Task No.: 202012O0201

PERFORM JET PUMP OPERABILITY CHECK (2)

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: Sim / Classroom
2. Appropriate Trainee Level: RO / SRO
3. Evaluation Method: _____Perform _____Simulate
4. Performance Time: 13 minutes
5. NRC K/A 202001 K1.06 3.6/3.6

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform the daily Jet Pump and Recirc Pump Flow Check of the Daily Tech Specs Surveillance Log.
2. Only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space, if desired, by the examiner.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
5. Brief the trainee,
6. If performed in the Simulator, place the Simulator in RUN, and tell the trainee to begin.
7. If this is being performed in the Classroom provide Attachment 2 along with Attachment 3 to the student.

Directions to Trainee:

When I tell you to begin, you are to perform the daily Jet Pump **AND** Recirc Pump Flow Check. 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 rated power with DEH in Mode 4.
2. Both Reactor Recirculation pumps are operating with pump flows balanced.

Task No.: 202012O0201

PERFORM JET PUMP OPERABILITY CHECK (2)

General References:

1. Procedure 6.LOG.601

General Tools and Equipment:

1. Calculator.
2. Jet pump operability curves.

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to perform the daily Jet Pump (6.LOG.601 Attachment 12) and Recirc Pump Flow Check (6.LOG.601 Attachment 13) as part of the routine shift activities. Notify the CRS when the task is complete.

Task No.: 202012O0201

PERFORM JET PUMP OPERABILITY CHECK (2)

Performance Checklist	Standards	Initials
NOTE: Steps 1 - 5 may be in any order.		
1. Record indicated core flow (10^6 lb/hr)	Record Core flow from Recorder NBI-DPR/FR-95 (Blue Pen) (± 2). **CUE**: Core Flow = 62	_____*
2. Record RR pump flow (10^3 gpm)	Record RR pump flow, from RR-FR-163 for Pumps A & B (± 2). **CUE**: Pump A = 41; Pump B =41.2	_____*
3. Record RRMG Set speed	Record RRMG Set speed from the following (± 2): a. RRFC-SI-1A for RRMG A b. RRFC-SI-1B for RRMG B **CUE**: RRMG A = 87; RRMG B = 87.	_____*
4. Record Jet Pump Flow	Record Jet Pump Flow from the following (± 2): a. NBI-FI-92A for LOOP A b. NBI-FI-92B for LOOP B **CUE**: LOOP A = 31; LOOP B = 31.5	_____*

Task No.: 202012O0201

PERFORM JET PUMP OPERABILITY CHECK (2)

Performance Checklist	Standards	Initials
5. Record Jet Pump Differential Pressure	Record differential pressures from individual jet pump instruments NBI-FI-78A through NBI-FI-78Z on Panel 9-38 in control room (± 2). **CUE**: 1 = 32, 2 = 33, 3 = 31, 4 = 30, 5 = 36, 6 = 34, 7 = 32, 8 = 32, 9 = 32, 10 = 34, 11 = 31, 12 = 31, 13 = 30, 14 = 30, 15 = 34, 16 = 36, 17 = 30, 18 = 30, 19 = 31, 20 = 30 **Note G, H, I, O, P & Q are not used**.	_____*
6. Record Loop B and Loop A Average	Add JP #1 through 10 and divide by 10 for LOOP B, then add JP #11 through 20 and divide by 10 for LOOP A (± 2). **CUE**: Average 32.6 for LOOP B and 31.3 for LOOP A.	_____*
NOTE: Curves are contained in the binder labeled "Cooper Nuclear Station Jet Pump Operability Graphs and Instability Noise Level Data".		
7. Verify RR pump flow and RRMG set speed within limits.	**Check 1** Determine that the values recorded in Items B and C are within the limits of the curve **(SAT checked).**	_____*

Task No.: 202012O0201

PERFORM JET PUMP OPERABILITY CHECK (2)

Performance Checklist	Standards	Initials
NOTE: The values obtained in the simulator for JP flow and RRMG set speed are very close to the limits of the Jet Pump Operability Graphs. The candidate may determine that it falls outside the limit.		
8. Verify JP flow and RRMG set speed within limits.	**Check 2** Determine that the values recorded in Items C and D are within or outside the limits of the curve **(SAT/UNSAT checked).**	_____
9. Jet Pump Δp differs by ≤20% from established patterns.	**Check 3** Determine that Jet Pump Δp differs by ≤20% from established patterns for **(SAT checked).**	_____*
10. Verify check 1 and 2 SAT or check 3 SAT.	Verify check 1 and check 2 SAT or check 3 is SAT (Check 3 is SAT).	_____*
11. Verify operation is not in Stability Exclusion Region of Power to Flow Map.	Determines operation is outside Stability Exclusion Region of Power to Flow Map using core flow value recorded in Item A on previous page and 2.1.10 Power to Flow Map.	_____*
12. Verify loop flow mismatch is within limit when at < 51.45×10^6 lbs/hr core flow.	Determine Step is N/A.	_____
13. Verify loop flow mismatch is within limits when ≥51.45×10^6 lbs/hr core flow.	Determine Item D values (previous page of 6.LOG.601) for Loop A and Loop B flow mismatch is ≤3.67×10^6 lbs/hr (SAT entered into block).	_____*

Task No.: 202012O0201

PERFORM JET PUMP OPERABILITY CHECK (2)

Performance Checklist	Standards	Initials
14. Verify Recirc Pump operating or RHR Pump operating in SDC.	Determine Step is N/A.	_____
15. Inform the CRS that the task is complete.	Inform Control Room Supervisor that the daily Jet Pump and Recirc Pump Flow Check is Complete. **#CUE: The CRS Acknowledges the report.**	_____

Task No.: 202012O0201

PERFORM JET PUMP OPERABILITY CHECK (2)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None					
B. Initialize the Simulator in IC		20					
C. Run Batch File		None					
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	None						
2. Malfunctions	None						
	N/A	N/A					
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					
5. Panel Setup	a. Place Simulator in Run						
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.							

Task No.: 202012O0201

ATTACHEMNT 2

Indicated core flow (10^6 lb/hr) Recorder NBI-DPR/FR-95 (Blue Pen) = 62

Rx Recirc pump flow (10^3 gpm) RR-FR-163 for Pumps A & B; A = 41; B =41.2

RRMG Set speed RRFC-SI-1A for RRMG A = 87
RRFC-SI-1B for RRMG B = 87

Jet Pump Flow NBI-FI-92A for LOOP A = 31
NBI-FI-92B for LOOP B = 31.5

Jet Pump Differential Pressure NBI-FI-78A through NBI-FI-78Z

1 = 32	11 = 31
2 = 33	12 = 31
3 = 31	13 = 30
4 = 30	14 = 30
5 = 36	15 = 34
6 = 34	16 = 36
7 = 32	17 = 30
8 = 32	18 = 30
9 = 32	19 = 31
10 = 34	20 = 30

Task No.: 202012O0201

ATTACHMENT 3

Directions to Trainee:

When I tell you to begin, you are to perform the daily Jet Pump and Recirc Pump Flow Check. 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 rated power with DEH in Mode 4.
2. Both Reactor Recirculation pumps are operating with pump flows balanced.

Initiating Cues:

The Control Room Supervisor directs you to perform the daily Jet Pump (6.LOG.601 Attachment 12) and Recirc Pump Flow Check (6.LOG.601 Attachment 13) as part of the routine shift activities. Notify the CRS when the task is complete.

Recirculation Pump Start Checklist

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: 20 minutes
5. Importance Rating: 3.3/3.7
6. NRC K/A 202001 A2.21

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform the RR Pump Start Checklist.
2. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.

General Conditions:

1. The plant is in cold shutdown following a reactor scram.
2. Shutdown Cooling is removed from service.
3. RR Pump B is running, the startup sequence is ready for the idle RR Pump A start.

General References:

1. Procedure 2.2.68.1
2. Procedure 2.1.1

General Tools and Equipment:

1. Calculator
2. Steam Table

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".

Recirculation Pump Start Checklist

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to complete the RR Pump Start Checklist for RR pump A in order to determine if the start limits are satisfied. Pump A is currently idle and pump B is running.

