacuated.

General References:

1. Emergency Procedure 5.1ASD.

General Tools and Equipment:

1. Key for ASD Room
2. Emergency Procedure 5.1ASD, Attachment 1

Special Conditions, References, Tools, Equipment:

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

Task No.: 206033P0201

Task Title: START HPCI FROM THE ASD ROOM

Task Standards:

1. Accurately locate, identify, operate and/or manipulate all component controls required to be utilized to perform control level and pressure with HPCI from the ASD room per Procedure 5.1ASD.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Initiating Cue(s):

You are the ASD Operator and the Shift Manager has directed you to start the HPCI System from the ASD Panel per 5.1ASD, Att.1. Steps 1 through 6 of Attachment 1 have been completed. The Shift Manager is in the TSC; inform him when HPCI is **running and available to be lined up for injection.**

Note: Place the simulator in RUN and tell the trainee to begin.

Task No.: 206033P0201

Task Title: START HPCI FROM THE ASD ROOM

Start Time: _____

Performance Checklist	Standard	Sat	Unsat
1. Determine HPCI not running.	7.2 Observed 0 speed on HPCI-SI-2793, TURBINE SPEED.		
2. Transfer control of HPCI to ASD	**7.3.1 Placed remaining ISOLATION switches in ISOL:** **_____ AOP** **_____ MO-20** **_____ MO-24** **_____ MO-25** **_____ MO-21** **_____ MO-14** **_____ MO-19** **_____ FCU** **_____ GSCB/P** **_____ MO-58** **_____ MO-17** **CUE:** (As operated) each switch is in ISOLATE.		
3. Ensure HPCI 14, 19, 25, & 58 are CLOSED:	7.3.2 Ensured CLOSED the following valves: _____ HPCI-MO-14, STEAM TO TURBINE _____ HPCI-MO-19, INJECTION _____ HPCI-MO-25, MINIMUM FLOW BYPASS _____ HPCI-MO-58, TORUS PUMP SUCTION **CUE (As checked)**: GREEN light ON. RED light OFF.		

Task No.: 206033P0201

Task Title: START HPCI FROM THE ASD ROOM

Performance Checklist	Standard	Sat	Unsat
4. Ensure HPCI 17, 20, 24, and 21 are OPEN:	7.3.3 Opened the following valves: _____ HPCI-MO-24, ECST Test Line Shutoff _____ HPCI-MO-21, Test Bypass to ECST **CUE (As checked):** RED light ON. GREEN light OFF.		
5. Start HPCI Room FCU	**7.3.4 Placed HPCI Room FC-R-1G control switch to RUN.** **CUE:** RED light ON. GREEN light OFF.		
6. Place GSCB in AUTO	**7.3.5 Placed GLAND SEAL CNDSR BLOWER control switch in AUTO.** **CUE:** Switch is in mid-position.		
7. Place GSCCP in AUTO	**7.3.6 Placed GLAND SEAL CNDSR COND PUMP control switch in AUTO.** **CUE:** Switch is in mid-position.		
8. Set HPCI Flow Controller and place in MANUAL	7.3.7 Set HPCI-FIC-1108, HPCI FLOW CONTROLLER to 4250 gpm and placed in MANUAL. **CUE**: The red line on the FIC is on 4250 gpm and tab is to the left.		

Task No.: 206033P0201

Task Title: START HPCI FROM THE ASD ROOM

Performance Checklist	Standard	Sat	Unsat
9. OPEN HPCI-MO-14, Steam to Turbine	**7.3.8 Placed control switch for HPCI-MO-14 to OPEN.** **CUE:** RED light ON, GREEN light OFF.		
10. Start the Auxiliary Oil Pump	**7.3.9 Placed control switch for the auxiliary oil pump to START.** **CUE:** RED light ON, GREEN light OFF.		
11. Ensure the Turbine Speed is >2050 rpm	**7.3.10 Ensured the speed of the HPCI pump is >2050 RPM by adjusting Flow Controller HPCI-FIC-1108 OPEN and CLOSE pushbuttons.** **CUE:** Speed (and therefore flow) is dependent on RCS pressure at the time the JPM is being performed and may not be critical if no adjustment is needed. RCS pressure is varying slightly in the IC snap because of the plant conditions given in the stem.		
12. Inform the Shift Manager the task is complete.	Informed Shift Manager the HPCI pump is running and available to be lined up for injection. **#CUE:** The Shift Manager acknowledges the report.		

Stop Time: _____ **Stop Time:** _____

Task No.: 206033P0201

Task Title: START HPCI FROM THE ASD ROOM

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

None

B. Initialize the Simulator in IC-18 or LOR equivalent. (IC-237)

Batch File Name - JPM/342056.

C. Change the simulator conditions as follows:

1. Triggers - None

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial
RC01	RCIC System Failure to Auto Start	N/A	N/A	N/A	N/A	N/A
RP02	Rx Scram	N/A	N/A	N/A	N/A	N/A
FW01a	RFP A Trip	N/A	N/A	N/A	N/A	N/A
FW01b	RFP B Trip	N/A	N/A	N/A	N/A	N/A
TC01	Main Turbine Trip	N/A	N/A	N/A	N/A	N/A
HP01	HPCI System Failure to Start	N/A	N/A	N/A	N/A	N/A
RP08a	Spurious Group 1 Isol. Signal Channel A-1	N/A	N/A	N/A	N/A	N/A
RP08c	Spurious Group 1 Isol. Signal Channel B-1	N/A	N/A	N/A	N/A	N/A

3. Remotes - None

Task No.: 206033P0201

Task Title: START HPCI FROM THE ASD ROOM

4. Overrides - None

5. Panel Setup

    a. Insert Batch File jpm/342056.
    b. Place Simulator in RUN.
    c. Trip all but one Condensate and Condensate booster pump.
    d. Place following HPCI Isolation switches to ISOL.
        LEVEL INDICATORS
        HPCI CONTROL AND INDICATION
        MO-15
        MO-16
    e. Place 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.

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to start HPCI from the ASD room. 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 start HPCI from the ASD room. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. 0% Reactor Power, Reactor Scrammed
2. Main turbine tripped.
3. Control Room is filled with toxic gas, non-fire source.
4. CSCS systems are all in standby status.
5. The RCIC system is INOPERABLE for a maintenance outage.
6. The Control Room has been evacuated.

Initiating Cue(s):

You are the ASD Operator and the Shift Manager has directed you to start the HPCI System from the ASD Panel per 5.1ASD, Att.1. Steps 1 through 6 of Attachment 1 have been completed. The Shift Manager is in the TSC; inform him when HPCI is **running and available to be lined up for injection.**

Task No.: 219001O0101

Task Title: Startup the Suppression Pool Cooling Mode of RHR (Alternate Path)

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

ALTERNATE PATH JPM

Additional Program Information:

1. Appropriate Performance Locations: Simulator
2. Appropriate Trainee level: RO/SRO
3. Evaluation Method: Perform
4. Performance Time: 23 minutes
5. NRC K/A 219000 A4.01 (3.8/3.7)

Directions to Examiner:

NOTE: THIS IS AN ALTERNATE PATH JPM. The first RHR Pump will TRIP when it is started.

1. This JPM evaluates the trainee's ability to startup the suppression pool cooling mode of RHR.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
5. Give the trainee Attachment 2.
6. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes:

_____
_____
_____
_____
_____
_____
_____
_____
_____

Task No.: 219001O0101

Task Title: Startup the Suppression Pool Cooling Mode of RHR (Alternate Path)

Directions to Trainee:

When I tell you to begin, you are to startup the suppression pool cooling mode of RHR. 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 startup the suppression pool cooling mode of RHR. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The RHR system is in LPCI Mode standby status per procedure 2.2.69.
2. The RHRSW system is in standby status per procedure 2.2.70.
3. RHR HX A has been in service within the last 7 days.
4. Suppression Pool cooling is NOT required by the EOPs.
5. All procedure prerequisites have been met for placing RHR Loop A in suppression pool cooling.
6. The NLO has completed venting loop A (2.2.69.3 through Step 4.13).
7. ALARA has determined the suction drain flush is not required.
8. The RPs have been notified of the system start.
9. Another operator is to perform 2.2.69.3 Section 3.

General References:

1. Procedure 2.2.69.3
2. Procedure 2.2.70

General Tools and Equipment:

1. Key 2235

Special Conditions, References, Tools, Equipment:

1. Simulator Setup: See Attachment 1.
2. Critical steps denoted **in bold**.
3. Simulator cues denoted by "#".
4. Alternate path denoted by♦.

Task No.: 219001O0101

Task Title: Startup the Suppression Pool Cooling Mode of RHR (Alternate Path)

Task Standards:

1. The operator begins placing RHR Loop A in SPC and after the pump trips, starts another pump and completes placing the loop into service per Procedure 2.2.69.3.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Initiating Cue(s):

The Control Room Supervisor directs you to startup RHR Loop A in suppression pool cooling and establish maximum cooldown rate using the A RHR pump per procedure 2.2.69.3. The hard card is **NOT** to be used. Inform the CRS when the A loop of RHR is in suppression Pool Cooling at maximum cooldown rate.

Any plant announcements will be simulated.

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

Task No.: 219001O0101

Task Title: Startup the Suppression Pool Cooling Mode of RHR (Alternate Path)

Start Time _____

Performance Checklist	Standards	Sat	Unsat
1. Obtained Procedure	Obtained Procedure 2.2.70.		
NOTE to Examiners: Candidate may place A or C SWBP in service.			
2. Place SWBP in service	**5.1.1 Held SWBP A (C) switch to START until pump starts. (Panel 9-3)**		
3. Check AMPS	5.1.2 Checked AMPS normal. (Panel 9-3)		
4. Check MO-89A open	5.1.3 Checked SW-MO-89A, HX-A SW DISCH VLV OPENED. (Panel 9-3)		
5. Adjust flow.	**5.1.4 Adjusted SW-SW-MO89A to maintain close to 4000gpm.**		
6. Check AMPS	5.1.4.2 Ensured AMPS ≤ 136.		
7. Check HX d/p.	5.1.5 Ensured d/p on SW-DPI-359A ≤ 17.0 psid. (HX Room) #CUE: When contacted as NLO report SW-DPI-359A indicates 4 psid.		
NOTE to Examiners: Tell candidate another operator will record HX d/p in narrative logs.			
8. Inform SM LPCI A inoperable.	4.15 Informed SM LPCI Mode of RHR Subsystem A is inoperable. #CUE: SM acknowledges.		
NOTE to Examiners: Steps 4.16 through 4.18 are N/A.			
9. Open MO-39A	**4.19 Obtained Key and opened RHR-MO-39A, SUPPR POOL COOLING/TORUS SPRAY VLV. (Panel 9-3)**		
10.	4.20 Step is N/A.		
11. Start Pump A	**4.21 Placed control switch for RHR Pump A to START. (Panel 9-3)**		

Task No.: 219001O0101

Task Title: Startup the Suppression Pool Cooling Mode of RHR (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
12. ♦Notices pump did not start.	Observed the RHR Pump A did not start.		
13. ♦Notifies SM or CRS. **Start Pump C**	Notified CRS or SM RHR Pump A did not start. Referred to alarm cards 9-3-1/B-4, RHR Pump A Trip and 9-3-1/C4, RHR Pump A Ovld/Ground. **4.21 Placed control switch for RHR Pump C to START. (Panel 9-3)** # CUE: If asked about starting RHR Pump C, ask the examinee what he/she recommends.		
14. ♦Initiate a CR.	#CUE: (If asked) CRS states someone else will write a CR on RHR Pump A.		
15. Throttle OPEN RHR-MO-34A .	**4.22 Placed control switch for RHR-MO-34A, SUPPR POOL COOLING INBD THROTTLE VLV, to OPEN to obtain desired flow on RHR-FI-133A or RHR-FR-143. (Panel 9-3)**		
16. Ensure RHR-MO-16A CLOSES.	4.23 Ensured RHR-MO-16A, LOOP A MIN Flow BYP VLV, CLOSES as flow increases >2500 gpm.		
NOTE to Examiners: Candidate may perform ONE of following steps.			
17. CLOSE CM-296.	4.24.1 Directed the Reactor Building NLO to CLOSE CM-296, LOOP A INJECTION LINE PRESSURE MAINTENANCE SHUTOFF. # CUE: The Station Operator reports CM-296 is CLOSED.		

Task No.: 219001O0101

Task Title: Startup the Suppression Pool Cooling Mode of RHR (Alternate Path)

Performance Checklist	Standards	Sat	Unsat
18. Maintain system pressure > Condensate Transfer System pressure .	4.24.2 Maintained RHR Subsystem A pressure > Condensate Transfer System pressure.		
19. CLOSE RHR-MO-66A.	**4.25 Held in the CLOSE position the control switch for RHR-MO-66A, HX BYPASS VLV, until Red light is OFF.**		
20. Open cooling water valve to room cooler and pump.	4.26 If PCIS Group 6 lights lit on Panel 9-5, at VBD-M ensure REC-MO-711 OR REC-MO-714, CRITICAL LOOP SUPPLY (associated with in service REC HX) open.		
21. Inform the CRS that the task is Complete.	Informed CRS RHR Loop A is in Suppression Pool Cooling with maximum cooldown rate established. # CUE: The CRS acknowledges the report.		

Stop Time _____ **Total Time _____**

Task No.: 219001O0101

Task Title: Startup the Suppression Pool Cooling Mode of RHR (Alternate Path)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

None

B. Initialize the Simulator in any IC with Torus Temperature below 95°F. (IC-234)

Batch File Name - none.

C. Change the simulator conditions as follows:

1. Triggers

None

2. Malfunctions

RH01A, RHR Pump A Trip

None

3. Remotes

None

4. Overrides

None

5. Panel Setup

a. Initialize the Simulator and place in FREEZE.

b. Insert IMF RH01A.

c. Place Simulator in RUN.

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

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to startup the suppression pool cooling mode of RHR. 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 startup the suppression pool cooling mode of RHR. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The RHR system is in LPCI Mode standby status per procedure 2.2.69.
2. The RHRSW system is in standby status per procedure 2.2.70.
3. RHR HX A has been in service within the last 7 days.
4. Suppression Pool cooling is NOT required by the EOPs.
5. All procedure prerequisites have been met for placing RHR Loop A in suppression pool cooling.
6. The NLO has completed venting loop A (2.2.69.3 through Step 4.13).
7. ALARA has determined the suction drain flush is not required.
8. The RPs have been notified of the system start.
9. Another operator is to perform 2.2.69.3 Section 3.

Initiating Cues:

The Control Room Supervisor directs you to startup RHR Loop A in suppression pool cooling and establish maximum cooldown rate using RHR Pump A per procedure 2.2.69.3. The hard card is **NOT** to be used. Inform the CRS when RHR Loop A is in suppression Pool Cooling at maximum cooldown rate.

Any plant announcements will be simulated.

Task No.: 208028P0101

Title: Separation of REC Critical Loops

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: 5 minutes
5. K/A 295018; AA1.03 (3.3/3.4), AK3.07 (3.1/3.2)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to separate the REC Critical Loops.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
5. Give the trainee Attachment 2.
6. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes: _____

Title: Separation of REC Critical Loops

Directions to Trainee:

When I tell you to begin, you are to separate the REC Critical Loops. 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.

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

General Conditions:

1. A large leak has developed in the REC system.
2. Emergency Procedure 5.2REC, Loss of REC, has been entered and actions taken up to separating the REC Critical Loops.

General References:

1. Procedure 5.2REC
2. Procedure 2.2.65.1

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

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

Task Standards:

1. Separates the REC critical loops per Procedure 5.2REC.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Title: Separation of REC Critical Loops

Initiating Cue(s):

The Control Room Supervisor directs you to separate the REC Critical Loops per 5.2REC, using the NORTH Critical Loop. RMP-RM-351A, SW A EFFLUENT RAD MON, is operable.
Inform the CRS when you have separated the REC Critical Loops.

NOTE: Ensure the Simulator is in RUN and tell the trainee to begin. (**Delete malfunction SW12B**)

Title: Separation of REC Critical Loops

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. **Close REC-MO-695.**	**1.1 Closed REC-MO-695, CRITICAL LOOP SUPPLY CROSSTIE.** **CUE:** GREEN light ON, RED light OFF.		
2. **Close REC-MO-694.**	**1.2 Closed REC-MO-694, CRITICAL LOOP SUPPLY CROSSTIE.** **CUE:** GREEN light ON, RED light OFF.		
3. **Close REC-MO-721.**	**1.3 Closed REC-MO-721, NON CRITICAL HEADER RETURN.** **CUE:** GREEN light ON, RED light OFF.		
4. **Close REC-MO-722.**	**1.4 Closed REC-MO-722, NON CRITICAL HEADER RETURN.** **CUE:** GREEN light ON, RED light OFF.		
NOTE to Examiner: Allow the examinee to contact the building operator to perform the following four steps. The booth operator will read the CUEs to the examinee.			
5. Ensure REC-19 is open.	1.5 Directed NLO to ensure REC-19 is open. REC HX B INLET (R-931-N REC Hx area). #CUE: As the NLO report REC-19 is open.		
6. Ensure REC-21 is open.	1.6 Directed NLO to ensure REC-21 is open. REC HX A INLET (R-931-N REC Hx area). #CUE: As the NLO report REC-21 is open.		
NOTE to Examiner: Booth operator must insert TRIGGER 2 to close the valves in next two steps.			
7. Remove seal and close REC-18.	1.7 Directed NLO to Close REC-18, REC HX A INLET (R-931-N REC Hx area). #CUE: As NLO, report REC-18 is closed.		