Recirculation Pump Start Checklist

Performance Checklist	Standards	Initials
1. Transcribe values	Transcribe values from Attachment 3 to the RR Pump Start Checklist.	_____
2. Convert Pressure to Temperature	Use Steam Tables to convert Pressure to Steam Dome Pressure.	_____
3. Determine ΔTs	Determine ΔT values for line items 10-14 of the checklist within ±4°F. Note: Allowable values are shown on the answer key.	_____*
4. Pump may NOT start.	Candidate does NOT check line item 15 of the checklist.	_____*

Recirculation Pump Start Checklist

[X] RR PUMP "A" [ ] RR PUMP "B"

1. Reactor Operation at ≤70% Rod Line: [X] YES
2. Speed of Running RR Pump ≤45%: [X] YES; [ ] N/A
3. P(dome) = 948 psig; RPV Dome Pressure; RFC-PI-90A or PMIS Point B025.
4. T(dome) = 540 °F; Saturation Temperature at [P(dome) + 14.7].
5. T(RWCU) = 508 °F; RWCU Inlet Temp; RWCU-TI-137 Pt 1 or PMIS Point B023.
6. T(drain) = 503 °F; Vessel Drain Temp; NBI-TR-89 CH 7 or PMIS Point M180.
7. If both RR pumps are inactive, record loop temperature for pump being started in Step and mark Steps and N/A.
8. T(inactive) = 488 °F; Inactive Loop Temp; RR-TI-151A (B) or PMIS Point B034 or B035 (B036 or B037).
9. T(active) = 542 °F; Active Loop Temp; RR-TI-151A (B) or PMIS Point B034 or B035 (B036 or B037).

				START LIMITS	
10. T(dome) - T(drain) =	540	- 503	=	37±4 *	ΔT < 145°F
11. T(RWCU) - T(drain) =	508	- 503	=	5±4 *	ΔT < 145°F
12. T(RWCU) - T(inactive) =	508	- 488	=	20±4 *	ΔT < 50°F
13. T(drain) - T(inactive) =	503	- 488	=	15±4 *	ΔT < 50°F
14. T(active) - T(inactive) =	542	- 488	=	54±4 *	ΔT < 50°F

15. Start Limits Satisfied: [ ] YES (If not YES, do not start pump.)
16. RR Pump Start Time: _____
17. Temperature Recorders Marked: [ ] YES

Operator: _____ Date: _____

Control Room Supervisor: _____ Date: _____

Shift Manager: _____ Date: _____

Reviewed By: _____ Date: _____

KEY

ATTACHMENT 2

Directions to Candidate:

When I tell you to begin, you are to complete the Recirculation Pump Start Checklist. 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 in cold shutdown following a reactor scram.
2. Shutdown Cooling is removed from service.
3. RR Pump B is running, the startup sequence is ready for the idle RR Pump A start.

Initiating Cues:

The Control Room Supervisor directs you to complete the RR Pump Start Checklist (Attachment 1 of Procedure 2.2.68.1) for RR pump A in order to determine if the start limits are satisfied. Pump A is currently idle and pump B is running.

Speed of RR Pump B: 20%

RPV Dome Pressure: 948 psig

RWCU Inlet Temp: 508°F

Vessel Drain Temp: 503°F

RR Loop A Temp: 488°F

RR Loop B Temp: 542°F

NOTE: If Candidate asks question about rod line, respond that enough information is given for the successful completion of the JPM. This is because the general conditions state that the plant is in cold shutdown following a scram. This part of the startup procedure is before rods are pulled.

Review Tech Spec LCO Entries For Mode Change

Trainee: _____ Examiner: _____

Pass: ☐ Fail: ☐ Examiner signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: Classroom
2. Appropriate Trainee Level: SRO
3. Evaluation Method: Perform
4. Performance Time: 25 minutes
5. Importance Rating: 2.9/4.0
6. NRC K/A 2.1.12

Directions to Examiner:

1. This JPM evaluates the candidate's ability to review LCO entries for conditions that would prohibit a Mode Change, and the trainee's ability to identify required actions for LCO 3.0.4 applicability.
2. The candidate is not required to use a procedure for this exercise. Rather, this is testing his/her ability to use Technical Specifications.
3. Provide the candidate with Attachment 1.

General Conditions:

1. The plant is in Mode 4, near the end of a refueling outage. Preparations for startup are being made.

General References:

1. Cooper Nuclear Station Technical Specifications

General Tools and Equipment:

None

Review Tech Spec LCO Entries For Mode Change

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

The Operations Supervisor directs you to review the current LCO log to determine what equipment is required to be returned to operable before the change to Mode 2 for startup. Explain why or why not each LCO prevents the Mode change. Notify the Operations Supervisor when the task is complete.

Review Tech Spec LCO Entries For Mode Change

Performance Checklist	**Standards**	**Initials**
1. Fills out attachment correctly.	See examiner attachment for correct answer and critical tasks.	_____*
2. Inform the OS that the task is complete	Inform Operations Supervisor that the LCO review is complete. #CUE: The OS Acknowledges the report. This JPM is complete.	_____

Review Tech Spec LCO Entries For Mode Change

Equipment Out of Service (OOS):

1. 4160 V Emergency Bus 1F Degraded Voltage Relay 27/1F2, removed from service 2 hours ago. This relay only affects the Bus Undervoltage sub-function of the 4.16 kV Emergency Bus Undervoltage (Degraded Voltage) function.

   * This must be returned to service before Mode 2 because LCO 3.0.4 applies to this Tech Spec, 3.3.8.1.

2. Torus Temperature Recorder PC-TR-25 is became Inoperable 1 hour ago and will be out for at least a month.

   * The Startup may continue and the mode switch moved from mode 4 to mode 2 because LCO 3.0.4 is not applicable to the Post Accident Monitoring Tech Spec 3.3.3.1.

3. HPCI-MO-19 “HPCI Injection Valve” motor operator was removed 2 hours ago and is expected back in 6 hours.

   * The Startup may continue and the mode switch moved from mode 4 to mode 2. However this must be returned to service before Reactor pressure reaches 150 psig in accordance with Tech Spec 3.5.1. LCO 3.0.4 applies however HPCI is not required to be operable until 150 psig.

KEY

ATTACHMENT 1

Directions to Candidate:

When I tell you to begin, you are to review Technical Specifications LCO entries for conflicts with a Mode change for startup. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have. Give your answers below each piece of equipment out of service on the next page.

General Conditions:

1. The plant is in Mode 4, near the end of a refueling outage. Preparations for startup are being made.

Initiating Cues:

The Operations Supervisor directs you to review the current equipment that is out of service for maintenance to determine if a change from Mode 4 to Mode 2 is allowed with the equipment out of service under any conditions. If the equipment does not have to be returned to service before the Mode Change, explain why Technical Specifications allows it to remain out of service. Notify the Operations Supervisor when the task is complete.

Equipment Out of Service (OOS):

1. 4160 V Emergency Bus 1F Degraded Voltage Relay 27/1F2, removed from service 2 hours ago. This relay only affects the Bus Undervoltage sub-function of the 4.16 kV Emergency Bus Undervoltage (Degraded Voltage) function.

2. Torus Temperature Recorder PC-TR-25 is became Inoperable 1 hour ago and will be out for at least a month.

3. HPCI-MO-19 “HPCI Injection Valve” motor operator was removed 2 hours ago and is expected back in 6 hours.

SRO Review of Recirculation Pump Start Checklist

Trainee: _____ Examiner: _____

Pass: ☐ Fail: ☐ Examiner signature:_____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: Any
2. Appropriate Trainee Level: SRO
3. Evaluation Method: Perform
4. Performance Time: 20 minutes
5. NRC K/A 202001 A2.21 3.3/3.7

Directions to Examiner:

1. This JPM evaluates the trainee's ability to review the RR Pump Start Checklist.
2. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.

General Conditions:

1. The plant is in cold shutdown following a reactor scram.
2. Shutdown Cooling is removed from service.
3. RR Pump B is running, the startup sequence is ready for the idle RR Pump A start.

General References:

1. Procedure 2.2.6.8.1
2. Procedure 2.1.1

General Tools and Equipment:

1. Calculator
2. Steam Table

SRO Review of Recirculation Pump Start Checklist

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".

Task Standards:

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

Initiating Cue(s):

The Reactor Operator has just completed the RR Pump Start Checklist for RR pump A in order to determine if the start limits are satisfied. Pump A is currently idle and pump B is running. You are to review the Reactor Operator's work for errors and complete the document as the Control Room Supervisor if the work was done correctly.

NOTE: If Candidate asks question about rod line, respond that enough information is given for the successful completion of the JPM. This is because the general conditions state that the plant is in cold shutdown following a scram. This part of the startup procedure is before rods are pulled.