Performance Checklist	Standards	Sat	Unsat
8. Remove seal and close REC-20.	1.8 Directed NLO to Close REC-20, REC HX B INLET (R-931-N REC Hx area). #CUE**:** As NLO, report REC-20 is closed.		
9. Select a critical subsystem.	1.9 Selects a critical subsystem to align. (North is assumed).		
10. Ensure REC-TCV-451A switch is in open.	1.10.1 Ensured REC-TCV-451A, REC HX A SW OUTLET TEMPERATURE CONTROL, switch is in OPEN. CUE: Point to switch indicating it is pointing to OPEN.		
11. **Throttle open SW-MO-650.**	**1.10.2 Throttled open SW-MO-650 to obtain 400 to 1200 gpm flow on SW-FI-387A, REC HX A SW OUTLET.** **CUE: Point indicating SW-FI-387A indicates 600 gpm.**		
12. Ensure REC-MO-712 is closed.	1.10.3 Ensured REC-MO-712, HX A OUTLET VLV, is closed. CUE: GREEN light On, RED light OFF.		
13. Ensure REC-MO-711 is open.	1.10.4 Ensured REC-MO-711, NORTH CRITICAL LOOP SUPPLY is open. CUE: GREEN light OFF. RED light ON. CUE: If asked as the NLO report no visible leaks exist on the system.		
14. Open REC-MO-722.	1.10.5 If REC Surge Tank is available, opened REC-MO-722. CUE: IF student chooses to open REC-MO-722, the red light is ON and green light is OFF.		

Performance Checklist	Standards	Sat	Unsat
15. **Ensure REC PUMP C or D is running.**	**1.10.6 Started REC PUMP:** **_____ C** **OR** **_____D** **CUE: REC PUMP C (D) red light came ON.**		
16. Inform CRS the task is complete.	Inform the CRS the REC Critical loops are separated. #CUE: CRS acknowledges the report.		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required	None
B. Initialize the Simulator in IC	Any power IC. (IC-235)
DO NOT LOAD BATCH FILE UNTIL DIRECTED BY SETUP!!	
C. Run Batch File	Jpm/342144
D. Change the simulator conditions as follows:	

1. Triggers

Number	File Name	Description
None		

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial
SW12B	REC HX 1B Tube Leak	A	N/A	60%	N/A	N/A
Rp05	Group 2 isolation failure	A	N/A	N/A	N/A	N/A
RP14	CREFS Auto Initiation failure	A	N/A	N/A	N/A	N/A
RP15	Group 6 isolation failure	A	N/A	N/A	N/A	N/A

3. Remotes

Number	Title	Trigger	TD	Value	Ramp
SW02	REC HX1B Inlet Isol Vlv (REC-V-18)	2	N/A	CLOSE	N/A
SW04	REC HXA Inlet Isol Vlv (REC-V-20)	2	N/A	CLOSE	N/A
RR03	RRMG A DC Oil Pump			STOP	N/A
RR04	RRMG B DC Oil Pump			STOP	N/A

4. Overrides

Instrument	Tag	Trigger	TD	Value	Ramp
None					

5. Panel Setup	a. Place the Simulator in RUN. b. Insert batch file (JPM/342144). c. Run the simulator long enough for the surge tank level to drop. d. Perform actions of EP 5.2REC up to the point of splitting the REC Critical Loops (all REC pumps off). These actions include scramming the reactor, tripping the RR pumps, stopping the RRMG oil pumps, and stopping the running CRD pump. e. DELETE SW11c and SW11d, REC pump C and D trips. f. FREEZE the simulator. g. When JPM begins and simulator is taken to RUN, **DELETE** the malfunction SW12b.
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 separate the REC Critical Loops. 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.

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

General Conditions:

1. A large leak has developed in the REC system.
2. Emergency Procedure 5.2REC, Loss of REC, has been entered and actions taken up to separating the REC Critical Loops.

Initiating Cue(s):

The Control Room Supervisor directs you to separate the REC Critical Loops per 5.2REC, using the NORTH Critical Loop. RMP-RM-351A, SW A EFFLUENT RAD MON, is operable.
Inform the CRS when you have separated the REC Critical Loops.

Task No.: 286005I0102

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

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

THIS IS AN ALTERNATE PATH JPM

Additional Program Information:

1. Appropriate Performance Locations: Plant
2. Appropriate Trainee Level: SO / RO / SRO
3. Evaluation Method: __ Simulate __ Perform
4. Performance Time: 12 minutes
5. NRC K/A 286000 A4.06(3.4/3.4)

Directions to Examiner:

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. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
4. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments:

Task No.: 286005I0102

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

Directions to Trainee:

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.

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 **bold text.**
2. Alternate path denoted by♦.

Task Standards:

1. The operator attempts to start the diesel fire pump normally but must start it by selecting emergency run and closing contactor A per Procedure 2.2.30.
2. 100% of critical elements successfully completed without error.
3. 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.: 286005I0102

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

Performance Checklist	Standards	Sat	UNSAT
1. Check the engine oil level.	9.1 Checked 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.	9.2 Checked the engine cooling water reservoir is full. CUE: The water level is at the top of the reservoir.		
3. Start Exhaust Fan	9.3 If room exhaust fans are not running (above small damper in Fire Pump D Room ceiling), adjust Fire Pump D Room thermostat (west wall) to start fans. CUE: Exhaust Fan is running.		
5. ♦Select Switch to Manual 1	9.4.2.1 Placed selector switch to MANUAL 1 or MANUAL 2. CUE: Use pen and point to MAN 1.		
6. ♦Press START button	9.4.2.2 Pressed START button. CUE: Engine cranking is sluggish and noise in room remains low.		
7. ♦Select Switch to Manual 2 and press START button	a. Placed selector switch to MANUAL 2 and pressed START button. CUE: Use pen and point to MAN 2 CUE: Engine cranking is sluggish and noise in room remains low.		
7. ♦Select Emergency Run	**9.5.1 Rotated Governor Manual Lever counter-clockwise to EMERGENCY RUN (located on top of engine).** **CUE: Manual level fully CCW and Lever pointing to EMERGENCY RUN.**		

Task No.: 286005I0102

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

8. ♦Close CONTACTOR A	**9.5.2 Pulled operating lever on either CONTACTOR A or CONTACTOR B (located on north side of engine below block heater) to start engine.** **CUE: Sound of engine cranking briskly.** **CUE: Sound of engine running.**		
9. Open FP-705.	**9.5.3.1 Opened FP-705, COOLING SYSTEM MANUAL BYPASS VALVE.** **CUE: Hand wheel rotates fully counter-clockwise until aligned with pipe.**		
10. Open FP-706.	**9.5.3.2 Opened FP-706, COOLING SYSTEM MANUAL BYPASS VALVE.** **CUE: Hand wheel rotates fully counter-clockwise until aligned with pipe.**		
11. Check flapper FP-FG-10.	9.5.3.3 Ensured flow flapper in FP-FG-10 (North side above diesel) is in horizontal position. CUE: Use pen to indicate flapper is in horizontal position.		
12. Check Engine Parameters.	9.6.1 Check: Circulation water temperature, Lube Oil Pressure, Engine RPM. CUE: With pen point at temperature gauge to indicate 180°F. CUE: With a pen point at oil pressure gauge to indicate 45 psig. CUE: With a pen point at tachometer to indicate 1800 RPM.		
13. Contacts the Control Room Operator.	The operator calls the Control Room and reports Diesel Fire Pump “D”: is running normal CUE: Respond as Control Room Operator.		

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:

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.: 263030P0104

PLACE 24 VDC BATTERIES AND ASSOCIATED CHARGERS IN SERVICE

Trainee: _____ Examiner: _____

Pass: _____ Fail: _____ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: Plant
2. Appropriate Trainee Levels: SO / RO / SRO
3. Evaluation Method: Perform ___ Simulate __
4. Performance Time: 15 minutes
5. Importance Factor: 2.75
6. NRC K/A: 263000 SG9(3.4/3.5)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to place 24 VDC batteries and associated chargers in service in accordance with Procedure 2.2.26, 24 VDC Electrical System.
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. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes/comments section below.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

Notes/Comments: _____

Task No.: 263030P0104

PLACE 24 VDC BATTERIES AND ASSOCIATED CHARGERS IN SERVICE

Directions to Trainee:

When I tell you to begin, you are to place 24 VDC batteries and associated chargers in service in accordance with Procedure 2.2.26, 24 VDC Electrical System. 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.

If being simulated in the 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.

General Conditions:

1. A refuel outage is in progress.
2. 1A1 and 1A2 24 VDC batteries have been replaced.

General References:

1. Procedure 2.2.26, 24 VDC Electrical System

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by **bold steps.**
2. Simulator cues denoted by "#".

Task Standards:

1. Accurately locate, identify, operate and/or manipulate all component controls required to be utilized to place 24 VDC batteries and associated chargers in service per Procedure 2.2.26.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Task No.: 263030P0104

PLACE 24 VDC BATTERIES AND ASSOCIATED CHARGERS IN SERVICE

Initiating Cue(s):

The BOP operator has directed you to return the 1A1 and 1A2 battery chargers and associated 24 VDC batteries to service in accordance with Procedure 2.2.26, 24 VDC Electrical System. . All prerequisites have been completed or verified.

Notify the Control Room Supervisor when the 1A1 and 1A2 battery chargers and 24 VDC batteries have been returned to service.

NOTE: Tell the trainee to begin.

Task No.: 263030P0104

PLACE 24 VDC BATTERIES AND ASSOCIATED CHARGERS IN SERVICE

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. Obtain the procedure	The operator obtained 2.2.26 at section 6, Placing 24V Batteries 1A1 and 1A2 in service.		
2. Verify the 24 VDC Batteries 1A1 and 1A2 are free of foreign materials.	6.1 Verified the batteries 1A1 and 1A2 free of foreign materials. CUE: No foreign materials present.		
3. CLOSE the 24 VDC BATTERY A1/A2 DISCONNECT switch.	**6.2 CLOSED the 24 VDC BATTERY A1/A2 DISCONNECT switch.** CUE: DISCONNECT switch is up.		
4. Verify OPEN the AC INPUT BREAKERS on 24 VDC CHARGERS 1A1 AND 1A2.	8.2/3 Verified OPEN the AC INPUT BREAKERS on 24 VDC CHARGERS 1A1 and 1A2. CUE: The breaker handles are down.		
5. Verify OPEN the DC OUTPUT DISCONNECT on 24 VDC CHARGERS 1A1 and 1A2.	8.4/5 Verified OPEN the DC OUTPUT DISCONNECTS on 24 VDC CHARGER 1A1 and 1A2. CUE: The breaker handles are down.		
6. Verify EQUALIZING timer on 24 VDC CHARGERS 1A1 and 1A2 set at zero	8.6/7 Verified the EQUALIZING timers on 24 VDC CHARGERS 1A1 and 1A2 was set at zero. CUE: Using a pen, indicate the timers are at zero (full CCW).		
7. CLOSE the DC OUTPUT BREAKERS on 24 VDC CHARGER 1A1 and 1A2	**8.8/9 CLOSED the DC OUTPUT BREAKERS on 24 VDC CHARGER 1A1 and 1A2.** **CUE: The breaker handles are up.**		
8. Verify CLOSED Bkr 5 on CDP-1A, Feeder to 24 VDC Battery Chargers 1A1 and 1A2	8.10 Verified CLOSED Bkr 5 on CDP-1A. CUE: The breaker handle is pointing to ON.		
9. CLOSE the AC INPUT BREAKERS on 24 VDC CHARGER 1A1 and 1A2	**8.11 CLOSED the AC INPUT BREAKERS on 24 VDC CHARGER 1A1 and 1A2.** **CUE: The breaker handles are up.**		

Task No.: 263030P0104

PLACE 24 VDC BATTERIES AND ASSOCIATED CHARGERS IN SERVICE

Performance Checklist	Standards	Sat	Unsat
10. Verify the GREEN AC ON INDICATING LIGHT on 24 VDC CHARGER 1A1 and 1A2 is illuminated	8.11.1.1 Verified the AC ON INDICATING LIGHTS were illuminated. CUE: The GREEN lights are illuminated.		
11. Verify that the voltmeters on 24 VDC CHARGER 1A1 and 1A2 are reading ~26.5 VDC.	8.11.1.2 Verified the voltmeters to be reading ~26.5 VDC. CUE: With a pen and the respective Voltmeters, point to ~ 27 VDC.		
12. Verify amps	8.11.1.3 Verified Ammeter on Charger 1A1 reading < 27.5 amps. CUE: With a pen and the respective Ammeter point to 22 amps.		
12. Verify annunciators.	8.11.1.4 Verified with the Control Room that Annunciators C-2/A-7 and C-2/B-7 are clear. CUE: The annunciators are clear.		
13. Test GROUND DETECTION indicating lights	10.1.1 Placed GND. DETECTION toggle switch on 24V Charger 1A1 to LAMP TEST and checked that the red GND DET indicating lights turned on. CUE: The Red GND DET indicating lights turn on.		
14. Test for grounds on 24 VDC CHARGER 1A1	10.1.2 Placed GND. DETECTION toggle switch on 24V Charger 1A1 to GND. DET and checked left red GND DET indicating light turned on and right red GND DET indicating light remained off. CUE: Left light ON, right light OFF.		
15. Test GROUND DETECTION indicating lights	10.2.1 Placed GND. DETECTION toggle switch on 24V Charger 1A2 to LAMP TEST and checked red GND DET indicating lights turned on. CUE: The Red GND DET indicating lights turn on.		

Task No.: 263030P0104

PLACE 24 VDC BATTERIES AND ASSOCIATED CHARGERS IN SERVICE

Performance Checklist	Standards	Sat	Unsat
16. Test for grounds on 24 VDC CHARGER 1A2	10.2.2 Placed GND. DETECTION toggle switch on 24V Charger 1A2 to GND. DET and checked right red GND DET indicating light turned on and left red GND DET indicating light remained off. CUE: Right light ON, left light OFF.		
NOTE to Examiner: Next step is performed in Cable Spreading Room (one floor up).			
17. Verify voltage indications on 24 VDC Power Panel DC-A to be ~26.5 VDC	8.15 Verified voltages on Panel DC-A to be ~ 26.5 VDC CUE: With a pen and the respective Voltmeter, point to ~ 26.7 VDC.		
18. Notify the CRS that task is completed.	The operator contacted the CRS and informed him that 1A1 and 1A2 24 VDC Battery Chargers and Batteries have been returned to service. CUE: The BOP operator acknowledges the report.		

Stop Time: _____ **Total Time: _____**

Task No.: 263030P0104

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to place 24 VDC batteries and associated chargers in service in accordance with Procedure 2.2.26, 24 VDC Electrical System. 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.

If being simulated in the 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.

General Conditions:

1. A refuel outage is in progress.
2. 1A1 and 1A2 24 VDC batteries have been replaced.

Initiating Cue(s):

The BOP operator has directed you to return the 1A1 and 1A2 battery chargers and associated 24 VDC batteries to service in accordance with Procedure 2.2.26, 24 VDC Electrical System. . All prerequisites have been completed or verified.

Notify the Control Room Supervisor when the 1A1 and 1A2 battery chargers and 24 VDC batteries have been returned to service.

Task No.: 200076A0504

Title: Conduct Alternate Rod Insertion (Vent Scram Air Header)

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: PLANT
2. Appropriate Trainee level: SO / RO / SRO
3. Evaluation Method: **Simulate**
4. Performance Time: 15 minutes
5. NRC K/A 2.1.30 (3.9/3.4); 295037 EA1.05 (3.9/4.0)

Directions to Examiner:

1. The candidate causes all the control rods to insert from outside the control room by depressurizing the scram air header.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. Check off either satisfactory or unsatisfactory performance. If Unsat state why in the notes section below.
4. Give the trainee Attachment 1.
5. Brief the trainee, and tell the trainee to begin.

Notes: _____

Title: Conduct Alternate Rod Insertion (Vent Scram Air Header)

Directions to Trainee:

When I tell you to begin, you are to conduct alternate rod insertion by venting the scram air header. 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.

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

General Conditions:

1. A failure of RPS and ARI to insert the control rods has occurred.
2. The Control Room operator has placed all keylock RPS test trip switches to TRIP.
3. All CRD HCU scram valves remain closed.
4. The TSC is not yet operational.
5. No ARMs are alarming.
6. The In-Containment Rad Monitors are reading 100 REM/HR.

General References:

1. Emergency Operating Procedure 5.8.3

General Tools and Equipment:

1. Crescent wrench (attached by wire lanyard at IA-1601).

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted **in bold**.

Task Standards:

1. The candidate isolates the air supply to the scram air header, removes a pipe plug with a wrench and then opens a manual valve which depressurizes the scram air header.
2. 100% of critical elements successfully completed without error.
3. 100% of safety and radiological work practices.

Title: Conduct Alternate Rod Insertion (Vent Scram Air Header)

Initiating Cue(s):

You have been assigned to conduct alternate rod insertion per Emergency Operating Procedure 5.8.3. The Control Room Supervisor directs you to manually vent the scram air header and to restore the scram air header when specifically directed to do so. Notify the CRS when the task is complete.

NOTE: Tell the trainee to begin.

Title: Conduct Alternate Rod Insertion (Vent Scram Air Header)

Start Time: _____

Performance Checklist	Standards	Sat	Unsat
1. **Close IA-985**	**Closed IA-985, SCRAM DISCHARGE VOLUME and SCRAM PILOT AIR SUPPLY ROOT (R-903-SE).** **CUE:** The handwheel is fully clockwise and the valve stem is down.		
2. Ensure IA-244 open	Ensured IA-244 open. **CUE:** The handwheel is fully counter clockwise.		
3. **Remove ¾" swagelock connector**	**Removed 3/4" swagelok female connector with 1/4" plug from IA-1601, PI-229 and PS-230 DRAIN line, utilizing the wrench attached by lanyard to IA-1601.** **CUE:** The 3/4" swagelok female connector with 1/4" plug is turning. **CUE**: The 3/4" swagelok female connector with 1/4" plug is removed.		
4. **Open IA-1601**	**Opened IA-1601, PI-229 and PS-230 DRAIN.** **CUE**: Valve handwheel is turning counter-clockwise. There is the sound of rushing air. **CUE**: The valve handwheel is fully counter clockwise.		

Title: Conduct Alternate Rod Insertion (Vent Scram Air Header)

Performance Checklist	Standards	Sat	Unsat
5. Inform Control Room venting is in progress.	Notified Control Room venting is in progress. **CUE**: When notified: • Acknowledge venting is in progress and DIRECT operator to stay on the line. • (After ~1 minute) report that all control rods are inserted and DIRECT restoration of the scram air header.		
6. **Close IA-1601**	**Closed IA-1601, PI-229 & PS-230 DRAIN.** **CUE**: The valve handwheel is fully clockwise.		
7. **Install 3/4" swagelok female connector with 1/4" plug on IA-1601**	**Installed and tightened the 3/4" swagelok female connector with 1/4" plug on IA-1601, PI-229 & PS-230 DRAIN.** **CUE**: The 3/4" swagelok female connector with 1/4" plug is in place and turning. **CUE**: The 3/4" swagelok female connector with 1/4" plug is tight.		
8. **Open IA-985**	**Opened IA-985, CRD SCRAM DISCHARGE VOLUME & SCRAM PILOT AIR SUPPLY.** **CUE**: The handwheel is fully counter clockwise and the valve stem is up		

Title: Conduct Alternate Rod Insertion (Vent Scram Air Header)

Performance Checklist	Standards	Sat	Unsat
9. Inform CRS the task is complete	Informed CRS the scram air header has been manually vented and the scram air header is restored. **CUE**: The CRS acknowledges the report.		

Stop Time: _____ **Total Time: _____**

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to conduct alternate rod insertion by venting the scram air header. 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.

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

General Conditions:

1. A failure of RPS and ARI to insert the control rods has occurred.
2. The Control Room operator has placed all keylock RPS test trip switches to TRIP.
3. All CRD HCU scram valves remain closed.
4. The TSC is not yet operational.
5. No ARMs are alarming.
6. The In-Containment Rad Monitors are reading 100 REM/HR.

Initiating Cue(s):

You have been assigned to conduct alternate rod insertion per Emergency Operating Procedure 5.8.3. The Control Room Supervisor directs you to manually vent the scram air header and to restore the scram air header when specifically directed to do so. Notify the CRS when the task is complete.

Note for Adams Package:

For scenario 2 only there is a final scenario file in the final approved Op test file and an as-given scenario 2 file which is in Adams as its own file. The other scenario ran was scenario 3 and scenario 1 was the spare for this exam.

Two crews (crew 1 and crew 3) failed to diagnose the dryer event properly and therefore created new critical tasks and different paths than expected by the licensee or NRC examiners during validation week and so the ES-D1 and ES-D2 forms are marked up accordingly (electronically) with two paths. Crew 2 took path one and crews 1 and 3 took path 2 with the new write-in critical tasks.

Facility: Cooper Nuclear Station Scenario No.: 1 (Spare) Op-Test No.: 1

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: Plant operating at 85% power (BCL).

Turnover: Continue startup to 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (BOP	Place Circulating Water Pump D in service (2.2.3)
2	N/A	R (ATC)	Raise Reactor Power using reactor recirculation (2.1.10)
3	RR17a	I (ATC) TS (SRO	RR Pump A runs back in speed on the power rise and must be locked out to halt to speed drop. (Abnormal Procedure 2.4RR). Enters TS LCO 3.4.1 because pump speeds vary by more than 5%.
4	RC08	I (BOP)	PCIS instrument causes RCIC-MO-16 to isolate. TS LCO 3.5.3, Condition A.
5	ED19c	C (BOP)	125V DC power panel AA-3 loses power. (Emergency Procedure 5.3DC125)
6	EG03	C (BOP) R (ATC)	H2 Gas leak in Generator (Abnormal Procedure 2.4 Gen) Reduce power using Recirculation Pump Flow (2.1.10)
7	N/A RP15	M (Crew) I (BOP)	Unit SCRAM due to Generator hydrogen leak (EOP 1A, 6A,7A) PCIS Group 6 failure. Required manual group isolation using radiation monitor switches out of operate.
8	RD15	C , (©) (ATC)	ATWS (6 rods) Manually insert control rods with RMCS (EOP 5.8.3)
9	FW18b MS02b	C , (©) (ATC)	FW Line B Break inside DW (transition to ECCS for RPV Level Control) 2.4MC-RF and 2.4PC.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (T)echnical Specifications, (©) CT

Initial Conditions: 85% power (BCL), “D” CWP out of service,

Turnover:

The “D” CWP is returned to service, 2.2.3 completed to step 5.5, and backwash completed. Raise power to 90% using reactor recirculation system.

Description:

BOP Operator places the 4th Circulating Water Pump in service per procedure 2.2.3 Circulating Water System Operation.

The ATC raises reactor power using Reactor Recirculation flow at least 5% power using procedure 2.1.10, Station Power Changes. During the power rise, RR Pump A runs back in speed requiring the ATC to stop the speed reduction by locking out the pump's scoop tube. Abnormal Procedure 2.4RR is entered. The CRS enters TS LCO 3.4.1, Condition B when RR pump speeds differ by more than 5%.

RCIC PCIS instrument failure causes RCIC-MO-16 steam supply valve to isolate. The instrument is repaired and the valve is reopened. RCIC is declared inoperable per TS 3.5.3.

The 125V DC Panel AA-3 loses power. Reactor Recirculation Pump A trips and the crew enters Procedures 2.4RR and 5.3DC125. Single loop operations are entered and effected loss of DC loads are shifted as needed.

The BOP operator responds to a H_2 Gas leak on the main generator. Abnormal procedure 2.4GEN-H2 will be entered requiring the operator to remove the generator from service due to excessive leakage.

The ATC is directed to scram the reactor as hydrogen pressure lowers to 30 psig. When the reactor is SCRAMMED 6 control rods fail to fully insert (ATWS). The SRO enters EOPs 6A and 7A. The ATC manually inserts control rods per EOP 5.8.3 using the reactor manual control system. Post scram the PCIS Group 6 isolation fails to actuate requiring the BOP to manually insert the isolation signal per operating procedures.

A small Feedwater line break occurs inside the drywell requiring the BOP operator to utilize ECCS systems to maintain reactor water level, and both the ATC and BOP operators take actions to restore RPV water level and containment parameters. The drywell requires containment sprays to maintain pressure within acceptable limits.

The scenario ends when Drywell pressure is being controlled and Reactor Water Level is restored to the normal band and all control rods are inserted.

Critical Task List

Critical Task	**During failure to scram conditions, insert control rods using one or more methods contained within Procedure 5.8.3 before addressing other tasks that detract from inserting control rods in an expeditious manner.**

Basis:
Achieving reactor shutdown is one of the primary goals of EOP 6A.

Critical Task	**Event 11- (BOP) Initiate Drywell spray when torus pressure exceeds 10 psig and before Pressure Suppression Pressure (PSP) Graph is exceeded.**

Basis:

Regarding drywell temperature, if operation of all available drywell cooling is unable to terminate increasing drywell temperature before the structural design temperature limit of 280°F is reached, drywell sprays are initiated to affect the required drywell temperature reduction status of the DSIL and adequate core cooling permitting. Spray operation effects a drywell pressure and temperature reduction through the combined effects of evaporative cooling and convective cooling.

Regarding drywell pressure, operation of drywell sprays reduces primary containment pressure by condensing any steam that may be present and by absorbing heat from the containment atmosphere through the combined effects of evaporative and convective cooling. Drywell sprays are initiated when torus pressure exceeds the Torus Spray Initiation Pressure (10# torus pressure) to preclude chugging the cyclic condensation of steam at the downcomer openings of the drywell vents. When a steam bubble collapses at the exit of the downcomers, the rush of water drawn into the downcomers to fill the void induces stresses at the junction of the downcomers and the vent header in Mark I containments and at the junction of the downcomers. Repeated application of such stresses could cause fatigue failure of these joints; thereby, creating a direct path between the drywell and torus. When drywell sprays are initiated, the resulting pressure reduction opens the vacuum breakers, drawing non-condensable from the torus back into the drywell.

This condition defines the Torus Spray Initiation Pressure. As the drywell atmosphere is purged to the torus and replaced by steam, torus pressure increases. The SCSIP is the lowest torus pressure which can occur when 95% of the non-condensable in the drywell have been transferred to the torus. Since the failure mode is based on fatigue failure, a precise time limit or pressure cannot be provided. Therefore, prompt initiation of drywell sprays is required based on existing EOP priorities.

Procedures used

2.2.3 Circulating Water System Operation (Normal)
2.1.10, Station Power Changes (Normal)
Annunciator 9-4-3/C-2 for scoop tube lockup (ARP)
2.4RR Abnormal for scoop tube lockup (AOP)
Annunciator 9-4-1/G-2, RCIC Steam line valve closure (ARP)
Annunciator 9-5-2/E-3 for loss of DC panel (ARP)
Annunciator 9-4-3/A-2 for loss of DC panel and RR pump trip (ARP)
5.3DC125 for DC 125 issues (EOP)
Annunciator B-2/B-4 for H2 leakage (ARP)
2.4GEN-H2 Abnormal for H2 leakage (AOP)
2.1.5 Scram (EOP)
EOP-1A
EOP 6A
EOP 7A
5.8.3 Alternate Rod Insertion (EOP)
2.4MC-RF, Condensate or Feedwater Abnormal (AOP)
2.4 PC (AOP)
EOP-3A
Manually insert PCIS per procedure 2.1.22.

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 1

Event Description: Place Circulating Water Pump D in service

Time	Position	Applicant's Action or Behavior
	BOP	Perform operator action of procedure 2.2.3, Circulating Water System, (Section 5.5) 5.5 Verifies pump has been backwashed per Section 9, (See turnover sheet). 5.6 Place and hold control switch for CIRC WATER PUMP to be started to START until pump starts and check following: 5.6.1 Discharge valve is opening and pump starts after valve has partially opened. 5.6.2 Pump motor current is < 218 amps. 5.6.3 Pump discharge pressure is within acceptable operating limits per Attachment 1. 5.7 Restore valves operated in Step 5.3.6 to full open. 5.8 Ensure ≥ 7 gpm bearing water flow being maintained as indicated on CW-FIS-351. 5.8.1 Annunciator A-4/C-3, CIRC WATER PUMP BRG WTR LOW FLOW, not alarming for pump started. 5.8.2 Verify sufficient gland water leakoff.
	Booth Operator	**ROLE PLAY: If requested as NLO to check CWP D gland water leakoff and bearing water report flow is normal.** **If River level is requested report 880 MSL.** **If CW Pump D discharge pressure is requested report 4 psig.**
	BOP	Informs CRS that D Circulating Water Pump is in service.
	CRS	Acknowledges D Circulating Water Pump in service.
		END OF EVENT

Op-Test No.: 1	**Scenario No.:** 1	**Event No.:** 1
Event Description: Place Circulating Water Pump D in service		

Time	**Position**	**Applicant's Action or Behavior**
	Notes	
	Proceed to the next event when CRS directs power rise.	

Op-Test No.: 1		**Scenario No.:** 1 **Event No.:** 2
Event Description: Raise Reactor Power using Reactor Recirculation		
Time	**Position**	**Applicant's Action or Behavior**
	CRS	Directs the ATC to raise reactor power to 90% using procedure 2.1.10, Station Power Changes (Section 6)
NOTE to Examiners: RR pump speed is changed by turning small knob CW on RRFC-SIC16A and RRFC-SIC-16B controllers on Panel 9-4-3.		
	ATC	Raise reactor power using procedure 2.1.10, Station Power Changes (Section 6) 6.1 Step is N/A 6.2 Step is N/A 6.3 Step is N/A. 6.4 Raise power by raising RR pump flow as follows: 6.4.1 IF thermal power ≤ 2413 (or ≤ 2375 if power limited to 2381 MWt), THEN raise power by raising RR pump flow. 6.4.1.1 Maintain rate of power change consistent with system capabilities as determined by Load Dispatcher and TG limits. 6.4.2 Step is N/A.
NOTE to Lead Examiner: When power change is underway direct Booth Operator to commence with malfunction in next event.		
		END OF EVENT Proceed to the next event at direction of the lead examiner.
	Notes	

Op-Test No.: 1		**Scenario No.:** 1 **Event No.:** 3
Event Description: RR Pump A controller causes RR Pump A to run down in speed.		
Time	**Position**	**Applicant's Action or Behavior**
	Booth Operator	**When directed by the Lead Examiner Insert Trigger 2 (RR 17a) RR Pump A run back towards 55% speed.** **(Note FW16b goes active on this trigger but it takes several minutes for hotwell level to lower appreciably for the next event.)**
	ATC	Recognize RR Pump A lowering in speed. Press Scoop Tube Lockout. Respond to alarm 9-4-3/C-2, RRMG A SCOOP TUBE LOCKOUT.
	CRS	Enter Procedure 2.4RR, and assign actions to ATC.
	ATC	Enter 2.4RR, Attachment 4 1.1 Operate scoop tube locally per Procedure 2.2.68.1; or 1.1.1 Trip affected RRMG; or 1.1.2 Enter Procedure 2.1.5. 2. If RR pump tripped, THEN enter Attachment 1 3. Ensure requirements of SR 3.4.1.1 are met as soon as practical.
	CRS	If greater than 5% speed mismatch, Enter LCO 3.4.1 Condition B-Satisfy requirement of the LCO. Completion Time 24 hours.
NOTE to Examiners: If RR pump speeds vary more than 5%, the CRS may direct RR B speed lowered to match RR Speed A.		
	Booth Operator	**If directed to adjust RR A flow locally, use Remote Function RR05.**
		END OF EVENT Proceed to the next event at direction of the lead examiner.

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 3

Event Description: RR Pump A controller causes RR Pump A to run down in speed.

Time	Position	Applicant's Action or Behavior
	Notes	

Op-Test No.: 1	**Scenario No.:** 1	**Event No.:** 4
Event Description: RCIC PCIS inadvertent isolation		

Time	Position	Applicant's Action or Behavior
	Booth Operator	**When directed by the Lead Examiner, Trigger 4, RC08 (Inadvertent Group 5 isolation)**
	BOP	Respond to alarm 9-4-1/G-2 RCIC-MO-15/16 NOT FULL OPEN Report RCIC-MO-16 has closed.
	ATC	Report Panel 9-5 PCIS lights out for PCIS Group 5.
	CRS	Refer to TS LCO 3.5.3, Condition A Verify HPCI operable in 1 hour. Restore RCIC to operable status within 14 days.
	Booth Operator	**ROLE PLAY: When contacted as Work Control, report you will put a team together to look into the RCIC isolation.** **In 5 minutes call the CRS and report the RCIC steam line supply high flow instrument RCIC- DPIS 83 has failed.**
	CRS	Refer to TS 3.3.6.1 Function 4a for Steam line high flow instrument failure. Enter Condition A, place in trip condition within 24 hours.
		END OF EVENT Proceed to the next event at direction of the lead examiner.
	Notes	

Op-Test No.: 1		**Scenario No.:** 1 **Event No.:** 5
Event Description: Loss of 125V DC Panel AA-3		
Time	**Position**	**Applicant's Action or Behavior**
	Booth Operator	**ROLE PLAY: When directed by the Lead Examiner insert Trigger 3 (Loss of 125V DC AA-3).**
	ATC	Respond to alarms 9-4-3/A-2, RRMG A BKR 1CN TRIP 9-5-2/E-3, ARI & ATWS RPT LOGIC POWER FAILURE. Determine loss of Panel AA-3.
	CRS	Enter 2.4 RR,REACTOR RECIRCULAITON ABNORMAL, and 5.3DC125, LOSS OF 125 VDC. Assign 2.4RR actions to the ATC. Assign 5.3DC125 actions to the BOP.
	ATC	Per 2.4RR 1.1 Step is N/A. 1.2 For tripped RR pump, ensure RRMG Set A(B) GEN FIELD BKR open. 1.2.1 Step is N/A. 1.3 For tripped RR pump, close RR-MO-53A(B), PUMP DISCHARGE VLV. 1.4 Continue with remaining steps in this attachment while waiting to open RR-MO-53A(B). 1.5 AFTER RR-MO-53A(B) has been closed for 5 minutes, THEN open valve.
	ATC	Enter 2.2.68.1 single loop operations as directed by 2.4RR. 1. SINGLE LOOP OPERATION **NOTE –** Core flow > 29.5×10^6 lbs/hr ensures backflow through inactive loop is maintained.

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5

Event Description: Loss of 125V DC Panel AA-3

Time	Position	Applicant's Action or Behavior
		1.1 Raise core flow to > 29.5×10^6 lbs/hr, if possible. 1.2 Ensure reactor power and core flow have stabilized outside Stability Exclusion Region. 1.2.1 IF reactor power and core flow are operating in Stability Exclusion Region, THEN enter Procedure 2.4RR immediately. 1.3 Steps are N/A. 1.4 Determine if reverse flow summer is functioning as follows: 1.4.1 IF Annunciator 9-4-3/E-3 (9-4-3/E-7), RECIRC LOOP A (B) OUT OF SERVICE, is alarming, THEN summer is functioning properly. 1.4.2 IF indicated core flow is approximately equal to difference between NBI-FI-92A and NBI-FI-92B, JP LOOP FLOW, THEN summer is functioning properly. 1.5 Steps are N/A. 1.6 Within 24 hours of entry into single loop operations, perform following in sequential order: **NOTE –** Adjusting AGAFs for single loop operation before adjusting the APRM Downscale trip setpoints to 13.5% makes the APRM downscale trip function inoperable. 1.6.1 Ensure APRM Downscale trip setpoints have been adjusted to 13.5% per Procedure 6.APRM.306. 1.6.2 Notify SM to reset allowable limit for APRM Flow Biased scram setpoint (LCO 3.3.1.1 Table 3.3.1.1-1 Function 2b) to single loop operating limit per LCO 3.4.1.c. 1.6.3 Trigger a Periodic Case. 1.6.4 Adjust AGAFs per Procedure 10.1 for single loop operation. 1.6.5 Complete thermal limits checks attachment of Procedure

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5

Event Description: Loss of 125V DC Panel AA-3

Time	Position	Applicant's Action or Behavior
		6.LOG.601.
	CRS	Enter TS LCO 3.4.1, Condition B for tripped RR pump.
	BOP	Per 5.3DC125 1.1 Ensure RR Pump A drive motor breaker has tripped. 1.3 Secure SAC 1A 1.4 If CRD Pump A running direct building operator to trip 480V breaker.
	Booth Operator	**If directed to trip SAC 1A, insert RF IA14 to STOP.** **If directed to open breaker for SAC 1A, insert RF IA07 to OPEN.** **If directed to start SAC 1B insert RF IA15 to START.**
		END OF EVENT Proceed to the next event at direction of the lead examiner.
	Notes	

Op-Test No.: 1	**Scenario No.:** 1	**Event No.:** 6
Event Description: H_2 Gas leak in Generator		

Time	Position	Applicant's Action or Behavior
	Booth Operator	**At the direction of the lead examiner, insert Trigger 1 (EG03) Generator Hydrogen leak.**
	BOP	Respond to annunciators: • B-2/B-4, GENERATOR HYDROGEN LOW PRESSURE.
	BOP	Inform the CRS that Hydrogen Pressure in the Main Generator is lowering and entry into 2.4GEN-H2 is required. Enters ABNORMAL PROCEDURE 2.4GEN-H2 GENERATOR OR HYDROGEN ABNORMAL 4.1 Record current time and date. 4.2 Concurrently refer to Attachment 4, ABNORMAL H_2 GAS PRESSURE OR H_2 LEAKAGE 4.3 Obtain Control Room Supervisor review/concurrence. Perform Attachment 4 as follows: 1. Make announcement for personnel to stay clear of Turbine Building due to potential hydrogen leak. 2. IF H_2 is leaking into Turbine Building, THEN direct a Non Licensed Operator to perform steps 2.1 through 2.3 3. **IF generator pressure < 30 psig, THEN inform the CRS and ATC the following is required:** 3.1 **IF Annunciator 9-5-2/C-4 is clear, THEN SCRAM and enter Procedure 2.1.5.** 3.2 Trip Main Turbine. 3.3 IF reactor was <u>not</u> scrammed, THEN enter Procedure 2.2.77.