SRO Review of Recirculation Pump Start Checklist

Performance Checklist	Standards	Initials
1. Review form	The SRO will review the form for errors.	_____
2. Determine errors.	Determine ΔT value for line item 14 is out of spec and pump may not be started. Note: Allowable values are shown on the answer key.	_____*
3. Pump may NOT start.	Candidate does NOT sign form.	_____

[X] RR PUMP "A" [ ] RR PUMP "B"

1. Reactor Operation at 70% Rod Line: [X] YES

2. Speed of Running RR Pump 45%: [X] YES; [ ] N/A

3. P(dome) = 948 psig; RPV Dome Pressure; RFC-PI-90A or PMIS Point B025.

4. T(dome) = 540 °F; Saturation Temperature at [P(dome) + 14.7].

5. T(RWCU) = 508 °F; RWCU Inlet Temp; RWCU-TI-137 Pt 1 or PMIS Point B023.

6. T(drain) = 503 °F; Vsl Drain Temp; NBI-TR-89 CH 7 or PMIS Point M180.

7. If both RR pumps are inactive, record loop temperature for pump being started in Step and mark Steps and N/A.

8. T(inactive) = 488 °F; Inactive Loop Temp; RR-TI-151A (B) or PMIS Point B034 or B035 (B036 or B037).

9. T(active) = 542 °F; Active Loop Temp; RR-TI-151A (B) or PMIS Point B034 or B035 (B036 or B037).

		START LIMITS
10.	T(dome) - T(drain) = 540 - 503 = 37	ΔT < 145°F
11.	T(RWCU) - T(drain) = 508 - 503 = 5	ΔT < 145°F
12.	T(RWCU) - T(inactive) = 508 - 488 = 20	ΔT < 50°F
13.	T(drain) - T(inactive) = 503 - 488 = 15	ΔT < 50°F
14.	T(active) - T(inactive) = 542 - 488 = 54	ΔT < 50°F

15. Start Limits Satisfied: [X] YES (If not YES, do not start pump.)

16. RR Pump Start Time: _____ Points out that the Start limits are not satisfied

17. Temperature Recorders Marked: [ ] YES

Operator: John R. Deere Date: Today's Date

Control Room Supervisor: No Signature Date: _____

Shift Manager: _____ Date: _____

Reviewed By: _____ Date: _____

KEY

ATTACHMENT 1

Directions to Candidate:

When I tell you to begin, you are to review the Recirculation Pump Start Checklist. 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 in cold shutdown following a reactor scram.
2. Shutdown Cooling is removed from service.
3. RR Pump B is running, the startup sequence is ready for the idle RR Pump A start.

Initiating Cues:

The Reactor Operator has just completed the RR Pump Start Checklist for RR pump A in order to determine if the start limits are satisfied. Pump A is currently idle and pump B is running. You are to review the Reactor Operator's work for errors and complete the document as the Control Room Supervisor if the work was done correctly.

ATTACHMENT 1

[X] RR PUMP "A" [ ] RR PUMP "B"

1. Reactor Operation at 70% Rod Line: [X] YES

2. Speed of Running RR Pump 45%: [X] YES; [ ] N/A

3. P(dome) = 948 psig; RPV Dome Pressure; RFC-PI-90A or PMIS Point B025.

4. T(dome) = 540 °F; Saturation Temperature at [P(dome) + 14.7].

5. T(RWCU) = 508 °F; RWCU Inlet Temp; RWCU-TI-137 Pt 1 or PMIS Point B023.

6. T(drain) = 503 °F; Vessel Drain Temp; NBI-TR-89 CH 7 or PMIS Point M180.

7. If both RR pumps are inactive, record loop temperature for pump being started in Step and mark Steps and N/A.

8. T(inactive) = 488 °F; Inactive Loop Temp; RR-TI-151A (B) or PMIS Point B034 or B035 (B036 or B037).

9. T(active) = 542 °F; Active Loop Temp; RR-TI-151A (B) or PMIS Point B034 or B035 (B036 or B037).

					START LIMITS
10.	T(dome) - T(drain) =	540 -	503 =	37	ΔT < 145°F
11.	T(RWCU) - T(drain) =	508 -	503 =	5	ΔT < 145°F
12.	T(RWCU) - T(inactive) =	508 -	488 =	20	ΔT < 50°F
13.	T(drain) - T(inactive) =	503 -	488 =	15	ΔT < 50°F
14.	T(active) - T(inactive) =	542 -	488 =	54	ΔT < 50°F

15. Start Limits Satisfied: [X] YES (If not YES, do not start pump.)

16. RR Pump Start Time:

17. Temperature Recorders Marked: [ ] YES

Operator: John R. Deere Date: Today's Date

Control Room Supervisor: _____ Date: _____

Shift Manager: _____ Date: _____

Reviewed By: _____ Date: _____

Review an IST Surveillance

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

THIS IS AN ALTERNATE PATH JPM

Additional Program Information:

1. Appropriate Performance Locations: Classroom
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: Perform ____ Simulate ____
4. Performance Time: 10 minutes
5. NRC K/As 2.2.12 (3.0 / 3.4)

Directions to Examiner:

NOTE:	This is an **ALTERNATE PATH** JPM. The Stroke Data for the HPCI-MO-19 is outside the IST Acceptable Range due to timing error. As well as the HPCI-MO-58 is outside its IST Acceptable Range and its Operability Limit.

1. This JPM evaluates the trainee's ability to review IST Data taken during a HPCI Surveillance and determine if acceptance criteria are met.
2. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space, if desired, by the examiner.
3. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
4. Brief the trainee, and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to review Attachment 1 HPCI Valve IST Data Sheet of Surveillance Procedure 6.HPCI.201 and determine if acceptance criteria are met. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

Review an IST Surveillance

If being simulated In-Plant or Control Room:

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

If being performed in the Simulator:

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

General Conditions:

1. The plant is operating at power.
2. You are the BOP Operator.
3. You are responsible for the review of Attachment 1 of 6.HPCI.201 prior to turning it in to the CRS.

General References:

1. Procedure 6.HPCI.201, HPCI Valve Operability Test (IST).

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by "*".
3. Simulator cues denoted by "#".

Task Standards:

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

Initiating Cue(s):

6.HPCI.201 has just been completed and you have it to perform a review of it prior to submitting it to the Control Room Supervisor.

Review an IST Surveillance

Performance Checklist	Standards	Initials
1. Obtain provided copy of 6.HPCI.201	The operator obtains a copy of the provided 6.HPCI.201.	_____
NOTE: The Candidate may notify the CRS each time an error is found or may wait until the end and notify him of all errors found		
2. Reviews for errors.	The operator reviews the data entered on Attachment 1 and determines that the Stroke Time for HPCI-MO-19 exceeded its IST Acceptable Range and ensures that the discrepancy sheet has been filled out.	_____*
3. Reviews for errors.	The operator reviews the data entered on Attachment 1 and determines that the Stroke Time for the HPCI-MO-58 exceeded its IST Acceptable Range **and** its Operating Limit and ensures that the discrepancy sheet has been filled out.	_____*
4. Notifies CRS.	The operator notifies the CRS about both stroke time discrepancies listed on Attachment 4 Sign-off and Review Sheet. **CUE:** Acknowledge the report as the CRS.	_____*

Review an IST Surveillance

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to review Attachment 1 HPCI Valve IST Data Sheet of Surveillance Procedure 6.HPCI.201 and determine if acceptance criteria are met. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

If being simulated In-Plant or Control Room:

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

If being performed in the Simulator:

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

General Conditions:

1. The plant is operating at power.
2. You are the BOP Operator.
3. You are responsible for the review of Attachment 1 of 6.HPCI.201 prior to turning it in to the CRS.

Initiating Cue(s):

6.HPCI.201 has just been completed and you have it to perform a review of it prior to submitting it to the Control Room Supervisor.

Review an IST Surveillance

4.51 (Independent Verification) In Panel 9-39, land lead to TB BB, Terminal 21 (HP98-6) ; N/A if not required.

Performed By:___JSD___

Verified By: ____JAD__

4 .52 (Independent Verification) In Panel 9-39, land lead to TB BB, Terminal 40 (HP 122-1); N/A if not required.

Performed By: ___JSD__

Verified By: ____JAD__

4.53 (Independent Verification) In Panel 9-41, land lead to TB DD, Terminal 14 (HP 68-2); N/A if not required.

Performed By: ____JSD_

Verified By: _____JAD_

5. RESTORATION

5.1 Restore Safety System Status Panel to normal.

6. ACCEPTANCE CRITERIA

6.1 ▌IST▌ Specified valves stroked in required direction.

6.2 ▌IST▌ [SR 3.6.1.3 .51 CLOSING STROKE TIME recorded in shaded blocks of Attachment 1 are within OPERABILITY LIMIT .

6 .3 ▌IST▌ OPENING STROKE TIME recorded in shaded blocks of Attachment 1 are within OPERABILITY LIMIT.

6 .4 ▌IST▌ Level in Gland Seal Condenser sight glass stabilized when HPCI-108 was opened.

6.5 ▌IST▌ STROKE TIME recorded in shaded blocks of Attachment 1 are within IST ACCEPTABLE RANGE.

6.6 ▌IST▌ RETEST STROKE TIME recorded in shaded blocks of Attachment 1 are within IST ACCEPTABLE RANGE.

6.7 If Steps 6.1 through 6.4 are not satisfied, declare the applicable valve inoperable and enter the appropriate CONDITION and REQUIRED ACTION.

6.8 If Step 6 .5 is not satisfied, immediately retest valve and perform Step 6.9.

Review an IST Surveillance

6 .9 If retest was performed, perform following:

6 .9 .1 If Step 6 .6 is satisfied, document probable cause of initial test deviation on Discrepancy Sheet.

6 .9 .2 If Step 6.6 is not satisfied, assess OPERABILITY per Procedure 0 .5 .OPS within 96 hours.

Review an IST Surveillance

ATTACHMENT 1 HPCI VALVE IST DATA SHEET

1. Record Stopwatch Calibration Due Date: ① 11-02-06 ② 11-04-06 .

2. Record Stopwatch Identification Number: ① 24735 ② 20845 .

3. Mark STROKE TIME N/A for valves not tested.

VALVE NUMBER	OPENING STROKE TIME seconds	CLOSING STROKE TIME seconds	RETEST STROKE TIME seconds	IST ACCEPTABLE RANGE seconds	OPERABILITY LIMIT seconds
HPCI-MO-16	N/A	34.5	N/A	28.7 to 38.8	≤ 46
HPCI-MO-16	30	N/A	N/A	N/A	N/A
HPCI-MO-15	N/A	43.2	N/A	36.7 to 49.6	≤ 50
HPCI-MO-15	38	N/A	N/A	N/A	N/A
HPCI-MO-19	18.7	N/A	16.4	13.0 to 17.6	≤ 19
HPCI-MO-20	15.7	N/A	N/A	13.2 to 17.8	≤ 20
HPCI-AO-42	N/A	3.0	N/A	1.6 to 4.8	≤ 6
HPCI-MO-21	N/A	22.3	N/A	N/A	N/A
HPCI-MO-58	87.4	N/A	83.3	53.3 to 72.1	≤ 82
HPCI-MO-17	N/A	55.4	N/A	48.7 to 65.9	≤ 78
HPCI-MO-17	56.3	N/A	N/A	49.6 to 67.0	≤ 79
HPCI-MO-58	N/A	54.4	N/A	48.2 to 65.0	≤ 77
HPCI-MO-25	4.5	N/A	N/A	3.5 to 5.8	≤ 7
HPCI-MO-25	N/A	5.1	N/A	3.2 to 5.3	≤ 7
HPCI-MO-24	N/A	4.6	N/A	N/A	N/A
HPCI-AO-70	N/A	1.7	N/A	0.9 to 2.5	≤ 5
HPCI-AO-71	N/A	1.8	N/A	0.9 to 2.7	≤ 5

Review an IST Surveillance

Initials	Printed Name	Initials	Printed Name
JSD	John Doe		
JAD	John Deere		

Acceptance Criteria Satisfied: [ ] YES; [ ] NO Initials/Date: _____.

Shift Manager Review: _____ Date: _____.

IST Engineer Review (required): _____ Date: _____.

RECORDS

Entire procedure is sent to CNS Records (quality record upon final review signature).

Review an IST Surveillance

Initial/date by each discrepancy or resolution listed.

#	DISCREPANCIES	#	RESOLUTIONS
1	HPCI-MO-19 Stroke time was slow because the timer did not start the stopwatch when the valve started stroking. JSD Today's date		Restroked per step 6.9 JSD Today's date
2	HPCI-MO-58 Stroke time was slow because the timer did not start the stopwatch when the valve started stroking. JSD Today's date		Restroked per step 6.9 JSD Today's date

Task No.: 299012O0301

Develop, Verify & Implement Tagouts (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: Perform
4. Performance Time: 15 minutes
5. NRC K/As 2.2.13 (3.6/3.8)

Directions to Examiner:

NOTE:	THIS IS AN **ALTERNATE PATH** JPM. THE TAGOUT DEVELOPER FAILED TO INCLUDE THE VENT AND DRAINS ON THE TAGOUT.

1. This JPM evaluates the trainee's ability to perform a verifier review of a tag out per 0.9 Tag Out and identify inadequate protection for the scheduled work.

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

3. Give the trainee his copy of the Directions to the Trainee (Attachment 1) and Tagout (Attachment 2) when ready to start the JPM.

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

Directions to Trainee:

When I tell you to begin, you are to perform a verifier review of a tag out per 0.9 Tag Out. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

Task No.: 299012O0301

Develop, Verify & Implement Tagouts (Alternate Path)

General Conditions:

1. The plant is operating at rated conditions.
2. A clearance order has been prepared for REC Pump C Discharge Check Valve REC-CV-12CV replacement and requires a verifier review.

General References:

1. 0.9, Tag Out
2. B&R DWG 2031, REC System
3. 2.2A.REC.DIV2, Reactor Equipment Cooling Water System Component Checklist

General Tools and Equipment:

1. Tag Out for REC-CV-12CV

Special Conditions, References, Tools, Equipment:

1. Critical steps denoted by “*”.
2. When preparing the tag out for REC-CV-12CV the vent and drain valves required should be left off the tag out to facilitate an alternate path JPM.

Task Standards:

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

Initiating Cue(s):

A tag out has been prepared for the replacement of REC Pump C Discharge Check Valve REC-CV-12CV. You are to perform a verifier review of the tag out per 0.9 Tag Out and inform me when the review is complete.

Task No.: 299012O0301

Develop, Verify & Implement Tagouts (Alternate Path)

Performance Checklist	Standards	Initials
NOTE: VALVES WITHIN THE ISOLATION BOUNDARY MAY BE LISTED AS NO TAG ITEMS ALONG WITH ASD PANEL SWITCHES BUT THESE ARE NOT REQUIRED TO BE IDENTIFIED.		
1. Review tagging sequence.	Operator determines the correct sequence of tags as described in 0.9: Control switch, breaker, discharge valve and suction valve in this order. **CUE:** If the operator identifies the tag out fault before the sequence is verified then ask if any other discrepancies exist.	_____
2. Review tagged components are adequate for planned activity. (Electrical)	Operator verifies correct pump power supply breaker using 2.2A.REC.DIV2 OR 2.2A_480.RX OR 3006 SH 5. **CUE:** If the operator identifies the tag out fault before the electrical power is verified then ask if any other discrepancies exist.	_____*
3. Review tagged components are adequate for planned activity. (Mechanical)	Operator verifies correct mechanical isolation using print 2031 and identifies that a vent and drain path are missing from the clearance order (REC-V-686 and REC-V-180).	_____*

Task No.: 299012O0301

Develop, Verify & Implement Tagouts (Alternate Path)

4. Resolve discrepancy with Originator.	Operator informs originator that a vent and drain path should be included in the tag out. **CUE**: Acknowledge as Originator that you concur that the vent and drain path must be added to the tag out. **CUE:** If the operator identifies the tag out fault before the electrical power and sequence are verified then ask if any other discrepancies exist.	_____

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to perform a verifier review of a tag out per 0.9 Tag Out. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

General Conditions:

1. The plant is operating at rated conditions.
2. A clearance order has been prepared for REC Pump C Discharge Check Valve REC-CV-12CV replacement and requires a verifier review.

Initiating Cue(s):

A tag out has been prepared for the replacement of REC Pump C Discharge Check Valve REC-CV-12CV. You are to perform a verifier review of the tag out per 0.9 Tag Out and inform me when the review is complete.

Attachment 2 Tag Out

Section Coversheet
October 4, 2006 (10:00am)
Tagout: CLEARANCE ORDER
Section: REC-1-1234567 REC-CV-12CV
Component to be worked:

REC-CV-12CV
REC-P-C DISCHARGE
R-931-NE

Description:

Replace discharge check valve as it does not stop back flow.

Special Instructions – Establish draining contingency plan as directed by 2.2.65.1, step 2.6

Worker Notes – The motor heater will not be tagged under this clearance boundary, No work identified to be performed on the REC Pump C Motor.

Release Notes

Section Attributes:

Attribute Description	Attribute Value
MRRS	YES
LCO ACTION REQUIRED	YES
FIRE IMPAIRMENT REQUIRED	NO
CONTAINMENT AFFECTED	NO
REQUIRED PLANT CONDITIONS	Equipment out of service