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6

Event Description: H_2 Gas leak in Generator

Time	Position	Applicant's Action or Behavior
		4. Step is N/A.
	ATC	Update crew of ownership of Scram action parameter of 2.4GEN-H2.
	CRS	Direct the Actions of 2.4 GEN-H2, per attachment 4 as follows: Direct BOP Operator to • Update Crew at 5 psig increments as pressure lowers. • 45 psig - Generator capability limit shifts to 30 psig curve. Inform the Crew that: **SCRAM is required when Generator H_2 pressure reaches < 30 psig.** • Prepare to reduce power per Procedure 2.1.10 - rapid power reduction may be required. • Brief Procedure 2.1.5. • Assign Operator to continue Procedure 2.4GEN-H2 action post-Scram. • Discuss shutdown resources without Fire Brigade. • Request Operations support from Training or WCC. • Contact RP for H_2 monitoring in Turbine Building. • Make announcement for personnel to stay clear of Turbine Building. • Assign Operator to standby for isolating H_2. • Review Flammable and Other Hazard EALs for applicability.
	Booth Operator	**ROLE PLAY-If sent to check H_2-PI-13 locally, report pressure is 135 psig.** **If sent to check H_2-PI-14 (near vacuum priming tank) report hydrogen pressure as 50 psig.** **If directed to close H_2-106 and H_2-108 in the Hydrogen House, wait 3 minutes and report the valves are closed.**
		END OF EVENT Crew will transition to the next event (SCRAM) as hydrogen pressure approaches 30 psig as listed above.
	Notes	

Op-Test No.: 1	**Scenario No.:** 1	**Event No.:** 7
Event Description: Unit SCRAM due to low Generator Hydrogen pressure.		

Time	Position	Applicant's Action or Behavior
	CRS	Directs ATC to perform actions 2.1.5 and enters EOP1A
	ATC	Perform Attachment 1 mitigating task scram actions of 2.1.5 as follows: 1. MITIGATING TASK SCRAM ACTIONS 4.1 Press both RX SCRAM buttons. 4.2 Place REACTOR MODE switch to REFUEL. 4.3 Step is N/A. 4.3.1 Step is N/A. 4.3.2 Step is N/A.
	ATC	Perform Attachment 2 Reactor Power Control of 2.1.5 as follows: 1 REACTOR POWER CONTROL 1.1 Ensure REACTOR MODE switch is in SHUTDOWN. 1.2 Verify all SDV vent and drain valves are closed. **NOTE –** RR pump(s) will be tripped if on Normal Transformer or if ARI/RPT has automatically initiated. 1.3 Ensure operating RR pumps have run back to 22% speed. **NOTE –** Steps 1.4 and 1.5 may be performed concurrently. 1.4 Verify all control rods are fully inserted. 1.4.1 If necessary, insert control rods as directed by CRS. 1.5 Observe nuclear instrumentation and perform following: 1.5.1 Insert SRM detectors.

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 7

Event Description: Unit SCRAM due to low Generator Hydrogen pressure.

Time	Position	Applicant's Action or Behavior
		1.5.2 Insert IRM detectors. 1.5.3 Change APRM recorders to IRMs. 1.5.4 Range IRMs on scale. Check reactor power is lowering
	ATC	Reports NOT all rods inserted during performance of 1.4 of 2.1.5. 6 rods did not fully insert.
	BOP	Trip the main turbine.
	CRS	Enters EOP 1A on Low RPV Level and then transfers to EOP 6A and 7A because the reactor is not shutdown under all conditions without Boron.
	CREW	Report failure of PCIS Group 6 isolation. Enter Procedure 2.1.22. 1.1 IF manual insertion of Group 6 Isolation required, THEN perform 1.1.1 or 1.1.2 1.1.1 To cause full Group 6 Isolation, perform following: 1.1.1.1 Place Mode switch for RMP-RM-452A, RX BLDG VENT RAD MON CH A, to TRIP TEST. 1.1.1.2 Place Mode switch for RMP-RM-452B, RX BLDG VENT RAD MON CH B, to TRIP TEST. 1.1.1.3 Place Mode switch for RMP-RM-452A to OPERATE. 1.1.1.4 Place Mode switch for RMP-RM-452B to OPERATE. 1.1.2 To cause full Group 6 Isolation, perform following: 1.1.2.1 Place Mode switch for RMP-RM-452C, RX BLDG VENT RAD MON CH C, to TRIP TEST. 1.1.2.2 Place Mode switch for RMP-RM-452D, RX BLDG VENT RAD MON CH D, to TRIP TEST. 1.1.2.3 Place Mode switch for RMP-RM-452C to OPERATE.

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 7

Event Description: Unit SCRAM due to low Generator Hydrogen pressure.

Time	Position	Applicant's Action or Behavior
		1.1.2.4 Place Mode switch for RMP-RM-452D to OPERATE.
		END OF EVENT The next event is already active (ATWS).
	Notes	

Op-Test No.: 1	**Scenario No.:** 1	**Event No.:** 8
Event Description: ATWS		

Time	Position	Applicant's Action or Behavior
	CRS	Direct ATC to reset the reactor scram and ARI and insert control rods per Procedure 5.8.3, Alternate Rod Insertion.
	ATC	Insert Control Rods per 5.8.3. 4. ALTERNATE ROD INSERTION 4.1 Perform Attachment 1, Alternate Rod Insertion Methods Flowchart, using the 11" x 17" color-enhanced flowcharts provided in the Control Room. 4.2 Under ATWS conditions, control rod insertions should start in the center of the core, or for partial ATWS conditions, the center of the region with lowest control rod density, and proceed to every other control rod in an outward spiral pattern. All control rods should be fully inserted, starting from their post ATWS notch position, in a continuous fashion to the fully inserted position.
	Critical Task	**During failure to scram conditions, insert control rods using one or more methods contained within Procedure 5.8.3 before addressing other tasks that detract from inserting control rods in an expeditious manner.**
	BOP	Maintain Reactor Pressure Stabilize RPV pressure below 1050 psig using main turbine BPVs and RPV Pressure Control Systems (TABLE 12) as necessary per step FS/P-5 of EOP 6A. Table 12 RPV PRESSURE CONTROL SYSTEMS EOP 5.8.12 ○ HPCI with suction from ECST if available (defeat high area temperature isolation interlocks and high suppression pool water level suction transfer logic if necessary) ○ RCIC with suction from ECST if available (defeat low RPV pressure, high RPV water level, high exhaust pressure, and high area temperature isolation interlocks if necessary) ○ RFPT A ○ RFPT B ○ Main steam line drains

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 8

Event Description: ATWS

Time	Position	Applicant's Action or Behavior
		○ SRVs only with PC water level above 6 ft (restore IA/N2 supply if necessary) ○ IF continuous IA/N2 supply to SRV accumulators becomes unavailable: ○ THEN perform following: • Pressure stabilization (FS/P-5): 1. Place each SRV control switch in AUTO 2. Prevent Low-Low Set actuation ○ Depressurization (FS/P-8 and FS/P-10): 1. Depressurize with sustained SRV opening ○ RWCU in blowdown mode (only if no boron has been injected into RPV) ○ AOG 3rd stage air ejector and preheater ○ Gland sealing steam ○ Steam jet air ejectors ○ RWCU with filters bypassed (defeat isolation interlocks if necessary) • SRVs from ADS only with PC water level above 6 ft (restore IA/N2 supply if necessary)
	CRS	Direct BOP to inhibit ADS.
	BOP	Perform actions for RPV Level Control EOP7A 1. Inhibit ADS (FS/L-3) 2. IF any main steam line is not isolated THEN start defeating low RPV water level interlocks if necessary, EOP 5.8.20 3. Is reactor power above 3% or cannot be determined (FS/L-4) 4. FS/L5, 6, 7, and 8 NA 5. FS/L9 Maintain RPV water level between -183 in. and +54 in. using Outside Shroud Injection Systems (TABLE 13)

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 8

Event Description: ATWS

Time	Position	Applicant's Action or Behavior
	ATC	Upon insertion of all control rods inform the CRS and continue in 2.1.5 post scram activities.
	CRS	Exit EOPs 6A and 7A and re-enter EOP 1A
		END OF EVENT Proceed to the next event at direction of the lead examiner.
	Notes	

Op-Test No.: 1	**Scenario No.:** 1	**Event No.:** 9
Event Description: FW Line B Break Inside the Drywell		

Time	Position	Applicant's Action or Behavior
	Booth Operator	**When directed by lead examiner, activate trigger 5 (FW leak line break inside primary containment and RCIC flow controller failure).**
	CRS	Direct the actions of 2.4MC-RF, CONDENSATE AND FEEDWATER ABNORMAL Determine that the "B" Feedwater line has failed and RCIC will need to be used to restore Reactor Water Level. Enter EOP 3A, Primary Containment Control and direct actions. Direct Drywell FCUs placed in OVERRIDE.
NOTE to Examiners: HPCI injects into feedwater Line B. (Failure is in FW line B)		
	ATC	Places Drywell FCUs in OVERRIDE as directed. Perform the actions of 2.4MC-RF, CONDENSATE AND FEEDWATER ABNORMAL as follows: 4.1 If system piping <u>not</u> intact, perform following: 4.4.1 If break is in Turbine Building, concurrently enter Procedure 5.1BREAK. 4.4.2 If break is endangering personnel or equipment necessary for safe operation: 4.4.2.1 Concurrently enter Procedure 2.1.5. 4.4.2.2 Ensure RFPs tripped. 4.4.2.3 Ensure RFP discharge valves closed. 4.4.2.4 At a RFPT/RVLC HMI, perform following: 4.4.2.4.1 Select RFPT-1A or RFPT-1B System.

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 9

Event Description: FW Line B Break Inside the Drywell

Time	Position	Applicant's Action or Behavior
		4.4.2.4.2 Select STARTUP VALVE screen. 4.4.2.4.3 Press EMER CLOSE button. 4.4.2.4.4 Confirm pop-up screen. 4.4.2.5 Ensure condensate booster pumps tripped. 4.4.2.6 If necessary, trip condensate pumps. 4.4.3 Notify Plant personnel to stay clear of affected area via gaitronics.
	CREW	Determine feedwater leak in FW Line B.
	BOP	Secure HPCI per the Hard Card.
	CREW	Update Group 6 isolation.
	BOP	Take drywell pressure as critical parameter and make periodic updates to the crew as it rises.
	Critical Task	**Initiate Drywell spray when torus pressure exceeds 10 psig and before Pressure Suppression Pressure (PSP) Graph is exceeded.**
	CRS	Direct transfer of reactor level control from Condensate/Feedwater to RCIC.
	BOP	When RFPs/condensate booster pumps are tripped, use RCIC per Procedure 2.2.67.1 to maintain RPV level.
	BOP	Monitor and control PC pressure below 1.84 psig using containment pressure control systems, EOP 5.8.17 (PC/P-1). Before torus pressure reaches 10 psig Spray Torus (PC/P-2). When torus pressure exceeds 10 psig Spray the Drywell (PC/P-3) maintain drywell pressure between +2 - +10 psig. Monitor average drywell temperature, EOP 5.8.10, and control below 150°F using available drywell cooling (DW/T-1).

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 9

Event Description: FW Line B Break Inside the Drywell

Time	Position	Applicant's Action or Behavior
		When average drywell temperature cannot be maintained below 150°F, Operate all available drywell cooling (defeat isolation interlocks if necessary (DW/T-2). Before average drywell temperature reaches 280°F Spray the Drywell (DW/T-4). Monitor and control torus water level between +2 in. and -2 in. (refer to SOP 2.2.69.3 prior to discharging water) (SP/L-1). Monitor average torus water temperature, EOP 5.8.9, and control below 95°F using available suppression pool cooling (SP/T-1).
		END OF EVENT When all control rods have been inserted, RPV level and drywell pressure are being controlled within desired band, stop the scenario as directed by the Lead Examiner.
	Notes	

Simulator Setup

Initialize the simulator in IC 16 (BOL) **(Protected IC 231)**

Triggers and Malfunctions

E1 – EG03 at 1.5% with 4.5 minute ramp. (Event 6)
E2 – RR17a 55% with 2 minute ramp. (Event 3)
E3 – ED19C Loss of 125v DC Panel AA-3. (Event 5)
E4 – RC08, Inadvertent RCIC isolation (Event 4)
E5 – FW18b, 30% on a 3:30 ramp rate,
MS02b, 12% on a 3:30 ramp rate and 5:00 time delay. (Event 9)
E6 – None
E7 – Ia15 Station Air Compressor local start.
E9– None
E10– None

RD15, Failure of control rods to scram-Active (02-27, 06-15, 14-31, 18-27, 22-07, 22-39) (Event 8)
RP15 PCIS Group 6 fails to actuate on low RPV level (Active) (Event 7)

Overrides
None

Panel Set-up
- Mark Tendamatic plaque on Board B with A-B-C
- Ensure PMIS IDTs are blank.
- Place the Startup BOL Rod Sequence Book on Panel 9-5.
- Remove “D” Circulating Water Pump from service.
- Ensure Station Air Compressor A running and B secured.
- Ensure CRD Pump A is operating.

Procedures Needed
- Copy of 2.2.3 Circulating water System marked up to step 5.5, and indicate section 9 “Backwash” has been completed.

Tags Hung

None

Parameter Monitoring:
Monitor RPV Pressure, Drywell pressure and RPV level.

Turnover Sheet:

Plant Status: The plant is operating at approximately 85% at the beginning of the current fuel cycle.

Risk: Green

Activities in Progress:

- Preparation for Startup of D Circulating Water Pump to support startup. Procedure 2.2.3 is completed through step 5.5, and backwash is complete per section 9.0.

LCOs in effect: None

Equipment out of service: None.

Activities for the Shift:

- Place D CWP in service to support continued startup.

NOTE: This is NOT the first power rise since the outage.

- Raise power to 90% this hour using Recirculation flow.

Facility: Cooper Nuclear Station Scenario No.: 2 Op-Test No.: 1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: 100% power, EOL, no equipment out of service.

Turnover: Lower power to 95% for HPCI Test. Following HPCI Test return to 100% power. 6.HPCI.103 completed to Step 4.13.

Event No.	Malf. No.	Event Type*	Event Description
1	SW04	C (BOP) TS (SRO)	RHRSW Pump trips when started. (2.2.70) The SRO addresses Tech Spec 3.7.1 Condition A for one pump INOP
2	N/A	N (BOP)	Place RHR Loop B in Suppression Pool Cooling (2.2.69.3)
3	N/A	R (ATC)	Lower Power with Reactor Recirculation (2.1.10)
4	HP12	N (BOP) TS (SRO)	Perform HPCI Full Flow Test (6.HPCI.103) Enters Tech Spec 3.5.1C and declares HPCI INOP
5	RD04a	I (ATC)	In Service CRD FCV fails closed.
6	RR26c RR26d	I (BOP) TS (SRO)	LIS-72C and LIS-72D fail downscale. RCIC initiates. (Abnormal Procedure 2.4CSCS) LCO 3.5.3 Condition A.
7	IA05	C (BOP)	Instrument Air dryer plugs. (Abnormal Procedure 5.2AIR)
8	RR50A RR10A, RR11A	C (ATC)	Reactor Recirculation Pump high Vibration (ARP) Recirculation Pump Seal Failure (ARP) (Abnormal Procedures 2.4RR and 2.4PC)
9	RR31A RD01	M © (All) C © (ATC)	LOCA – RR Suction Line Break (EOP 1A, 3A) Scram Discharge Volume Drain Vlv. Fails to close

10	O/R	C © (BOP)	RHR Loop A Drywell Spray Valves de-energize.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (T)echnical Specifications, (©) CT			

Initial Conditions: 100% power, EOL, HPCI INOP for testing.

Turnover:

Lower power to 95% for HPCI Test. Following HPCI Test return to 100% power. 6.HPCI.103 completed to step 4.13

Description:

RHR Suppression Pool cooling is placed into service in preparation for the HPCI run. RHR Service Water Booster system is started and then RHR is placed into service.

The B RHRSW Pump trips when B loop of RHRSW is placed in service per Procedure 2.2.70, RHR Service Water Booster Pump System, to support Suppression Pool Cooling. The other pump in the loop is started per procedure. The CRS addresses Tech Spec LCO 3.7.1 and declares the tripped pump inoperable.

The BOP Operator places B Loop of RHR in Suppression Pool Cooling operation to support the HPCI Full Flow Test per 2.2.69.3, RHR Suppression Pool Cooing and Containment Spray.

The ATC reduces reactor power using reactor recirculation flow to 95% reactor power in preparation for the HPCI Full Flow Test per 2.1.10 Station Power Changes.

The BOP Operator performs the HPCI Full Flow Test per 6.HPCI.103. At step 4.16 the test fails and the SRO addresses Tech Spec 3.5.1C and declares HPCI INOP.

The in-service CRD FCV fails closed requiring the ATC to enter Abnormal Procedure 2.4CRD which requires shifting FCVs per procedure 2.2.8.

The BOP responds to alarms 9-3-2/A-5, 9-3-2/B-5 and 9-4-1/A-1. RCIC starts and must be secured per Abnormal Procedure 2.4CSCS. The SRO enters TS LCO 3.5.3, Condition A for RCIC being inoperable.

The BOP responds to alarm A-4/A-5, CONTROL AIR LOW PRESSURE, due to instrument air dryers plugging. The BOP enters Abnormal Procedure 5.2AIR and opens a motor operated valve that bypasses the air dryer. Once the other air dryer train is placed in service the bypass valve can be closed.

The ATC responds to high vibration on the “A” Reactor Recirculation Pump per alarm 9-4-3/C-3 and begins to reduce recirculation pump speed to reduce vibrations. The vibration continues and the Recirculation Pump seals fail resulting in a LOCA inside the Drywell. The pump is secured and isolated and the primary containment is vented with Standby Gas Treatment. After a time delay the RR suction pipe breaks. The SRO enters EOP 1A and directs the ATC to SCRAM the reactor then enters EOP 3A to address containment pressure issues.

During the SCRAM recovery, one of the SDV drain valves fails to close resulting in a primary system leaking into secondary containment. The ATC recognizes this and closes the valve using the control switch on Panel 9-5 and reports the action to the SRO.

The SRO directs the BOP operator to utilize Drywell Sprays and control drywell pressure between 2 psig and 10 psig per EOP 3A. If the operator fails to control drywell pressure the valves will NOT close resulting in a negative pressure in primary containment.

The scenario ends when the primary containment pressure is being controlled in band (+2 to +10 psig) as directed by the SRO and Reactor water level is in the normal range.

Critical Task List

Critical Task	**Event 9- (ATC) Isolate primary system discharging into secondary containment before any Max Safe Operating Limit is reached.** **NOTE to Examiners: The SDIV drain valve (AO-33) on the south volume fails to isolate when required post scram.**

Critical Task	**Event 9 – (BOP) Initiate Drywell Spray prior to Drywell pressure exceeding the Pressure Suppression Pressure (PSP) graph.** **Note to Examiners: Either Loop of RHR may be used for Torus Spray and Drywell Spray. Only A Loop of RHR may be used for Torus cooling.**

Critical Task	**Event 10 – (BOP) Secure RHR Loop A drywell sprays or lower Loop B sprays prior to Drywell Pressure reaching negative pressure.** **NOTE to Examiners: During performance of Drywell Sprays using procedure 2.2.69.3 during execution of EOP 3A if the operator fails to recognize DW Spray valves have lost power the valves will fail to close resulting in negative DW pressure and challenging PC Integrity.**

Procedures used

2.2.70, RHR Service Water Booster Pump System (Normal)
Annunciator 9-4-3/A-2 or 9-3-3/D-1 for RHR Service Water Pump trip (ARP)
2.2.69.3, RHR Suppression Pool Cooling and Containment Spray (Normal)
2.1.10, Station Power Changes (Normal)
6.HPCI.103, HPCI IST AND 92 DAY TEST MODE SURVEILLANCE OPERATION (Normal)
Annunciator 9-5-2/E-6, CRD Flow Control Valve fails closed. (ARP)
2.4CRD, place standby CRD Flow Control Valve into service. (AOP)
Annunciator 9-3-2/A-5, reactor low-low level due to LIS failure (ARP)
Annunciator 9-3-2/B-5, reactor low-low level due to LIS failure (ARP)
Annunciator 9-4-1/A-1, RCIC initiation due to LIS failure (ARP)
2.4CSCS, Inadvertent ECCS Initiation due to LIS failure (AOP)
Annunciator A-4/A-5 for instrument air dryer plugging (ARP)

5.2AIR for instrument air dryer plugging (AOP)
Annunciator 9-4-3/C-3 for RR pump high vibration (ARP)
Annunciator 9-4-3/A-3 for RR pump seal failure (ARP)
2.4RR for RR pump seal failure (AOP)
2.4PC for RR pump seal failure (AOP)
2.2.68.1, Reactor Recirculation System Operations for single loop operation (Normal)
2.1.5, Scram (EOP)
EOP-1A
EOP-3A
2.2.69.3, RHR Suppression Pool Cooling and Containment Spray to spray the torus and drywell (Hard Card)

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 1
Event Description: RHRSWBP trips		
Time	**Position**	**Applicant's Action or Behavior**
NOTE to Examiners: SWB Pump B or D will trip shortly after starting.		
	Booth Operator	**Allow the SWBP to run for a couple of seconds before tripping the first one started. Insert Trigger 10 for SWBP B or Trigger 11 for SWBP D.**
	BOP	Place RHRSW system B in service per 2.2.70 5.2.1 Place and hold SWBP B or D switch to START until pump starts. 5.2.2 At Panel 9-3, check SWBP B or D AMPS are normal. 5.2.3 At Panel 9-3, check SW-MO-89B, HX-B SW DISCH VLV, opens. Respond to alarm 9-3-3/C-1 (Pump B) or 9-3-3/D-1 (Pump D). 2.3 Start SWBP B(D), as required, per Procedure 2.2.70. Respond to alarm 9-3-3/A-1 (Pump B) or 9-3-3/B-1 (Pump D). 2.3 Start SWBP B(D), as required, per Procedure 2.2.70.
	Booth Operator	**ROLE PLAY: If contacted as the E Shop to investigate the SWBP trip, wait 5 minutes and report a bad overload/ground relay in the start circuit is the cause.**
	Booth Operator	**After the E Shop report, call the CRS as AOM Shift and direct the B Loop of RHRSW be placed into service.**
	CRS	Direct BOP to place the other RHRSW pump in service per 2.2.70.
	CRS	Refers to Tech Spec 3.7.1 Condition A, One RHRSWB Pump inoperable. Action A.1 Restore RHR suppression pool cooling subsystem to OPERABLE status. Time 30 Days to restore
	BOP	5.2.1 Place and hold SWBP B or D switch to START until pump starts. 5.2.2 At Panel 9-3, check SWBP B or D AMPS are normal. 5.2.3 At Panel 9-3, check SW-MO-89B, HX-B SW DISCH VLV, opens.

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 1
Event Description: RHRSWBP trips		
Time	**Position**	**Applicant's Action or Behavior**
		5.1.4.1 Flow on SW-FI-132B, SW FLOW, between 2500 and 4000 gpm. 5.1.4.2 SWBP B or D AMPS ≤ 136 amps. 5.1.5 Ensure differential pressure on SW-DPI-359B, RHR HX B SW SIDE DIVIDER PLATE DIFFERENTIAL PRESSURE (R-903-B RHR HX Room), ≤ 17.0 psid. 5.1.5.1 Record SW-DPI-359B ΔP (R-903-B RHR HX Room) in Narrative Logs
	Booth Operator	**When requested as NLO to report differential pressure at step 5.2.5 of SW 2.2.70, respond it indicates 5 psid. (≤17 psid is procedurally acceptable)**
		END OF EVENT
	Notes	
	Proceed to the next event when CRS directs SPC placed into service..	

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 2
Event Description: Place RHR Loop B in Suppression Pool Cooling (Procedure 2.2.69.3)		

Time	Position	Applicant's Action or Behavior
	CRS	Directs BOP to place RHR Loop B in Suppression Pool Cooling per 2.2.69.3.
	Booth Operator	**ROLE PLAY: When contacted, report suction line drain flush for hot spots is not required.**
	BOP	Contact ALARA to determine if suction line drain flush for hot spots is needed. Ensure RHR Subsystem B in Standby Status per Procedure 2.2.69. Notify Radiation Protection of RHR startup. IF RHR Subsystem B is being placed in suppression pool cooling to support non-emergency evolutions, THEN perform Section 3 concurrent with this section. 3.1.2 Initiate 6.LOG.601 Torus Average Temperature and Drywell Bulk Average Temperature Log Attachment for testing which adds heat to the suppression pool.
NOTE to Examiners: Annunciator 9-3-1/G-1, ADS AUX COOLING INTERLOCK, is an expected alarm when starting an RHR pump.		
	BOP	Initiate Suppression Pool Cooling: 8.23 Open RHR-MO-39B, SUPPR POOL COOLING/TORUS SPRAY VLV 8.25 Start RHR Pump B or D. 8.26 Throttle open RHR-MO-34B, SUPPR POOL COOLING INBD THROTTLE VLV, to obtain rated cooling flow or as directed by Control Room Supervisor 8.27 Ensure RHR-MO-16B (min flow valve) closed. 8.28 Perform one of the following: 8.28.1 Close CM-38, LOOP B INJECTION LINE PRESSURE MAINTENANCE SHUTOFF (R-958-SW). 8.28.2 Maintain RHR Subsystem B pressure greater than

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 2
Event Description: Place RHR Loop B in Suppression Pool Cooling (Procedure 2.2.69.3)		
Time	**Position**	**Applicant's Action or Behavior**
		Condensate Transfer System pressure to prevent filling Torus. 8.29 Throttle closed RHR-MO66B, HX BYPASS VLV, to obtain desired cooling rate.
		END OF EVENT
	Notes	
	Proceed to the next event when the CRS directs lowering reactor power.	

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 3
Event Description: Reduce Power with Reactor Recirculation		

Time	**Position**	**Applicant's Action or Behavior**
	CRS	Conducts Reactivity Briefing. Notifies Shift Manager and Load Dispatcher of power reduction for HPCI testing. Directs ATC to lower reactor power to 95% per 2.1.10.
NOTE to Examiners: RR pump flows can be read on recorder RR-FR-163 on VBd 9-4.		
	ATC	Enter Procedure 2.1.10 Station power changes, Section 7 RR FLOW. 7.4 Lower power by lowering RR pump flow. Maintain rate of power change consistent with system capabilities as determined by Load Dispatcher and TG limits. Monitors reactor power, level, and power-to-flow map. Reports power lowered to 95% to SRO.
		END OF EVENT
	Notes	
	Proceed to the next event when CRS direct surveillance to begin.	

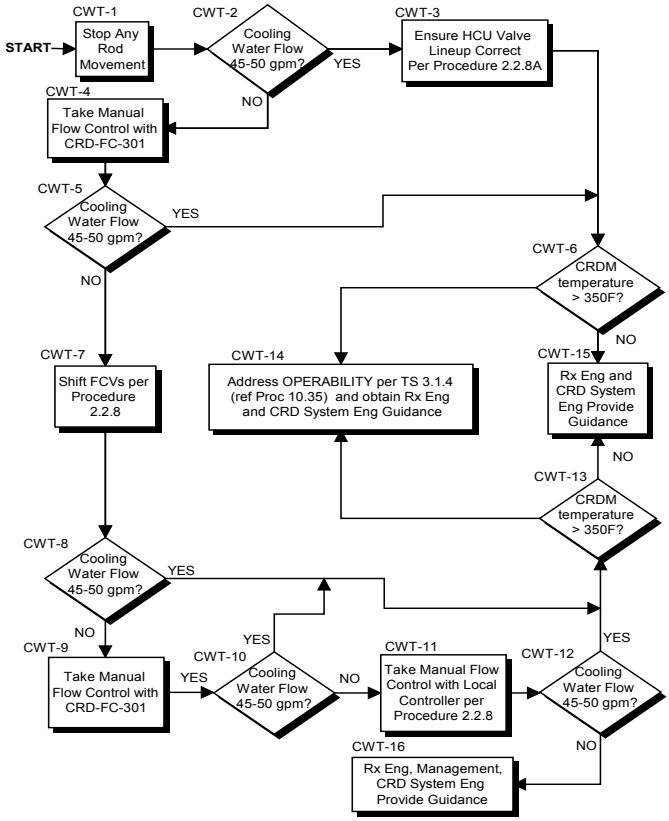
Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 4
Event Description: Perform HPCI Full Flow Test (Procedure 6.HPCI.103)		
Time	**Position**	**Applicant's Action or Behavior**
NOTE to Examiners: The HPCI Aux Oil Pump discharge line rupture is passive until the pump is started.		
	CRS	Directs performance of 6.HPCI.103
	Both Operator	**ROLE PLAY: When requested to establish communications, respond that you are setup and ready to begin 6.HPCI.103 at step 4.16.** **Wait 2 minutes and report oil pressures were recorded.**
	BOP	Reviews procedure 6.HPCI.103 in preparation for continuing surveillance. Establish Communications with local Operator in HPCI room. Begins at step 4.13 4.13 Informs CRS that HPCI System is inoperable for testing. 4.14 Step already completed 4.15 Step already completed 4.16 (Time) Start AUXILIARY OIL PUMP and time STOP VALVE opening stroke time
	Booth Operator	**ROLE PLAY-After HPCI AOP is started and Trigger 13 becomes active, call the control room and report a large lube oil leak on the AOP discharge piping.**
	CRS	Halt the HPCI surveillance.
	CRS	Refers to Tech Spec 3.5.1 Condition C and declares HPCI INOP. Action C.1 Verify by administrative means RCIC System is OPERABLE within one hour AND C.2 Restore HPCI System to OPERABLE status within 14 days.

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 4
Event Description: Perform HPCI Full Flow Test (Procedure 6.HPCI.103)		
Time	**Position**	**Applicant's Action or Behavior**
	BOP	Place HPCI AOP control switch to Pull-To-Lock.
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 5
Event Description: In-Service CRD FCV fails closed.		
Time	**Position**	**Applicant's Action or Behavior**
	Booth Operator	**When directed by the Lead Examiner, Insert Trigger 6, (CRD FCV fails closed).**
	ATC	Respond to alarm 9-5-2/E-6, CRD CHARGING HEADER HIGH PRRESSURE. 1.1 Check drive water flow control valves for proper operation. 1.2 Adjust CRD-MO-20 to maintain following: 1.2.1 Drive water DP of ~ 265 psid. 1.2.2 Cooling water DP of ~ 20 psid. 1.3 Adjust charging water pressure manually with CRD-170, PUMP DISCHARGE MANUAL PRESSURE CONTROL VALVE, per Procedure 2.2.8. 1.4 IF annunciator due to CRD flow degradation, THEN enter Procedure 2.4CRD. Report alarm references 2.4CRD.
	CRS	.Enter Abnormal Procedure 2.4CRD, CRD TROUBLE. Assign actions to ATC.

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 5

Event Description: In-Service CRD FCV fails closed.

Time	Position	Applicant's Action or Behavior
	ATC	Enter 2.4CRD Attachment 5 for cooling water trouble. 
	ATC	Follow 2.4CRD Attachment 5 path to step CWT-7 and shift FCVs per Procedure 2.2.8. 20.1 Ensure CRD-FC-301 in BAL with settape adjusted, as required, for obtaining ~ 50 gpm cooling water flow. 20.4 .1 Step performed locally by building operator (controller in manual) 20.4.2 Building operator opens FCV B inlet valve. 20.4.3 Building operator opens FCV B outlet valve. 20.4.4 Building operator ensures FCV A in manual.

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 5
Event Description: In-Service CRD FCV fails closed.		
Time	**Position**	**Applicant's Action or Behavior**
		20.4.5 Step is N/A because the valve is closed. 20.4.5 Building operator opens FCV B. 20.4.9 & 10 Building operator isolates FCV A.
	Booth Operator	**When directed to CRD FCV use remote function RD12 to OPEN to unisolate FCV B. Use remote function RD11 to CLOSE to isolate FCV A.**
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 6
Event Description: LIS-72C and LIS-72D fails downscale.		

Time	Position	Applicant's Action or Behavior
	Booth Operator	**When directed by the Lead Examiner, Insert Trigger 7 (RD26C and D. NBI-LIS-72C and D)**
	BOP	Respond to alarms: 9-3-2/A-5, RX LOW WATER LEVEL -42 2.1 If alarm is not valid, then enter Procedure 2.4CSCS to secure HPCI and RCIC as dictated by plant conditions. 9-3-2/B-5, RX LOW WATER LEVEL -113 2.1 If alarm not valid, then perform following: 2.1.1 Enter Procedure 2.4PC. 2.1.2 Enter Procedure 2.4CSCS. 2.1.3 Step is N/A. 9-4-1/A-1, RCIC LOGIC ACTUATED 2.1 If initiation not valid, perform following: 2.1.1 Press and hold TURBINE TRIP button until throttle valve closed. 2.1.2 Leave RCIC-MO-131 open, so turbine trip will not reset. 2.1.3 Enter Procedure 2.4CSCS.
	CRS	Enter Abnormal Procedure 2.4CSCS. Assign actions to BOP.
	Booth Operator	**ROLE PLAY: If directed to go to local instrument racks, report NBI-LIS-72C and 72D are both down scale. NBI-LIS-72A and B are reading normal.**
	CRS	Review TS LCO 3.5.3 Condition A for RCIC and determine Condition B applies due to HPCI being inoperable. Be in MODE 3 in 12 hours and reduce reactor steam dome pressure ≤ 150 psig within 36 hours. Review TS LCO 3.3.5.1-1 for Function 3a (HPCI low level initiation) Note half of HPCI initiation logic is tripped.