Work Order List: WOxx33xx

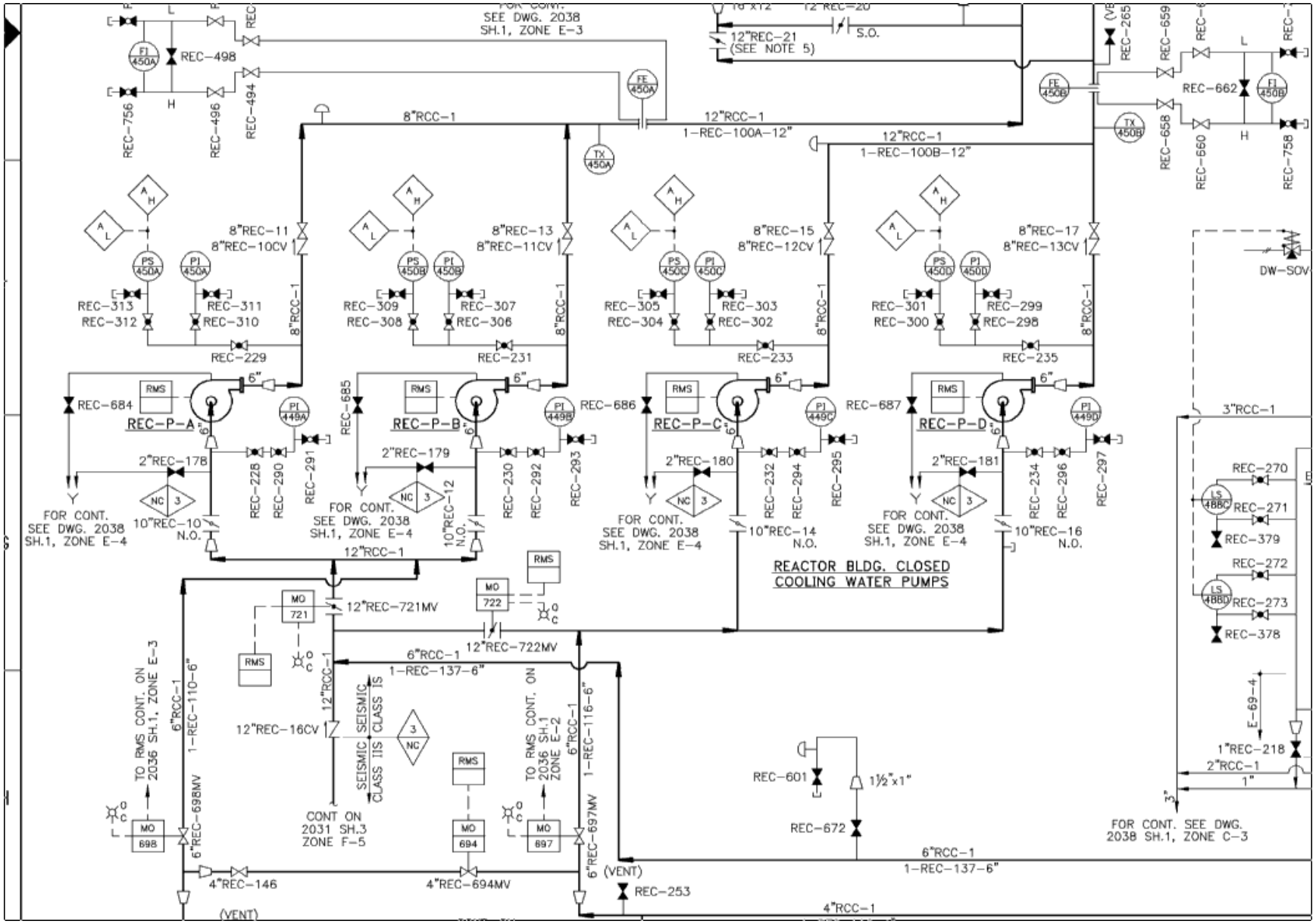
Section Verification:

Status	Description	User	Verification Date
Complete	Section Prepared	Barton, Michael	9/14/2006
	Section Verified		
	Section Authorized		
	Equip. Ready for Maintenance		
	Release Prepared		
	Release Verified		
	Release Authorized		
	Section Complete		

Temporary Safety Devices List:

Section Tagout
Tagout: Clearance Order
Section: REC-1-1234567 REC-CV-12CV

Tag Serial No.	Tag Type	Equipment Equipment Description Equipment Location	Ver. Req	Pla Seq	Placement Configuration	Place 1st Verif Date/Time	Place 2ND Verif Date/Time	Rest Seq.	Restoration Configuration	As Left Configuration	Rest.1st Verif Date/Time	Rest 2ND Verif Date/Time	Tag Placement Notes	Tag Removal Notes
1	Danger	*REC-SW-SS (RCC-C) *REC PUMP C NORMAL /STANDBY SWITCH *CONTROL ROOM BOARD “M”		1	NORMAL			7	NORMAL	NORMAL				
2	Danger	*REC-SW -REC-P-C *CONTROL SWITCH FOR REC PUMP C *CONTROL ROOM BOARD “M”		2	NORMAL AFTER STOP				NORMAL AFTER STOP	NORMAL AFTER STOP				
3	Danger	*EE-MCC-S(4C) *REC-P-C RX EQUIP COOLING PUMP 1C *MCC-S RX BLDG 903 SOUTH		3	OFF			5	ON	ON				
4	Danger	*REC-V-15 *REC-P-C DISCHARGE *REC PUMP AREA		4	CLOSED			4	OPEN	OPEN				
5	Danger	*REC-V-14 *REC-P-C SUCTION *REC PUMP AREA		5	CLOSED			3	OPEN	OPEN				


REACTOR BLDG. CLOSED COOLING WATER PUMPS
REC-P-A
REC-P-B
REC-P-C
REC-P-D
12"REC-21 (SEE NOTE 5)
S.O.
REC-498
REC-494
REC-496
REC-756
8"RCC-1
12"RCC-1
1-REC-100A-12"
1-REC-100B-12"
8"REC-11
8"REC-10CV
8"REC-13
8"REC-11CV
8"REC-15
8"REC-12CV
8"REC-17
8"REC-13CV
REC-313
REC-312
REC-311
REC-310
REC-309
REC-308
REC-307
REC-306
REC-305
REC-304
REC-303
REC-302
REC-301
REC-300
REC-299
REC-298
REC-229
REC-231
REC-233
REC-235
REC-684
REC-685
REC-686
REC-687
2"REC-178
2"REC-179
2"REC-180
2"REC-181
REC-228
REC-290
REC-291
REC-230
REC-292
REC-293
REC-232
REC-294
REC-295
REC-234
REC-296
REC-297
FOR CONT. SEE DWG. 2038 SH.1, ZONE E-4
10"REC-10 N.O.
10"REC-12 N.O.
10"REC-14 N.O.
10"REC-16 N.O.
12"RCC-1
12"REC-721MV
12"REC-722MV
6"RCC-1
1-REC-137-6"
12"REC-16CV
SEISMIC CLASS IIS
CONT ON 2031 SH.3 ZONE F-5
TO RMS CONT. ON 2036 SH.1, ZONE E-3
TO RMS CONT. ON 2036 SH.1 ZONE E-2
6"RCC-1
1-REC-110-6"
1-REC-116-6"
6"REC-698MV
6"REC-697MV
4"REC-146
4"REC-694MV
(VENT)
REC-253
4"RCC-1
REC-601
1½"x1"
REC-672
REC-265
REC-659
REC-662
REC-658
REC-660
REC-758
DW-SOV
3"RCC-1
REC-270
REC-271
REC-379
REC-272
REC-273
REC-378
E-69-4
1"REC-218
2"RCC-1
FOR CONT. SEE DWG. 2038 SH.1, ZONE C-3

Determine Dosage On Workers For ALARA

Trainee: _____ Examiner: _____

Pass: ☐ Fail: ☐ Examiner signature: _____ Date: _____

Additional Program Information/:

1. Appropriate Performance Locations: Classroom
2. Appropriate Trainee Level: RO
3. Evaluation Method: Perform
4. Performance Time: 20 minutes
5. NRC K/A 2.3.2 2.5/2.9

Directions to Examiner:

1. This JPM evaluates the trainee's ability to read a RWP map and make an ALARA recommendation.
2. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.

General Conditions:

1. NA

General References:

1. Procedure 9.ALARA.1

General Tools and Equipment:

1. Calculator.

Special Conditions, References, Tools, Equipment:

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

Determine Dosage On Workers For ALARA

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to review the work package you were given for ALARA. Using the three scenarios below, determine the doses that would be received for the worker(s), and which scenario results in the least total job dose. Record your calculated dose below each scenario, and mark the scenario which would result in the least amount of total job dose.

Scenario #1: A single worker working in the HPCI room on MO-14. It will take him approximately 6 hours to finish the job.

Scenario #2: Two workers working in the HPCI room on MO-14. Worker A will take 3 hours in the vicinity of the valve to finish the job. Worker B will take 4 hours in the vicinity of the valve to finish the job.

Scenario #3: Two workers working in the HPCI room on MO-14. Worker A will take 5 hours in the vicinity of the valve to finish the job. Worker B will take 0.5 hours in the vicinity of the valve to finish the job.

ATTACHMENT 1

Note: Working on MO-14 will require the workers to be very close to the valve, approximately 1 foot from the valve.

Scenario #1: A single worker working in the HPCI room on MO-14. It will take him approximately 6.5 hours to finish the job.

* Worker will receive 195mrem dose. **±10mrem**

Total dose 195mrem.

Scenario #2: Two workers working in the HPCI room on MO-14. Worker A will take 3 hours in the vicinity of the valve to finish the job. Worker B will take 1.5 hours in the vicinity of the valve and 0.5 hours in the doorway of the room to finish the job.

*Worker A will receive 90mrem dose. **±10mrem**
*Worker B will receive 51mrem dose. **±10mrem**

Total dose 141mrem.