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 6
Event Description: LIS-72C and LIS-72D fails downscale.		
Time	**Position**	**Applicant's Action or Behavior**
		TS LCO 3.3.5.2-1 for Function 1(RCIC low level actuation)-Note logic is tripped.
	BOP	Trip RCIC by depressing the Turbine Trip pushbutton on Panel 9-4. Observe RCIC speed lowers to zero. Verify MO-131, STEAM SUPPLY TO TURBINE valve remains open.
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 7
Event Description: Instrument Air dryer plugs		

Time	Position	Applicant's Action or Behavior
	Booth Operator	**When directed by the Lead Examiner, Insert Trigger 2 (IA05, Instrument Air dryer plugging)**
	BOP	Respond to alarm A-4/A-5, CONTROL AIR LOW PRESSURE. 1.1 Verify SACs operating properly. 1.2 Check for excessive air leaks or usage. 1.3 Enter Procedure 5.2AIR Report Instrument air pressure from IA-PI-606 (Panel A) Report Service air pressure from SA-PI-611. Report Service air pressure high and instrument air pressure low.
	CRS	Enter Abnormal Procedure 5.2AIR. Assign actions to BOP.
	Booth Operator	**ROLE PLAY: If directed to report air filter dP, wait 3 minutes and report the filter dP is rising.**
	BOP	4.3 If air drying/filtering components at fault then perform following: 4.3.1 Open SA-MO-81, SA TO IA CROSSTIE (Panel A) 4.3.2 Place standby dryer and filters in service per Procedure 2.2.59. 4.3.3 If necessary, manually bypass any obstructed component(s). 4.3.4 When dryer and filter flow returned to service, close SA-MO-81. Contact building operator and direct other air dryer/filter placed in service.
	Booth Operator	**If directed to place other air dryer/filter in service, wait 5 minutes delete malfunction IA05, and report the other**

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 7
Event Description: Instrument Air dryer plugs		
Time	**Position**	**Applicant's Action or Behavior**
		dryer/filter is in service.
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 8
Event Description: Reactor Recirculation Pump High Vibration (ARP 9-4-3/C-3) Recirculation Pump Seal Failure (ARP 9-4-3/A-3)		
Time	**Position**	**Applicant's Action or Behavior**
	Booth Operator	**When directed by lead examiner, insert Trigger 4 (RR10a, RR11a, RR50a RR31a, RR Pump A #1 and #2 seal failure, RR Motor A high vibration, and RR Loop A suction rupture)**
	ATC	Respond to alarm 9-4-3/C-3, RECIRC A PUMP MOTOR HI VIBRATION 1.1 Monitor RR A pump/motor vibration using PMIS Points. 1.2 NA 1.3 Notify System Engineer of valid alarms.
	Booth Operator	**ROLE PLAY: If sent to the 976' elevation to observe RR Pump A motor vibrations, wait 4 minutes and report the MOTOR LOWER vibration is indicating 10 mils (Alert) and the UPPER MOTOR velocity is 6 mils (Alert).**
NOTE to Examiners: ATC may trip RR pump A before SRO directs it if a drywell pressure increase is noted with the seal trouble annunciator.		
	ATC	Respond to alarm 9-4-3/A-3, RECIRC PUMP A SEAL TROUBLE
	ATC	Operator responds to annunciator, announces alarm RR Pump A seal failures, and refers to alarm procedure.
	CRS	Directs ATC to trip RR pump A and entry into 2.4RR.
	BOP	Report drywell pressure rise.
	CRS	Enter Abnormal Procedure 2.4 PC and direct BOP to vent the drywell to maintain drywell pressure within band.
	BOP	Vent the drywell per the Hard Card: 1.5 Ensure **PC-AD-R-1B** is open and **PC-AD-R-1A** is closed. 1.6 Start preferred SGT fan.

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 8
Event Description:		Reactor Recirculation Pump High Vibration (ARP 9-4-3/C-3) Recirculation Pump Seal Failure (ARP 9-4-3/A-3)
Time	**Position**	**Applicant's Action or Behavior**
		1.7 Open **SGT-DPCV-546A(B)** valve. **NOTE –** Steps 1.4 and 1.5 may be performed in any order or concurrently, depending on plant conditions. 1.8 Vent Torus by performing following: 1.8.1 Ensure **PC-MO-1308** is closed.Ⓟ[1] 1.8.2 Open **PC-AO-245AV**. 1.8.3 Open **PC-MO-305MV**. 1.8.4 WHEN Torus pressure ~ 0.25 psig, THEN close **PC-MO-305MV**. 1.8.5 Close **PC-AO-245AV**. 1.8.6 Place switch for **PC-AO-245AV** to AUTO. 1.9 Vent Drywell by performing following: 1.9.1 Open **PC-AO-246AV**. 1.9.2 While ensuring Torus pressure does not exceed Drywell pressure by > 0.1 psig, open **PC-MO-306**.©[1] 1.9.3 WHEN Drywell pressure ~ 0.25 psig, THEN close **PC-MO-306**. 1.9.4 Close **PC-AO-246AV**. 1.9.5 Place switch for **PC-AO-246AV** to AUTO. 1.10 Place switch for running SGT fan to AUTO. 1.11 Place switch for **SGT-DPCV-546A(B)** to AUTO.
	ATC	Trips RR pump A and enters 2.4RR.

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 8

Event Description: Reactor Recirculation Pump High Vibration (ARP 9-4-3/C-3)
Recirculation Pump Seal Failure (ARP 9-4-3/A-3)

Time	Position	Applicant's Action or Behavior
		4.3 Checks power-to-flow map for operating in the exclusion zone 4.4 Secure OWC Injection System, place OWC INJECTION SYS ENABLE SWITCH to SHUTDOWN (PANEL A). 4.5 Perform applicable Attachment 2, RECIRCULATION PUMP SEAL FAILURE Attachment 2 1. If both seals have failed and affected RR pump requires prompt isolation, perform following: 1.1 Ensure DRIVE MOTOR BKR 1CN, 1CS (1DN, 1DS) is tripped. 1.2 Close RR-MO-43A(B), PUMP SUCTION VLV. 1.3 Close RR-MO-53A(B), PUMP DISCHARGE VLV. 1.4 Close CRD-50 (CRD-51), REACTOR RECIRCULATION PUMP A (B) SEAL FLOW REGULATOR 46A (B) INLET (R-903-SE). 1.5 Following steps may be performed concurrently: 1.5.1 Enter Single Loop Operation section of Procedure 2.2.68.1. 1.5.2 Ensure RRMG Set A(B) GEN FIELD BKR open. 1.5.3 Ensure operating RRMG is transferred to Startup Transformer per Procedure 2.2.18. If both seals have degraded and time allows, shut down and isolate affected pump per Procedure 2.2.68.1.
NOTE to Examiners: Venting the drywell with Standby Gas Treatment can keep up with RR seal leakage until the RR suction piping failure leakage exceeds venting capabilities.		
		END OF EVENT
	Notes	

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 8
Event Description: Reactor Recirculation Pump High Vibration (ARP 9-4-3/C-3) Recirculation Pump Seal Failure (ARP 9-4-3/A-3)		
Time	**Position**	**Applicant's Action or Behavior**
	The next event is already active.	

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 9
Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A)		
Time	**Position**	**Applicant's Action or Behavior**
NOTE to Examiners: malfunction RR31A, 5%, RR Suction line leak is already ramping in (Active).		
	BOP	Report reversal in drywell pressure.
	ATC	Accept scram action of 1.5 psig drywell pressure from Abnormal Procedure 2.4PC.
	CRS	Direct ATC to SCRAM at 1.5 psig drywell pressure.
	CRS	Enters EOP 1A and 3A on high drywell pressure and directs actions.
	ATC	SCRAM or verify SCRAM per 2.1.5 1. MITIGATING TASK SCRAM ACTIONS 1.1 Press both RX SCRAM buttons. 1.2 Place REACTOR MODE switch to REFUEL. 1.3 IF reactor power > 3%, THEN perform following: 1.3.1 Place REACTOR MODE switch to SHUTDOWN. 1.3.2 Initiate ARI.
	Critical Task	**Isolate primary system discharging into secondary containment before any Max Safe Operating Limit is reached.**
NOTE to Examiners: The SDIV drain valve (AO-33) on the south volume fails to isolate when required post scram.		
	ATC	Perform Attachment 2 Reactor Power Control of 2.1.5 as follows: 1 REACTOR POWER CONTROL

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 9

Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A)

Time	Position	Applicant's Action or Behavior
		1.1 Ensure REACTOR MODE switch is in SHUTDOWN. 1.2 Verify all SDV vent and drain valves are closed. Report failure of drain isolation valve AO-33 to close. (Panel 9-5) Places SDV Isolation switch on Panel 9-5 to ISOL. Reports SDV drain valve closed. **NOTE –** RR pump(s) will be tripped if on Normal Transformer or if ARI/RPT has automatically initiated. 1.3 Ensure operating RR pumps have run back to 22% speed. **NOTE –** Steps 1.4 and 1.5 may be performed concurrently. 1.4 Verify all control rods are fully inserted. 1.4.1 If necessary, insert control rods as directed by CRS. 1.5 Observe nuclear instrumentation and perform following: 1.5.1 Insert SRM detectors. 1.5.2 Insert IRM detectors. 1.5.3 Change APRM recorders to IRMs. 1.5.4 Range IRMs on scale. Check reactor power is lowering.
	BOP	EOP 1A RPV Control (RC/P-5) Stabilize RPV pressure below 1050 psig using main turbine BPVs and RPV Pressure Control Systems (TABLE 1) as necessary (RC/L-5) If ADS timer has initiated THEN inhibit ADS

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 9
Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A)		
Time	**Position**	**Applicant's Action or Behavior**
Note to Examiners: Either Loop of RHR may be used for Torus Spray and Drywell Spray. Only A Loop of RHR may be used for Torus cooling.		
	Critical Task	**Initiate Drywell Spray prior to Drywell pressure exceeding the Pressure Suppression Pressure (PSP) graph.**
	CRS	Enters EOP 3A and directs Containment Sprays initiated.
	BOP	(PC/P-1) Monitor and control PC pressure below 1.84 psig using containment pressure control systems, EOP 5.8.17 (PC/P-2) BEFORE torus pressure reaches 10 psig, Spray Torus (PC/P-3) When Torus pressure exceeds 10 PSIG Spray the Drywell 2. Containment Sprays (**RHR Hard Card**) 2.1 IF required, with CRS permission, THEN place CONTMT COOLING 2/3 CORE VALVE CONTROL PERMISSIVE switch to MANUAL OVERRD. 2.2 IF required, THEN place CONTMT COOLING VLV CONTROL PERMISSIVE switch to MANUAL. 2.3 Ensure RHR-MO-39A(B) open. 2.4 IF reactor pressure ≤ 300 psig and injection not desired, THEN close RHR-MO-27A(B), OUTBD INJECTION VLV. 2.5 Ensure RHR PUMP(s) running. NOTE – RHR pump operation at minimum flow should be limited to < 15 minutes or pump damage may result. 2.6 Throttle RHR-MO-38A(B) to maintain desired containment pressure. 2.7 Throttle RHR-MO-66A(B) to obtain desired cooling rate. 2.8 IF Drywell Spray required, THEN perform following: 2.8.1 Open RHR-MO-31A(B).

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 9

Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A)

Time	Position	Applicant's Action or Behavior
		2.8.2 Throttle RHR-MO-26A(B) to maintain desired containment pressure. 2.9 IF PCIS Group 6 lights lit on Panel 9-5, THEN ensure one of following open: 2.9.1 REC-MO-711; or 2.9.2 REC-MO-714. 2.10 Place RHR SW System in service: 2.10.1 Start SWBP(s). 2.10.2 Adjust SW-MO-89A(B) to maintain flow between 2500 and 4000 gpm. 2.11 Throttle RHR-MO-66A(B) to maintain desired cooling rate. Maintain Drywell pressure between +2 & +10 psig.
	ATC	EOP 1A RPV Control (RC/L-1) Ensure each of following initiated: • PCIS Group 1-7 isolations, SOP 2.1.22 • ECCS initiations • DGs (RC/L-3) Restore and maintain RPV water level between +3 in. and +54 in. with one or more Injection Systems (TABLE 3) (RC/L-4) When RPV water level cannot be restored and maintained between +3 in. and +54 in. (RC/L-6) Restore and maintain RPV water level above -150 in. using Injection Systems (TABLE 3) and, if necessary, Alternate Injection Subsystems (TABLE 4)

Op-Test No.: 1		**Scenario No.:** 2 **Event No.:** 9
Event Description: LOCA – RR Suction Line Break (EOP 1A, 3A)		
Time	**Position**	**Applicant's Action or Behavior**
		END OF EVENT
	Notes	
	Proceed to the next event.	

Op-Test No.: 1	**Scenario No.:** 2	**Event No.:** 10
Event Description: RHR Drywell Spray Valves fail to auto close on low DW pressure.		

Time	Position	Applicant's Action or Behavior
NOTE to Examiners: During performance of Drywell Sprays using procedure 2.2.69.3 during execution of EOP 3A if the operator fails to recognize DW Spray valves have lost power the valves will fail to close resulting in negative DW pressure and challenging PC Integrity.		
	Critical Task	**Secure RHR Loop A drywell sprays or lower Loop B sprays prior to Drywell Pressure reaching negative pressure.**
	Booth Operator	**As drywell pressure is lowered to ~5 psig, insert Trigger 5 to de-energize MO26A and MO-31A open.**
	BOP	Recognizes that RHR-MO-26A, DRYWELL SPRAY OUTBD THROTTLE VLV and RHR-MO-31A, DRYWELL SPRAY INBD VLV will not close while spraying the Drywell. If RHR Loop B also being used to spray the drywell, isolate drywell sprays in that loop to maintain drywell pressure above 2 psig. OR Secure all RHR Loop A pumps. Report status to the CRS
	CRS	Acknowledges and directs the drywell pressure maintained positive.
		When Drywell Pressure is being controlled and RPV level is within band, stop the scenario as directed by the lead examiner.

Simulator Setup

Initialize the simulator in **Protected IC 232.**

Triggers and Malfunctions

E4 – RR10A, RR #1 seal failure, 100% severity with a 5:00 ramp time.
RR11A, RR #2 seal failure, 100% severity with a 15:00 ramp time.
RR31A, RR Suction Line Break, 3.5% severity with a 10:00 ramp time. 6 minute TD.
RR50A RR Pump A High Vibration, 50% severity.
E5 – RH23a and RH19a Loop A DW Spray Valves fail open.
E6 – RD04a 0% with 15 second ramp.
E7 – RR26 C and D.
E9– DMF RD01a (Allows SDIV drain valve to close)
E13– None
Trgset 9 "zdirpssws10[1]==1" (SDIV control switch to ISOL)
Trgset 13 "zdihpcisws20[4]==1" (HPCI Aux Oil Pump control switch to START)
RD01a, 100% (Open) South SDV Drain Valve Fails to Close (Active)

HP 12, HPCI oil discharge line rupture (15 second time delay) (Active)
IA05 100% with a 5 minute ramp.

Remotes
E5- rh19a, RHR-MO-26a control power failure
rh23a, RHR-MO-31a control power failure
E10- SW04b RHRSW Pump B trip.
E11- SW04d RHRSW Pump D trip.

Overrides
None

Panel Set-up

- Ensure HPCI Test displayed on SSSP.
- Ensure Tendamatic plaque labeled B-A-C
- Ensure PMIS IDTs are blank.
- Place the Shutdown EOL Rod Sequence Book on Panel 9-5.
- Ensure Recirculation Controllers are selected to ”P”

Procedures Needed

6.HPCI.103 – Completed up to step 4.13, then steps 4.14 and 4.15 are complete.

Tags Hung

None

Parameter Monitoring:

Monitor RPV Power, Pressure and Level, Drywell Pressure

Turnover Sheet:

Plant Status: 100% power, EOL

Risk: Green

Activities in Progress:

Prejob brief for SPC and HPCI surveillance was briefed yesterday.
Procedure 2.2.69.3 is complete through Step 8.17.
RHR Heat Exchanger B was vented at the end of the previous shift in preparation for performing HPCI surveillance test.
6.HPCI.103 – procedure completed up to Step 4.13; Steps 4.14 and 4.15 are N/A.

LCOs in effect: None

Equipment out of service: None

Activities for the Shift:

- Place B Loop of RHR in Suppression Pool Cooling.
- Lower power to 95% for HPCI Test
- Perform 6.HPCI.103 Test
- Return to 100% power following HPCI test

Facility: Cooper Nuclear Station Scenario No.: 3 Op-Test No.: 1

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 4%, BCL, power, plant startup in progress.

Turnover: Procedure 2.1.1, Steps 4.22 and 5.36 are completed, 2.2.77 Attachment 1, Step 1.14 is complete, 2.2.28.1 Step 5.14 is complete. Fuel is being de-channeled on the refueling floor, No Tech Specs Limitations in effect. Reactor Coolant samples (1xE-3 Micro-Curies / CC) indicate higher than normal gross activity level for this point in a startup. Site Management and Reactor Engineering have indicated the startup can continue. PRA risk is green. Continue plant startup.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R (ATC)	Continue startup using control rods
2	NM05A	I (ATC) TS (SRO)	IRM power supply failure (ARP 9-5-1/D-8) Tech Specs LCO 3.3.1.1, Reactor Protection System (RPS) Instrumentation
3	SW01d N/A	C (BOP) TS (SRO)	Service Water Pump D Trip (ARP B-3/B-7) Tech Spec LCO 3.7.2 Service Water (SW) System and Ultimate Heat Sink (UHS) for number of Operable SW Pumps.
4	RD03d N/A	C (ATC) TS (SRO)	Control Rod Drifts IN (2.4 CRD) Tech Spec LCO 3.1.3 for Inoperable Control Rod.
5	HP05,CR 01, CR03	I (BOP)	HPCI Inadvertent Initiation / Fuel Failure (2.4CSCS)
6	HP06, HP09, HP15	M (All) © R (ATC)	LOCA - Steam line break into Secondary Containment (EOP-5A, 2.4 OG, 5.1RAD) SCRAM (2.1.5)
7	N/A	M © (BOP)	Emergency Depressurization (>2 above Max Safe) EOP-2A
8	FW28B	I (ATC)	Reactor Feedpump fails to trip on high level
9	PC18a/b	I (BOP)	SGT Fans A & B fail to auto start.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (T)echnical Specifications, (©) CT

Initial Conditions: 4%, BCL, power, plant startup in progress.