***This is the lowest dose option.**

Scenario #3: Two workers working in the HPCI room on MO-14. Worker A will take 5 hours in the vicinity of the valve to finish the job. Worker B will take 0.5 hours in the vicinity of the valve to finish the job.

*Worker A will receive 150mrem dose. **±10mrem**
*Worker B will receive 15mrem dose. **±10mrem**

Total dose 165mrem.

KEY

ATTACHMENT 2

Directions to Candidate:

When I tell you to begin, you are to determine dosage on a job for ALARA. Before you start, I will state the initiating cues and answer any questions you may have.

Initiating Cues:

The Control Room Supervisor directs you to review the work package you were given for ALARA. Using the three scenarios below, determine the doses that would be received for the worker(s), and which scenario results in the least total job dose. Record your calculated dose below each scenario, and mark the scenario which would result in the least amount of total job dose.

Note: Working on MO-14 will require the workers to be very close to the valve, approximately 1 foot from the valve.

Scenario #1: A single worker working in the HPCI room on MO-14. It will take him approximately 6.5 hours to finish the job.

Scenario #2: Two workers working in the HPCI room on MO-14. Worker A will take 3 hours in the vicinity of the valve to finish the job. Worker B will take 1.5 hours in the vicinity of the valve and 0.5 hours in the doorway of the room to finish the job.

Scenario #3: Two workers working in the HPCI room on MO-14. Worker A will take 5 hours in the vicinity of the valve to finish the job. Worker B will take 0.5 hours in the vicinity of the valve to finish the job.

CNS RP-120

NEBRASKA PUBLIC POWER DISTRICT
COOPER NUCLEAR STATION
RADIOLOGICAL SURVEY SHEET

KCT 1-9-06

DATE: _____
TIME: _____

% PWR 100 H2 Inj _____ scfm

Survey Inst (s) R020 / RML2
Serial No (s) 1566 / MG
Cal Due Date(s) 10/06 / 12/06

BKG CPM 80

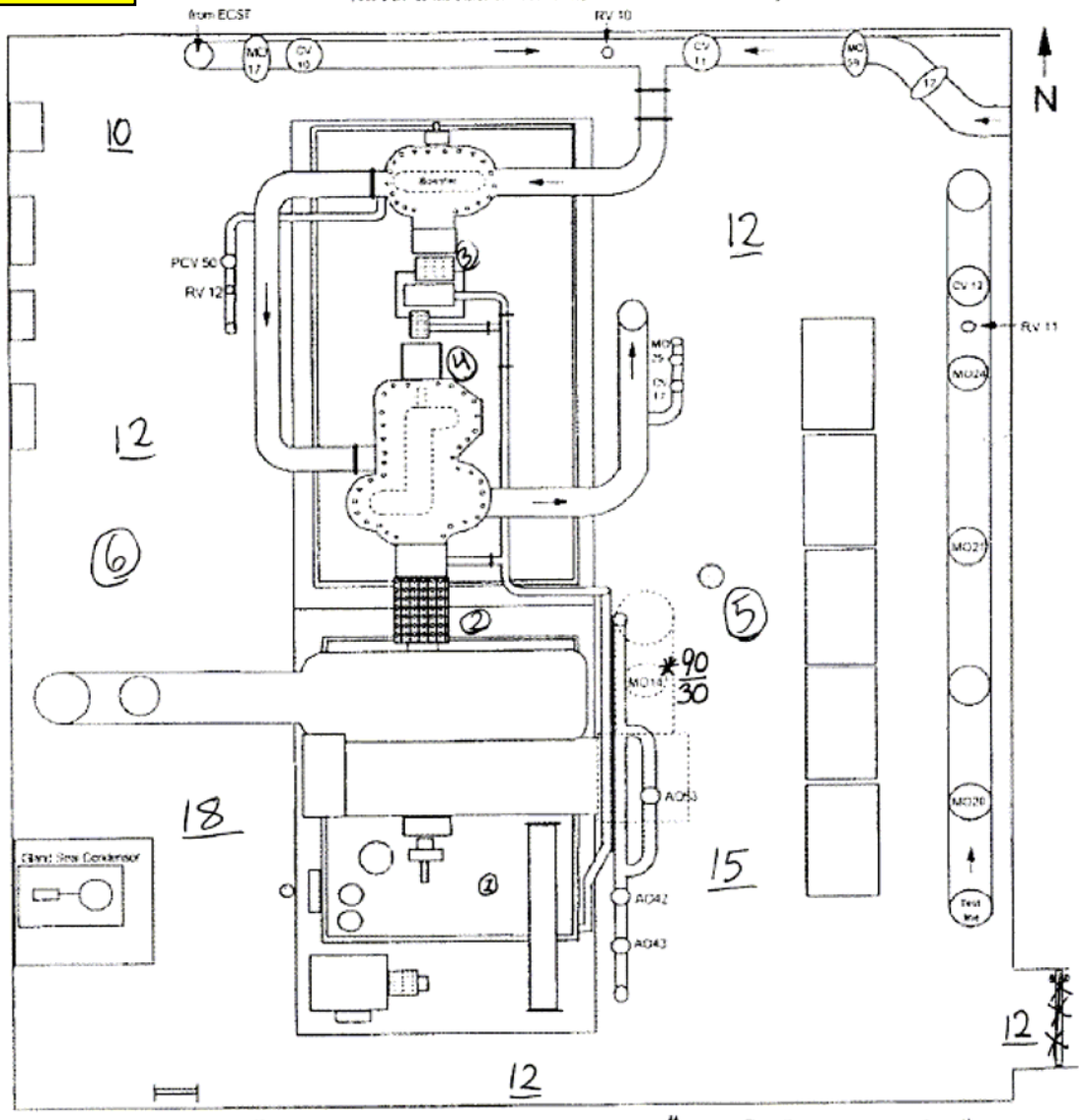
SURVEYOR: John Doe / John Doe
REVIEWED BY: Bob Mangus / Bob Mangus

DOSE RECEIVED: 1 mRem

DELETED INFORMATION

REASON FOR SURVEY: HPCI Run

NOTE: Dose rates in mRem/hr, Contamination levels in dpm/100cm² unless otherwise noted



RWP/SWP USED _____

AIR SAMPLE DATA _____

#	Results	Location	#	Results	Location	#	Results	Location
1	8K		5	<1K				
2	10K		6	<1K				
3	45K							
4	58K							

Comments _____

All smears <1000dpm/100cm² unless otherwise noted

Task No.: 344022O0303

Emergency Dose Authorization

Trainee: _____ Examiner: _____

Pass: ☐ Fail: ☐ Examiner signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: Classroom / Simulator
2. Appropriate Trainee Levels: SRO / STE
3. Evaluation Method: Perform
4. Performance Time: 15 minutes
5. NRC K/A: 2.3.4 Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized. (CFR: 43.4 / 45.10)

Directions to Examiner:

1. The intent of this JPM is to present to the operator a set of conditions that he must use to authorize an emergency worker to exceed established occupational exposure limits
2. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space, if desired, by the examiner.
3. Give the trainee his copy of the Directions to the Trainee (Attachment 1) and Attachment 2 when ready to start the JPM.
4. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to use the provided attachment to determine who to authorize to receive an emergency exposure. Also identify the basis for your decision. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

Task No.: 344022O0303

Emergency Dose Authorization

General Conditions:

The plant has experienced an accident that has resulted in an ongoing exposure to downwind population.

General References:

1. Procedure 5.7.12, EMERGENCY RADIATION EXPOSURE CONTROL

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*".

Task Standards:

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

Initiating Cue(s):

The plant has experienced the events listed on Attachment 2 of this JPM. You are to determine the individual to authorize to receive an emergency dose. Inform the examiner of the individual to receive the emergency dose.

Tell the trainee to begin.

Task No.: 344022O0303

Emergency Dose Authorization

Performance Checklist	Standards	Initials
1. Refers to Procedure	The operator refers to Procedure 5.7.12, EMERGENCY RADIATION EXPOSURE CONTROL	_____
2. Determine the individuals that are excluded.	Jaimee Thomas is excluded because she previously received an emergency exposure. Gracie Wood is excluded because she is declared pregnant and Jesse Nelson is excluded because he is under 18 years of age.	_____
NOTE: Because the authorized dose is for only 25 REM individuals that are not volunteers can still be used. While they should be volunteers they are not excluded just because they do not volunteer. As such the candidate may pick Paul Perry to receive the emergency dose even though he is not a volunteer.		
3. Select the individual.	Matt Young and/or Paul Perry are selected to receive the emergency exposure.	_____ *
4. The individuals are recorded on Attachment 2.	Matt Young and/or Paul Perry are recorded on Attachment 2.	_____

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to use the provided attachment to determine the individual to authorize to receive an emergency dose. Inform the examiner of the individual to receive the emergency dose by recording the name on the provided attachment.

General Conditions:

The plant has experienced an accident that has resulted in an ongoing exposure to downwind population. You have already determined that corrective actions are required to protect large populations from radiological exposure and have authorized up to 25 Rem exposure for these actions.