Turnover:

Procedure 2.1.1, Steps 4.22 and 5.36 are completed, 2.2.77 Attachment 1, Step 1.14 is complete, 2.2.28.1 Step 5.14 is complete, LCOs and Logs are complete for change to MODE 1. Fuel is being de-channeled on the refueling floor, No Tech Specs Limitations in effect. Reactor Coolant samples (1xE-3 Micro-Curies / CC) indicate higher than normal gross activity level for this point in a startup. Site Management and Reactor Engineering have indicated the startup can continue normally. PRA risk is green. Continue plant startup.

Description:

A startup is in progress following a refueling outage. Reactor Power is approximately 4% and the intention is to raise power. Reactor Coolant activity is above normal. The ATC continues the plant startup using control rods using procedure 2.1.1, Startup and procedure 10.13, Control Rod Movement Sequence.

During control rod withdrawal, one IRM power supply fails requiring the ATC to bypass the IRM per ARP 9-5-1/D-8. The SRO addresses Tech Spec 3.3.1.1, Reactor Protection System (RPS) Instrumentation and declares IRM B inoperable. Potential LCO 3.3.1 is logged. The half reactor scram is reset per Procedure 2.1.5.

The BOP operator responds to a Service Water Pump Trip per ARP B-3/B-7 and responds by starting another pump.

The SRO addresses Tech Spec LCO 3.7.2 Service Water (SW) System and Ultimate Heat Sink (UHS) for number of Operable SW Pumps and determines 30 day LCO entry is required per 3.7.2 and 7 day LCO entry is required per 3.8.1 with DG-1 declared inoperable.

One Control Rod drifts in due to a leaking outlet scram valve and the ATC responds per 2.4CRD to fully insert the Control Rod using the emergency in switch. The control rod is fully inserted and the SRO enters Tech Spec 3.1.6 because BPWS is not met. The control rod is declared INOP and de-activated. The SRO addresses Tech Spec LCO 3.1.3 for Inoperable Control Rod.

An Inadvertent HPCI Actuation and Injection occurs resulting in a power excursion that results in some Fuel Failure. The BOP Operator responds per 2.4CSCS and secures HPCI. During the process of tripping HPCI the HPCI Steam line breaks in Secondary Containment. The SRO enters EOP 5A due to high Reactor Building temperature and radiation. EOP 5A provides direction to “isolate systems discharging into the area”

As area temperatures and radiation continue to rise the SRO directs the ATC to SCRAM the reactor per 2.1.5, prior to commencing emergency depressurization, due to the inability to isolate the HPCI steam line break and follows up by entering 5.1 RAD and 2.4 OG.

The crew will be able to anticipate emergency depressurization but will have to close the MSIVs due to MSL HI-HI RAD. Once two or more areas are above Max Safe the SRO will direct the BOP operator to Emergency Depressurize the Reactor per EOP 2A prior to exceeding 312^{o}F anywhere in the reactor building.

The SGT fans fail to auto start and the BOP operator must manually start them to prevent the secondary containment pressure from becoming positive and a potential radioactivity release.

During recovery of reactor water level using Feedwater the remaining Reactor Feedpump fails to trip on high level requiring the BOP operator to control RPV level using ECCS Systems.

The scenario ends when the RPV level has been restored to the normal range following emergency depressurization and the SGT system has restored negative pressure in the secondary containment.

Critical task List

Critical Task	**Event 6- (ATC) With a primary system discharging into secondary containment through an un-isolable break, SCRAM the reactor per EOP 5A and EOP 1A prior to commencing Emergency Depressurization.**

Critical Task	**Event 7- (BOP) With a primary system discharging into secondary containment through an un-isolable break, execute Emergency Depressurization when Maximum Safe Operating Values are exceeded in two or more areas for the same parameter per EOP2A prior to exceeding 312^0F anywhere in the reactor building.**

Procedures used

10.13, control rod withdrawal to raise power (Normal)
Annunciator 9-5-1/D-8, IRM upscale trip due to instrument failure (ARP)
Annunciator 9-5-2/A-3, IRM upscale trip due to instrument failure (ARP)
Annunciator 9-5-2/B-1, IRM upscale trip due to instrument failure (ARP)
2.1.5, Scram for resetting 1/2 scram due to IRM failure (Normal)
Annunciator B-3/B-7 for SW pump trip (ARP)
Annunciator B-3/C-7 for SW pump trip (ARP)
2.2.71, Service Water System for aligning SW Pump selector switch (Normal)
Annunciator 9-5-1/C-4 for control rod drifting inwards (ARP)
2.4CRD, CRD Trouble for drifting control rod (AOP)
Annunciator 9-3-2/F-4 for HPCI inadvertent start (ARP)
2.4CSCS, Inadvertent ECCS Initiation for HPCI start (AOP)
Annunciator 9-3-1/E-10 building high temperature for HPCI operating (ARP)
Annunciator 9-3-1/A-9 building high radiation for HPCI operating (ARP)
EOP-5A
EOP-1A
2.1.5, Scram to scram reactor
5.1RAD, Building Radiation Trouble for high reactor building high radiation (AOP)
2.4OG, Off-Gas Abnormal for high off-gas radiation (AOP)

5.2FUEL, Fuel Failure for MSL high radiation due to failed fuel (AOP)
EOP-2A

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 1
Event Description: Continue startup using control rods		

Time	**Position**	**Applicant's Action or Behavior**
	CRS	Performs a Reactivity Briefing Directs the ATC to continue startup.
NOTE to Examiners: Reactivity Briefing is normally conducted in briefing room during turnover prior to entering the simulator.		
	ATC	Continue to withdrawal rods using procedure 10.13 starting at step 4.2.1 - Proceed with consecutive step order on Attachment 5 in the Control Rod Sequence Package. 4.2.3 The Operator shall initial in the "PERFORMED BY" column on Attachment 5.
	BOP	4.2.2 The Operator or Concurrent Verifier shall place a check mark in the DESIRED ROD SELECTED block for the selected rod. 4.2.3 The Operator shall initial in the "PERFORMED BY" column on Attachment 5. 4.2.4 The Concurrent Verifier shall initial in the "CONCURRENT VERIFICATION" column on Attachment 5.
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 2
Event Description: IRM power supply failure (ARP 9-5-1/D-8)		
Time	**Position**	**Applicant's Action or Behavior**
	Booth Operator	**When directed by the lead examiner insert Trigger 6 (NM05b IRM Power Supply Failure)**
	ATC	Respond to Annunciators 9-5-1/D-8, IRM RPS CH B UPSCALE TRIP OR INOP. 9-5-2/A-3, RX SCRAM CHANNEL B 9-5-2/B-1, NEUTRON MONITORING TRIP Refers to INSTRUMENT OPERATING PROCEDURE 4.1.2,INTERMEDIATE RANGE MONITORING SYSTEM Visually inspects the IRM B cabinet and recognizes the white INOP light is illuminated and the outputs are downscale indicating a power supply failure. Bypasses IRM B using joystick on panel 9-5 Verifies remaining IRMs indications have normal reading for the reactor power. Resets RPS B trip per Procedure 2.1.5, Section 4. 4. HALF SCRAM RESET 4.1 Place REACTOR SCRAM RESET switch to Group 1 and 4, Group 2 and 3, then back to NORM. 4.2 Ensure eight SCRAM GROUP lights (Panels 9-15 and 9-17) or SCRAM INDICATIONS GROUP A and GROUP B lights are on.
	Booth Operator	**If requested as I&C to investigate the IRM B power supply, respond that you will prepare a troubleshooting request and investigate.**
NOTE to Examiners: TS requires 3 IRMS per trip system so LCO 3.3.1.1 is met. The CRS will call the LCO a Potential LCO and track it in NOMS.		
	CRS	Refers to TECH SPEC LCO 3.3.1.1, Reactor Protection System (RPS) Instrumentation. LCO 3.3.1.1, Table 3.3.1.1-1, Functions 1a and 1b.

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 2

Event Description: IRM power supply failure (ARP 9-5-1/D-8)

Time	Position	Applicant's Action or Behavior
		Declares IRM B Inoperable.
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 3
Event Description: Service Water Pump D Trip		

Time	Position	Applicant's Action or Behavior
	Booth Operator	**When directed by lead examiner, insert Trigger 4 (Service Water Pump D Trip).**
	BOP	Responds to Annunciator B-3/B-7 SERVICE WATER PUMP D TRIP and B-3/C-7, SERVICE WATER PUMP D OVLD/GROUND 1.2 Maintain SW System pressure >38psig 1.2.1 Place available non-running Service Water Pump in MAN. 1.2.2 Start available Service Water pump(s) as necessary. 1.3 Ensure MODE SELECTOR switches are aligned per procedure 2.2.71. Starts SW Pump B at Panel B. Dispatch an Operator to investigate the pump trip.
	Booth Operator	**When asked to investigate the Service Water Pump D Trip, report the motor is very hot.** **If asked to investigate the local SW Pump 4160 V breaker, report the 51X overload/ground relay has tripped for the pump. State a 50-1 flag is showing on the relay.**
	CRS	Refer to Tech Spec 3.7.2.A.1 Declare "D" Service Water Pump Inoperable. 30 Day LCO applies, and Refer to Tech Spec 3.8.1, B declare the Diesel Generator 1 inoperable, with a seven day LCO.
		END OF EVENT
	Notes	

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 3
Event Description: Service Water Pump D Trip		

Time	Position	Applicant's Action or Behavior
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1	Scenario No.: 3	Event No.: 4
Event Description: Control Rod Drifts IN (2.4 CRD)		

Time	Position	Applicant's Action or Behavior
	Booth Operator	**When directed by the lead examiner, activate RD03d, Rod 18-39 Drift in (Trigger 1)**
	ATC	Respond to annunciator 9-5-1/C-4, ROD DRIFT. Determine that rod 18-39 is drifting inward. Verify no other rod drift indications.
	CRS	Enter 2.4CRD, Attachment 4, Single Rod Drift IN. Direct rod driven in with Emergency IN Switch. Contact the WCC for troubleshooting plan. Contact Reactor Engineering.
	ATC	Insert rod 18-39 using Emergency IN switch to full in.
	Booth Operator	**ROLE PLAY: As Reactor Engineer, when contacted by the CRS regarding the control rod drifting in, tell them if they determine the rod is INOP they can continue with the startup.** **ROLE PLAY: If contacted as the Work Control Center for the rod drifting in, tell them you will put a team together and develop a troubleshooting plan.**
	Booth Operator	**ROLE PLAY: When contacted by the control room as the NLO to isolate HCU 18-39, reply you will isolate the HCU and tag it.** **ACTION: THEN: wait 5 minutes then delete malfunction RD03d.**
NOTE to Examiners: If the CRS declares control rod 18-39 inoperable first, then LCO 3.1.6 does not apply. (LCO 3.1.6 applies only to OPERABLE control rods)		
	CRS	Refer to Tech Spec 3.1.6 and determine Condition A applies. A.1 Move control rod 18-19 to its correct position within 8 hours. OR A.2 Declare control rod 18-19 inoperable within 8 hours.

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 4

Event Description: Control Rod Drifts IN (2.4 CRD)

Time	Position	Applicant's Action or Behavior
		Refer to Tech Spec 3.1.3 and determine Condition C applies. C.1 Fully insert control rod 18-19 within 3 hours. C.2 Disarm control rod 18-19 within 4 hours. Declare the Control Rod Inoperable and direct it to be deactivated.
	ATC	Call NLO and direct them to stop by the WCC to get a clearance and to isolate control rod 18-39 and tag it.
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 5

Event Description: HPCI Inadvertent Initiation / Fuel Failure (2.4CSCS)
Tech Spec 3.5.1, ECCS Operating

Time	Position	Applicant's Action or Behavior
	Booth Operator	**When directed by Lead Examiner, Insert Trigger 3 (HP05, HPCI Inadvertent Initiation and HP06 HPCI steam line break)**
	ATC	Responds to alarm 9-3-2/F-4, HPCI PUMP LOW FLOW. Makes report HPCI has started. Check Reactor Level and Drywell pressure. Verify there are no valid start signals for HPCI.
	CRS	Direct HPCI tripped per 2.4CSCS
	BOP	Respond to inadvertent initiation of HPCI using 2.4CSCS and 3.1 IF HPCI initiated, THEN perform following: 3.1.1 Ensure AUXILIARY OIL PUMP control switch in START. 3.1.2 Press and hold TURBINE TRIP button. 3.1.3 AFTER turbine stops, THEN place AUXILIARY OIL PUMP in PULL-TO-LOCK. 3.1.4 Release TURBINE TRIP button. Inform the CRS that HPCI is INOP.
	CRS	Enter EOP 5A on high building temperature (9-3-1/E-10) high building radiation (9-3-1/A-9)
	CREW	Make plant announcement warning personnel of high reactor building temperature or radiation.
	CRS	Refers to Tech Spec 3.5.1, ECCS Operating, Action C requires verification of RCIC operable within one hour and determines Action C.2 applies requiring restoring HPCI to operability within 14 days.
		END OF EVENT
	Notes	

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 5

Event Description: HPCI Inadvertent Initiation / Fuel Failure (2.4CSCS)
Tech Spec 3.5.1, ECCS Operating

Time	Position	Applicant's Action or Behavior
	The next event is already in progress.	

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 6

Event Description: LOCA - Steam line break into Secondary Containment

Time	Position	Applicant's Action or Behavior
NOTE to Examiners: Malfunctions HP09, and HP15 (HPCI failure to automatically isolate) and CR01 CR03 (fuel element failure) are ACTIVE.		
	CREW	Crew recognizes rising temperature and radiation levels in the reactor building and diagnose a break in the HPCI Steam Line.
	CRS	Enters EOP 5A, direct actions as follows: Direct HPCI to be isolated. Rad Release Isolate all primary systems discharging into areas outside primary and secondary containments except systems required to support EOPs (RR-2) Before offsite gaseous radioactivity release rate reaches that which requires a General Emergency BUT ONLY IF primary system is discharging into area outside primary and secondary containments Emergency Depressurize the reactor (RR-3) Secondary Containment Control When Reactor Bldg. exhaust plenum radiation level exceeds 10 mr/hr ensure: • isolation of Rx Bldg. HVAC • initiation of SGT When Reactor Building HVAC isolates AND Rx Bldg. exhaust plenum radiation level is below 10 mr/hr, then restart Rx Bldg HVAC (defeat high drywell pressure and low RPV water level isolation interlocks if necessary, EOP 5.8.20) (SC-1) Monitor and Control TEMPERATURE, RADIATION, & WATER LEVEL BEFORE any secondary containment parameter reaches its maximum normal operating value: • Temperatures (TABLE 9) • Radiation (TABLE 10) • Water levels (TABLE 11) Isolate all primary systems discharging into areas outside primary and

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 6

Event Description: LOCA - Steam line break into Secondary Containment

Time	Position	Applicant's Action or Behavior
		secondary containments except systems required to support EOPs (SC-10) BEFORE any secondary containment parameter reaches its maximum safe operating value: • Temperatures (TABLE 9) • Radiation (TABLE 10) • Water levels (TABLE 11) with a primary system discharging into secondary containment enter EOP 1A, SCRAM the reactor.
	BOP/ATC	Take action in EOP5A as follows: BEFORE any secondary containment parameter reaches its maximum safe operating value: • Temperatures (TABLE 9) • Radiation (TABLE 10) • Water levels (TABLE 11) 1. Start all reactor building quad room coolers. 2. Open REC cooling water supply (MO-711/714) to provide cooling to the quad room coolers. Respond to Annunciator 9-3-1/A-9 REACTOR BLDG HIGH RAD 1. Evacuate plant personnel from the area
	BOP	Attempt to isolate HPCI. Report to CRS that HPCI will not Isolate. Send NLO to ASD Room to Isolate HPCI.
	Booth Operator	**If sent to the ASD Room to attempt to isolate HPCI:** **Override Alarm 9-3-3/G-5 ASD ROOM DOOR OPEN to ON** **Then Override Alarm 9-3-3/F-5, ASD SWITCH POSITION ABNORMAL to ON** **Then report you can NOT get control of the valves from the ASD Room.** **DELETE the overrides on the alarms.**
	CRS	Enter 5.1RAD and 2.4OG on notification of High Reactor Bldg. Radiation. Direct actions. Enter EOP1A and direct a reactor Scram.
	Critical Task	**With a primary system discharging into secondary containment through an un-isolable break, SCRAM the reactor per EOP 5A and EOP 1A prior to commencing Emergency Depressurization.**

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 6

Event Description: LOCA - Steam line break into Secondary Containment

Time	Position	Applicant's Action or Behavior
	ATC	Perform Scram actions using procedure 2.1.5 Attachment 1. Perform Attachment 1 mitigating task scram actions of 2.1.5 as follows: 1. MITIGATING TASK SCRAM ACTIONS 1.1 Press both RX SCRAM buttons. 1.2 Place REACTOR MODE switch to REFUEL. 1.3 IF reactor power > 3%, THEN perform following: 1.3.1 Place REACTOR MODE switch to SHUTDOWN. 1.3.2 Initiate ARI. Perform Attachment 2 Reactor Power Control of 2.1.5 as follows: 1 REACTOR POWER CONTROL 1.1 Ensure REACTOR MODE switch is in SHUTDOWN. 1.2 Verify <u>all</u> SDV vent and drain valves are closed. **<u>NOTE</u> –** RR pump(s) will be tripped if on Normal Transformer or if ARI/RPT has automatically initiated. 1.3 Ensure operating RR pumps have run back to 22% speed. **<u>NOTE</u> –** Steps 1.4 and 1.5 may be performed concurrently. 1.4 Verify all control rods are fully inserted. 1.4.1 If necessary, insert control rods as directed by CRS. 1.5 Observe nuclear instrumentation and perform following: 1.5.1 Insert SRM detectors. 1.5.2 Insert IRM detectors. 1.5.3 Change APRM recorders to IRMs.

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 6

Event Description: LOCA - Steam line break into Secondary Containment

Time	Position	Applicant's Action or Behavior
		1.5.4 Range IRMs on scale. Check reactor power is lowering.
	BOP	Perform action of 5.1RAD, BUILDING RADIATION TROUBLE 4.2 Notify Plant personnel to clear affected area via gaitronics. Perform actions of 2.4OG, OFF-GAS ABNORMAL Verify automatic actions 2. AUTOMATIC ACTIONS 2.1 Standby off-gas dilution fan starts on low dilution flow. 2.2 A 5 minute time delay on low dilution flow or 15 minutes of continuous Alarm 9-4-1/C-4, OFFGAS TIMER INITIATED, causes an off-gas isolation signal. 2.3 An off-gas isolation signal causes following: 2.3.1 OG-AO-254, OG SYSTEM ISOLATION, closes. 2.3.2 AOG-AO-902, AOG RETURN, closes. NOTE – 50 to 60 psig on AR-12AV and OG-13AV air regulators indicates valves closed. 2.3.3 OG-AO-13, OFF-GAS FILTERS A & B DRAIN, closes. 2.3.4 AR-AO-12, 30 MINUTE HOLDUP PIPE DRAIN, closes. 2.3.5 OWC Injection System trips. 3. NA 4. Subsequent Actions: 4.1 Record date and time. 4.2 NA 4.3 IF off-gas isolation has occurred, THEN place OWC-SW-ENABLE, OWC INJECTION SYS ENABLE, to SHUTDOWN (PANEL A). 4.3.1 Complete securing OWC Injection System per Procedure 2.2.98 when conditions permit. 4.4 Concurrently perform Attachment 1, Off-Gas System High Radiation Attachment 1 1. OFF-GAS SYSTEM HIGH RADIATION:

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 6

Event Description: LOCA - Steam line break into Secondary Containment

Time	Position	Applicant's Action or Behavior
		1.1 Lower reactor power per Procedure 2.1.10 to prevent off-gas timer from timing out or to clear Annunciator 9-4-1/C-4, OFFGAS TIMER INITIATED. 1.2 IF off-gas isolation is immediately desired, THEN at Panel 9-02, place OFFGAS TIMER switch to CLOSE. 1.3 IF fuel cladding has not been confirmed lost per EPIP 5.7.1, Emergency Classification, THEN request Chemistry obtain isotopic analysis of off-gas stream. 1.4 IF Off-Gas System automatically isolates or is manually isolated due to high-high radiation, THEN: 1.4.1 SCRAM and enter Procedure 2.1.5. 1.4.2 Close MSIVs and MSIV drains. 1.4.3 Ensure OFFGAS TIMER switch on Panel 9-02 is in CLOSE. 1.4.4 Ensure following valves are closed: 1.4.4.1 RHR-920MV, AOG STEAM SUPPLY VALVE (PNL 9-3). 1.4.4.2 RHR-1485MV, AOG STEAM BYP THROTTLE VLV (PNL 9-3). 1.4.4.3 RHR-921MV, AOG STEAM SUPPLY VALVE (PNL 9-3). 1.4.4.4 AOG-AO-902, AOG RETURN (VBD-K). 1.4.4.5 OG-AO-254, OFFGAS SYSTEM ISOLATION (VBD-K). 1.4.5 Remove SJAEs from service per Procedure 2.2.55. 1.4.6 Ensure gland steam exhauster running. 1.4.7 NA 1.4.8 NA 1.4.9 NA 1.4.10 Monitor ERP gas activity levels.
		END OF EVENT
	Notes	
	The next event is a continuation of the current event.	

Op-Test No.: 1		**Scenario No.:** 3 **Event No.:** 7
Event Description: Emergency Depressurization (>2 above Max Safe) EOP-2A		
Time	**Position**	**Applicant's Action or Behavior**
NOTE to Examiners: This event is a continuation of the previous event.		
	CRS	Enter 5.2FUEL and direct actions as follows: 4.6 IF valid MAIN STM LINE HI HI RAD (9-4-1/A-4) alarm is actuated and reactor is shut down, THEN close MSIVs and MSL drain valves. 4.7 Direct Chemistry to sample reactor coolant activity. 4.8 Notify Reactor Engineering and follow their recommendations per Procedure 10.31.
	BOP	Close MSIVs and MSL Drains
	Critical Task	**With a primary system discharging into secondary containment through an un-isolable break, execute Emergency Depressurization when Maximum Safe Operating Values are exceeded in two or more areas for the same parameter per EOP2A prior to exceeding 312°F anywhere in the reactor building.**
	CRS	EOP1A When CRS determines the second containment area temperature is going to exceed MAX SAFE temperature of 195°F, ANTICIPATE Emergency Depressurization and direct BOP to fully open main turbine bypass valves.
	BOP	When directed fully open main turbine bypass valves per Hard Card. (Panel B DEH HMI) 3. MANUAL BPV CONTROL 3.1 On BYPASS VALVE POSITION control, press OPEN to access controls. 3.2 Press MANUAL button and check it backlights yellow. 3.3 On BYPASS VALVE POSITION control, use UP/DOWN, JOG UP/JOG DOWN and FAST/SLOW controls to adjust BYPASS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 7

Event Description: Emergency Depressurization (>2 above Max Safe) EOP-2A

Time	Position	Applicant's Action or Behavior
		VALVE POSITION to desired value.
	CRS	EOP 5A (SC-14) BEFORE any 2 secondary containment parameters reach their maximum safe operating value: • Temperatures (TABLE 9) • Radiation (TABLE 10) • Water levels (TABLE 11) with a primary system discharging into secondary containment Emergency Depressurize the reactor. EOP 2A (RC/P-12) Rapidly depressurize RPV (disregard cooldown rate) (RC/P-13) NA (RC/P-14) WHEN shutdown cooling RPV pressure interlock clears (70 psig) AND further cooldown is required (RC/P-15) Cool down to cold shutdown conditions with shutdown cooling (use only RHR pumps not required to maintain RPV water level above +3 in.)
	CRS	Request torus water level before ordering SRVs opened for emergency depressurization.
	BOP	Report torus water level to CRS.
	BOP	Open 6 SRVs with control switches. Report RPV pressure as it lowers.
	BOP	Restore RPV Level using Low Pressure ECCS Systems (RHR, Core Spray) to normal range.

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 7
Event Description: Emergency Depressurization (>2 above Max Safe) EOP-2A		

Time	**Position**	**Applicant's Action or Behavior**
		END OF EVENT
	Notes	
	Proceed to the next event at direction of the lead examiner.	

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 8

Event Description: Reactor Feedpump fails to trip on high level

Time	Position	Applicant's Action or Behavior
NOTE to Examiners: Following Emergency Depressurization reactor water level will swell resulting in a Reactor Feed Pump (RFP) Trip setpoint and the RFP will not trip automatically. RPV overfill results if the RFP is not tripped.		
	ATC	Recognizes that reactor water level has exceeded the trip setpoint for the running reactor Feedpump and the reactor Feedpump should have tripped. Press TURBINE TRIP pushbutton on benchboard A.
	Booth Operator	**When requested to investigate the Reactor Feedpump for reasons it may not have tripped when required, respond that there is nothing abnormal around the Reactor Feedpump.**
	CRS	Acknowledges the Reactor Feedpump did not trip automatically and it has been manually tripped. Directs the BOP Operator to maintain reactor water level using ECCS Systems.
	BOP	Maintains Reactor Water Level using Core Spray, and/or RHR.
		END OF EVENT
	Notes	
	The next event is already active.	

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 9
Event Description: SGT Fans A & B fail to auto start		
Time	**Position**	**Applicant's Action or Behavior**
NOTE to Examiners: Malfunctions PC18a and PC18b, SGT Fans Fail to Auto Start are ACTIVE. (Reactor Building exhaust plenum radiation level become high and it is imperative to filter the release.		
	BOP	Recognizes the SGT fan failed to auto start upon a group 6 isolation signal and SGT inlet valves SGT-AO-249 (250) and outlet valves SGT-AO-251 (252) did not auto open. Informs CRS that SGT fans did not start. Places the Fan Control Switches to RUN to start both Fans. Ensures both Inlet and Outlet valves open following start of fans.
	CRS	Directs BOP to place the SGT Fan switches to RUN and ensure system is maintaining negative pressure in the reactor building.
	Booth Operator	**If requested to investigate the SGT Fans for reasons they may not have started, respond you will notify maintenance to investigate.**
		END OF EVENT
	Notes	

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 9

Event Description: SGT Fans A & B fail to auto start

Time	Position	Applicant's Action or Behavior
	When the RPV has been depressurized and RPV level is has been restored within band, stop the scenario as directed by the lead examiner.	
	END OF SCENARIO	

Simulator Setup

Initialize the simulator in IC 10 (BOL) **(Protected IC 233)**

Triggers and Malfunctions

E4 – SW01d, Trip, Service Water Pump D trip
E1 – RD03d, Severity 22%, Control rod 18-39 drifts in.
E3 – HP05, Inadvertent initiation
CR01, TD 5:00, Severity 1%
CR03, TD 6:00, Severity 100%, Ramp 10:00 minutes
HP06, HPCI steam line break, Severity 5%, Ramp 10:00 minutes
E6 – NM05b, IRM B power supply failure

PC18a (Active) Standby Gas Treatment train A failure to start.
PC18b (Active) Standby Gas Treatment train B failure to start.
FW28a and FW28b (Active), RFP fails to trip on high water level.
HP09 (Active) HPCI fails to automatically isolate.
HP15 (Active) HPCI fails to automatically isolate on low steam supply pressure.

Overrides

- zdihpcisws2[2] Control Switch for HPCI-MO-16, OPEN (Active)
- zdihpcisws1[2] Control Switch for HPCI-MO-15, OPEN (Active)
- zdihpciswmo15[2] Control Switch for HPCI-MO-15 (ASD ROOM), OPEN (Active)
- zdihpciswmo16[2] Control Switch for HPCI-MO-16 (ASD ROOM), OPEN (Active)
- zdihpcisws32[1] HPCI Manual Isolation Switch, OFF (Active)
- an:p1641, HPCI LOGIC INITITATED Alarm, OFF(Active)

Panel Set-up

- Ensure the following breakers are in “Normal After Trip” position:
  a. 1CN
  b. 1DN
  c. 1AN
  d. 1BN
- Place the “Breakers must be cycled” tags on the following breakers:
  e. 1CN
  f. 1DN
  g. 1AN
  h. 1BN
- Ensure RWM is “Operating below LPSP” with no rod blocks.
- Place PC-PIC-513 in manual and shut and lower Containment Pressure to “0”.

Procedures Needed

- Procedure 2.1.1 (2 Copies) with steps 4.22 and 5.3.6 completed.
- Procedure 2.2.77, Attachment 1, Step 1.14 complete.
- Procedure 2.2.28.1 Step 5.14 completed.

Tags Hung

- Mark up boards and ensure tag reflects CREF is on Division I.

Parameter Monitoring:
Monitor RPV Pressure, Average Torus Water Temperature and Torus Water Level (HCTL &BIIT)

Turnover Sheet:

Plant Status: The plant is at 4% reactor power during a startup following refueling. Procedure 2.1.1, Steps 4.22 and 5.36 are completed, 2.2.77 Attachment 1, Step 1.14 is complete, 2.2.28.1 Step 5.14 is complete, LCOs and Logs are complete for change to MODE 1. Fuel is being de-channeled on the refueling floor, Reactor Coolant samples (1xE-3 Micro-Curies / CC) indicate higher than normal gross activity level for this point in a startup. Site Management and Reactor Engineering have indicated the startup can continue normally. Continue plant startup.

Risk: Green

Activities in Progress: Lately irradiated fuel is being de-channeled on the refueling floor.

LCOs in effect: No Tech Specs Limitations in effect.

Equipment out of service: None

Activities for the Shift: Continue plant startup.

Facility:	Cooper Nuclear Station	Date of Exam: 7/28/2014	Operating Test No.: 1

APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO-1 **X** SRO-I ☐ SRO-U ☐	RX					3								1	1	1	0
	NOR													0	1	1	1
	I/C					5, 8, 9				3, 5, 9				6	4	4	2
	MAJ					9				6, 7				3	2	2	1
	TS													N/A	0	2	2
RO -2 **X** SRO-I ☐ SRO-U ☐	RX								1, 6					2	1	1	0
	NOR						2, 4							2	1	1	1
	I/C						1, 6, 7, 10		2, 4, 8					7	4	4	2
	MAJ						9		6					2	2	2	1
	TS													N/A	0	2	2
RO-3 **X** SRO-I ☐ SRO-U ☐	RX					3								1	1	1	0
	NOR													0	1	1	1
	I/C					5, 8, 9				3, 5, 9				6	4	4	2
	MAJ					9				6, 7				3	2	2	1
	TS													N/A	0	2	2
RO-4 **X** SRO-I ☐ SRO-U ☐	RX								1, 6					2	1	1	0
	NOR						2, 4							2	1	1	1
	I/C						1, 6, 7, 10		2, 4, 8					7	4	4	2
	MAJ						9		6					2	2	2	1
	TS													N/A	0	2	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility:	Cooper Nuclear Station	Date of Exam: 7/28/2014	Operating Test No.: 1

APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO-5 **X** SRO-I ☐ SRO-U ☐	RX								1, 6					2	1	1	0
	NOR						2, 4							2	1	1	1
	I/C						1, 6, 7, 10		2, 4, 8					7	4	4	2
	MAJ						9		6					2	2	2	1
	TS													N/A	0	2	2
RO ☐ SRO-I-1 **X** SRO-U ☐	RX					3		1, 6						3	1	1	0
	NOR													0	1	1	1
	I/C					5, 8, 9		2, 3, 4, 5, 8, 9						9	4	4	2
	MAJ					9		6, 7						3	2	2	1
	TS							2, 3, 4						3	0	2	2
RO ☐ SRO-I ☐ SRO-U-1 **X**	RX				3									1	1	1	0
	NOR				2, 4									2	1	1	1
	I/C				1, 5, 6, 7, 8, 10									6	4	4	2
	MAJ				9									1	2	2	1
	TS				1, 4, 6,									3	0	2	2
RO ☐ SRO-I ☐ SRO-U-2 **X**	RX				3									1	1	1	0
	NOR				2, 4									2	1	1	1
	I/C				1, 5, 6, 7, 8, 10									6	4	4	2
	MAJ				9									1	2	2	1
	TS				1, 4, 6									3	0	2	2

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Facility: Cooper Nuclear Station						Date of Exam: 7/28/2014							Operating Test No.: 1				
APPLICANT	EVENT TYPE	Scenarios															
		1			2			3			4			TOTAL	MINIMUM(*)		
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO ☐ SRO-I ☐ SRO-U-3 **X**	RX				3									1	1	1	0
	NOR				2, 4									2	1	1	1
	I/C				1, 5, 6, 7, 8, 10									6	4	4	2
	MAJ				9									1	2	2	1
	TS				1, 4, 6									3	0	2	2
RO ☐ SRO-I ☐ SRO-U ☐	RX														1	1	0
	NOR														1	1	1
	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2
RO ☐ SRO-I ☐ SRO-U ☐	RX														1	1	0
	NOR														1	1	1
	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2
RO ☐ SRO-I ☐ SRO-U ☐	RX														1	1	0
	NOR														1	1	1
	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

Instructions:

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Facility: CNS Date of Examination: 7/28/2014 Operating Test No.: 1

Competencies	APPLICANTS															
	RO-1 X SRO-I ☐ SRO-U ☐				RO-2 X SRO-I ☐ SRO-U ☐				RO-3 X SRO-I ☐ SRO-U ☐				RO-4 X SRO-I ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		5,8, 9	3,5,6,7 8,9			1,4,6,7, 9, 10	2,4,7			5,8, 9	3,5,6,7 8,9			1,4,6,7, 9, 10	2,4,7	
Comply With and Use Procedures (1)		3,5,8,9	3,5,6,7 8,9			1,2,4,6, 7,9,10	2,4,6,7			3,5,8, 9	3,5,6,7 8,9			1,2,4,6, 7,9,10	2,4,6,7	
Operate Control Boards (2)		3,5,8,9	3,5,6,7 8,9			1,2,4,6, 7,9,10	1,2,4,7			3,5,8, 9	3,5,6,7 8,9			1,2,4,6, 7,9,10	1,2,4,6 7	
Communicate and Interact		1-10	1-9			1-10	1-9			1-10	1-9			1-10	1-9	
Demonstrate Supervisory Ability (3)																
Comply With and Use Tech. Specs. (3)																

Notes:
(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Facility: CNS	Date of Examination:	Operating Test No.: 1

Competencies	APPLICANTS															
	RO-5 X SRO-I ☐ SRO-U ☐				RO ☐ SRO-I-1 X SRO-U ☐				RO ☐ SRO-I ☐ SRO-U-1X				RO ☐ SRO-I ☐ SRO-U-2 X			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		1,4,6,7, 9, 10	2,4,7			5,8,9	2,3.],4, 5,6,7			1,5,6,7 ,8,9				1,5,6,7, 8,9		
Comply With and Use Procedures (1)		1,2,4,6, 7,9,10	2,4,6,7			3,5,8,9	1-9			1-10				1-10		
Operate Control Boards (2)		1,2,4,6, 7,9,10	1,2,4,6, 7			3,5,8,9										
Communicate and Interact		1-10	1-9			1-10	1-9			1-10				1-10		
Demonstrate Supervisory Ability (3)							1-9			1-10				1-10		
Comply With and Use Tech. Specs. (3)							2,3,4			1,4,6				1,4,6		

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Facility: CNS	Date of Examination:	Operating Test No.: 1

Competencies	APPLICANTS															
	RO ☐ SRO-I ☐ SRO-U-3 X				RO ☐ SRO-I ☐ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		1,5,6, 7,8,9														
Comply With and Use Procedures (1)		1-10														
Operate Control Boards (2)																
Communicate and Interact		1-10														
Demonstrate Supervisory Ability (3)		1-10														
Comply With and Use Tech. Specs. (3)		1,4,6														

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