Initiating Cues:

The plant has experienced the events listed on Attachment 2 of this JPM. Five individuals onsite are capable of performing corrective action that would limit offsite dose. You are to determine the individual to authorize to receive an emergency dose. Inform the examiner of the individual to receive the emergency dose and record the name on the provided attachment.

ATTACHMENT 2

Individual	Age	Lifetime Exposure	Declared Pregnant	Previous Planned Special Exposure	Previous Emergency Exposure	Volunteer
Jesse Nelson	17	0.1 Rem	N/A	0 Rem	None	Yes
Matt Young	34	25 Rem	N/A	5 Rem	None	Yes
Paul Perry	59	40 Rem	N/A	0 Rem	None	No
Gracie Wood	21	0.5 Rem	Yes	0 Rem	None	Yes
Jaimee Thomas	65	5.5 Rem	No	0 Rem	5 Rem	Yes

Event Description:

An accident occurred that resulted in significant fuel failure. A damper failure in the reactor building has resulted in a ground level release. This damper is required to be repositioned in order to terminate the ground level release. The dose projection for the population downwind is 50 Rem TEDE and 500 Rem CDE (thyroid). If the damper is repositioned the projected dose is expected to be less than 0.5 Rem TEDE and less than 5 Rem CDE (thyroid). All attempts to close it remotely have been unsuccessful.

You have determined that corrective actions are required to protect large populations from radiological exposure and have authorized up to 25 Rem exposure for these actions.

Individual(s) authorized to receive the emergency dose: _____

Signature of Emergency Director:_____

ATWS SCENARIO EAL

Trainee: _____ Examiner: _____

Pass: ☐ Fail: ☐ Examiner signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: SIM
2. Appropriate Trainee Level: SRO
3. Evaluation Method: Perform
4. Performance Time: 20 minutes
5. NRC K/A 2.4.41 2.3/4.1

Directions to Examiner:

1. This JPM evaluates the trainee's ability to determine the Emergency Action Level from an ATWS Scenario (Scenario 1).
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.

General Conditions:

1. As seen during the previous simulator scenario.

General References:

1. EPIP 5.7.1, Emergency Classification, Revision 33

General Tools and Equipment:

None

Special Conditions, References, Tools, Equipment:

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

ATWS SCENARIO EAL

Task Standards:

1. Accurately classify the event using the correct plant procedure.

Initiating Cue(s):

The Shift Manager has directed you to determine what the highest Emergency Action Level was during the previous scenario. Notify the Shift Manager when the task is complete.

ATWS SCENARIO EAL

Performance Checklist	Standards	Initials
1. Consult EAL.	Candidate consults EAL procedure.	_____
2. EAL classification.	Candidate identifies that a Site Area Emergency would have been declared per EAL 3.3.4. This is because boron was injected to shut down the reactor.	_____*
3. Inform the SM that the task is complete.	Inform Shift Manager that the Emergency Classification is complete. #CUE: The SM Acknowledges that it is complete. This JPM is complete.	_____

ATTACHMENT 1

Directions to Candidate:

When I tell you to begin, you are to determine the Emergency Action Level from the ATWS Scenario you just experienced. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

General Conditions:

1. As seen during the previous simulator scenario.

Initiating Cues:

The Shift Manager has directed you to determine what the highest Emergency Action Level was during the previous scenario. Notify the Shift Manager when the task is complete.

Task No. 211005O0101

Initiate SLC (Alt Path RWCU fails to Isolate)

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

THIS IS AN ALTERNATE PATH JPM

Additional Program Information:

1. Appropriate Performance Locations: Simulator
2. Appropriate Trainee Level: RO/SRO
3. Evaluation Method: **Perform**
4. Performance Time: 10 Minutes
5. NRC K/A 2.1.30 (3.0/3.4) and 211000 A4.06 (3.9/3.9)

Directions to Examiner:

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

Directions to Trainee:

When I tell you to begin, you are to initiate the SLC using both pumps. 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. An ATWS occurred.
2. Plant conditions require that SLC be initiated.

Task No. 211005O0101

Initiate SLC (Alt Path RWCU fails to Isolate)

General References:

1. 2.2.74, STANDBY LIQUID CONTROL SYSTEM

General Tools and Equipment:

1. Key to operate the SLC pumps.

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

An ATWS has occurred and the CRS has directed you to initiate SLC notify the CRS when you have completed the required actions.

Note: Tell the trainee to begin.

Task No. 211005O0101

Initiate SLC (Alt Path RWCU fails to Isolate)

Performance Checklist	Standards	Initials
1. Obtain the procedure 2.2.74.	Procedure 2.2.74 obtained.	_____
2. Starts Both SLC pumps.	SLC PUMP A and SLC PUMP B keylock switches on Panel 9-5 are in the START position.	_____ *
3. Check both SLC pumps start.	Check that both SLC pump RED Pump Running lights on Panel 9-5 are illuminated. CUE: Both SLC pump RED running lights are ON and the GREEN lights are OFF.	_____
4. Checks both squib valves fired.	Checks both white SQUIB VALVE READY DS-3A (1106A) and SQUIB VALVE READY DS-3B (1106B) lights are OFF and Annunciator 9-5-2/G-7, LOSS OF CONT TO SQUIB VLVS, alarms. CUE: Both white SQUIB VALVE READY DS-3A (1106A) and SQUIB VALVE READY DS-3B (1106B) lights are OFF and Annunciator 9-5-2/G-7, is alarming.	_____
5. Verify SLC pump discharge pressure is greater than reactor pressure.	Compares SLC pump discharge pressure (SLC-PI-65) to reactor pressure. CUE: SLC pump discharge pressure is slightly greater than reactor pressure.	_____

Task No. 211005O0101

Initiate SLC (Alt Path RWCU fails to Isolate)

Performance Checklist	Standards	Initials
6. Verify RWCU isolates.	Checks position of RWCU-MO-15 and RWCU-MO-18 and the status of the RWCU pumps. CUE: The RED indicating lights for both RWCU-MO-15 and 18 are ON and the GREEN Lights are OFF. RWCU pump A RED light is ON and the GREEN light is OFF.	_____
7. Informs CRS that RWCU failed to isolate.	CRS informed. #CUE: Acknowledge as the CRS that RWCU failed to isolate.	_____
8. Isolates RWCU.	RWCU-MO-15 and 18 control switches are momentarily place to CLOSE.	_____*
9. Verifies RWCU is isolated.	Checks the position indication for RWCU-MO-15 and 18. And checks the indication for RWCU pump 1A. CUE: RWCU-MO-15 and 18 GREEN position indicating lights are ON and the RED position indicating lights are OFF. The RWCU pump 1A GREEN light is ON and the RED light is OFF.	_____
10. Verifies the RWCU-MO-74, DEMIN SUCTION BYPASS VLV is throttled open.	Check the position indicating lights for RWCU-MO-74. CUE: RWCU-MO-74 RED and GREEN lights are ON.	_____
11. Informs the CRS That the SLC system has been initiated.	CRS informed #CUE: Acknowledge as the CRS that SLC has been initiated.	_____

Task No. 211005O0101

Initiate SLC (Alt Path RWCU fails to Isolate)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None					
B. Initialize the Simulator in IC		Any					
C. Run Batch File		None					
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	None						
2. Malfunctions	RP-12	Group 3 Isolation Failure	N/A				
	N/A	N/A					
3. Remotes	None						
	N/A	N/A					
4. Overrides	None						
	N/A	N/A					
5. Panel Setup	a. Place Simulator in Run b. Insert RP-12 c. Place the Simulator in FREEZE						
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.							

Task No. 211005O0101

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to initiate the SLC using both pumps. 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. An ATWS occurred.
2. Plant conditions require that SLC be initiated.

Initiating Cue(s):

An ATWS has occurred and the CRS has directed you to initiate SLC notify the CRS when you have completed the required actions.

Task No.:

HPCI 92 Day Test Mode Surveillance

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Start Time: _____ Finish Time: _____

Comments:

Additional Program Information:

1. Appropriate Performance Location: Simulator
2. Appropriate Trainee Level: RO / SRO
3. Evaluation Method: Perform
4. Validation Time: 30 minutes
5. NRC K/A

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform a HPCI Operability Surveillance.
2. All blanks should be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space, if desired, by the examiner.
3. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
4. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to perform steps 3.58 through 3.102 of procedure 6.HPCI.103, HPCI IST AND 92 DAY TEST MODE SURVEILLANCE OPERATION. Note that vibration monitoring, stop valve transient tests, and ultrasonic flow measurements will NOT be performed as part of this surveillance. The operators on Panel 9-3 have been briefed on all the requirements associated with this surveillance. All independent verifications have been waived for the performance of this surveillance. You can assume all prerequisites and steps performed up to step 3.58 have been completed / met satisfactorily. Before you start, I will provide the general plant conditions, the Initiating Cues and answer any questions you may have.

Task No.:

HPCI 92 Day Test Mode Surveillance

General Conditions:

1. Reactor is approximately 90 percent power.
2. All plant systems are in their normal lineup with the exception of those supporting the HPCI surveillance.
3. There are no emergency or abnormal procedures in use.
4. There is another operator at panel 9-21 to monitor and record Suppression pool temperatures.
5. PRA risk is green.

General References:

1. Procedure 6.HPCI.103, HPCI IST AND 92 DAY TEST MODE SURVEILLANCE OPERATION.

General Tools and Equipment:

1. Calibrated stop watch.

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*."

Task Standards:

1. 100% of critical elements successfully completed without error.

Initiating Cue(s):

When I tell you to begin, you are to perform steps 3.59 through 3.102 of procedure 6.HPCI.103, HPCI IST AND 92 DAY TEST MODE SURVEILLANCE OPERATION. Note that vibration monitoring, stop valve transient tests, and ultrasonic flow measurements will NOT be performed as part of this surveillance. The operators on Panel 9-3 have been briefed on all the requirements associated with this surveillance. All independent verifications have been waived for the performance of this surveillance. You can assume all prerequisites and steps performed up to step 3.59 have been completed/met satisfactorily.

Before you start, I will provide the general plant conditions, the Initiating Cues and answer any questions you may have. You are to notify the CRS when the task is completed.

This JPM does have one time critical element associated with it.

Task No.:

HPCI 92 Day Test Mode Surveillance

Performance Checklist	Standards/Cues	Initials
1. Opens MO-21.	The Operator opens HPCI-MO-21, TEST BYPASS TO ECST VLV.	_____
2. Opens MO-24.	The Operator opens HPCI-MO-24, ECST TEST LINE SHUTOFF VLV.	_____
3. Perform following concurrently: a. Start AUXILIARY OIL PUMP and time STOP VALVE; record time on Attachment 1, Table 1. b. Open and time HPCI-MO-14, STM TO TURB VLV; record time on Attachment 2, Table 1.	The Operator starts the AOP and records time within 0.1 seconds. (Note the stop watch is started when the switch is taken to open.) Opens MO-14 and records time within 0.1 seconds. NOTE: Record time of opening MO-14 for a time critical step. **#CUE:** A Second Operator will record MO-14 Time.	_____
4. Check STOP VALVE and the GOVERNOR VALVEs open.	The Operator checks Turbine STOP and GOVERNOR VALVEs open.	_____
5. Check HPCI-AO-42 is CLOSED.	The Operator checks HPCI-AO-42, STEAM LINE DRAIN TO CONDENSER ISOLATION VALVE, is closed.	_____
6. Check HPCI-AO-43 is CLOSED.	The Operator checks HPCI-AO-43, STEAM LINE DRAIN TO CONDENSER ISOLATION VALVE, is closed.	_____
7. Check locally FC-R-1G (HPCI Room) is running.	The Operator checks locally FC-R-1G (HPCI Room) is running **CUE:** FC-R-1G is running.	_____
8. Checks MO-25 CLOSED	The Operator checks that the MO-25 Minimum Flow Valve is CLOSED	_____

Task No.:

HPCI 92 Day Test Mode Surveillance

Performance Checklist	Standards/Cues	Initials
9. Check Annunciator M-2/E-4 is clear.	The Operator checks Annunciator M-2/E-4, HPCI ROOM (SW) FCU G LOW REC FLOW, is clear.	_____
10. Performs following concurrently: a. Adjust HPCI-FIC-108, as required, to obtain ≥ 4250 gpm flow. b. Throttle HPCI-MO-21, as required, to obtain discharge pressure ≥ 100 psig above reactor pressure.	The Operator performs the following concurrently: - Adjust HPCI-FIC-108, as required, to obtain ≥ 4250 gpm flow. - Throttle HPCI-MO-21, as required, to obtain discharge pressure ≥ 100 psig above reactor pressure. **CUE:** If asked, ultrasonic flow measurements and the stop valve transient test are not being performed (steps 3.71/72/73 are NA).	_____*
10. Records following on Attachment 1, Table 2: - HPCI flow. - Reactor Press (Panel 9-5). - HPCI Disch Press.	The Operator records the following on Attachment 1, Table 2: - HPCI-FIC-108 flow. - RFC-R-LRPR97 reactor pressure (Panel 9-5). - HPCI-PI-81 discharge pressure (LR 25-50/RHR B & D Pump Room **#CUE:** HPCI-PI-81 reads 1250 psig.	_____
11. Monitors suppression pool level.	The Operator monitors suppression pool level and lowers, as required, per Procedure 2.2.69.3 # **CUE:** Suppression pool level and torus pressure are being monitored by another operator.	_____

Task No.:

HPCI 92 Day Test Mode Surveillance

Performance Checklist	Standards/Cues	Initials
12. Records pressure and check CM-PI-268 is not pegged high.	The Operator checks with the SO in area and request the CM pressure and that CM-PI-268 is not pegged high. **#CUE:** CM-PI-268 is not pegged high and indicates 65 psig.	_____
13. Balance HPCI-FIC-108 and place it in MAN.	The Operator balances HPCI-FIC-108 and places it in MAN.	_____
14. Perform following concurrently: - Throttle HPCI-MO-21. - Adjust HPCI-FIC-108.	The Operator performs the following concurrently: - Throttle HPCI-MO-21 until flow on HPCI-FIC-108 is 4250 gpm. - Adjust HPCI-FIC-108 until turbine/pump speed on hand-held digital tachometer is 3980 to 4000 rpm. CUE: The hand-held tachometer indicates 3985 rpm.	_____*
15. Records required data on Attachment 1, Table 3.	The Operator after approximately 5 minutes after HPCI turbine is started, records required data on Attachment 1, Table 3, regardless of pump flow rate. STANDARD: This step must be performed within 6 minutes of step 3.64.2. (This is Performance Checklist step 3 above.) CUE: Provide candidate with Table 3 that has local readings filled in.	_____*

Task No.:

HPCI 92 Day Test Mode Surveillance

Performance Checklist	Standards/Cues	Initials
16. Hold flow at 4250 gpm and turbine/pump speed.	The Operator holds flow at 4250 gpm and turbine/pump speed between 3980 and 4000 rpm (as read by the hand-held digital tachometer) for ≥ 2 minutes to allow for flow stabilization.	_____
17. Checks HPCI-AOV-PCV50.	The Operator checks HPCI-AOV-PCV50 is between FULL CLOSED and FULL OPEN. **#CUE:** The Valve is in the intermediate position	_____
18. Check HPCI-AO-39 and 40 CLOSE.	The Operator checks that the HPCI-AO-39 and 40 CLOSE.	_____
19. Balance HPCI-FIC-108 and place in BAL.	The operator balances HPCI-FIC-108 and places it in BAL.	_____
20. Record Specified Temperatures	The Operator at 9-21 records the specified temperatures on Attachment 2. #CUE: There is another operator recording temperatures on Panel 9-21.	_____
21. Have Maintenance check packing not leaking on HPCI-V-44.	The Operator has Maintenance check packing and body to bonnet gasket are not leaking on HPCI-V-44, HPCI TURBINE EXHAUST TO SUPPRESSION POOL ISOLATION. CUE: There is no leakage on V-44.	_____
CUE: Inform candidate step 3.90 is for vibration monitoring and is NA.		

Task No.:

HPCI 92 Day Test Mode Surveillance

Performance Checklist	Standards/Cues	Initials
22. Check AUX OIL PUMP is OFF.	The Operator checks that the Aux Oil Pump is not running.	_____
23. Checks AOP switch in START.	The Operator checks that the AOP control switch is in START.	_____
24. Press and hold TURBINE TRIP button.	The Operator presses and holds the TURBINE TRIP button until directed to release and checks that the STOP VALVE closes.	_____
25. Close HPCI-MO-14, STM TO TURB VLV.	The Operator closes the HPCI-MO-14, STM TO TURB VLV	_____
26. Verify HPCI-AO-42 and 43 are open.	The Operator verifies HPCI-AO-42 and 43 are open.	_____
27. Close HPCI-MO-21 and MO-24.	The Operator closes HPCI-MO-21 and MO-24	_____
28. Ensure HPCI-FIC-108 setpoint tape at 4250 gpm.	The Operator ensures HPCI-FIC-108 setpoint tape at 4250 gpm	_____
29. Notify the CRS that the HPCI Surveillance is completed.	The Operator reports to the CRS that the HPCI Surveillance is completed. **#CUE:** Respond as the CRS and acknowledge the report.	_____

ATTACHMENT 1

Trainee Handout

Directions to Candidate:

When I tell you to begin, you are to perform steps 3.58 through 3.102 of procedure 6.HPCI.103, HPCI IST AND 92 DAY TEST MODE SURVEILLANCE OPERATION.

Before you start, I will provide the general plant conditions, the Initiating Cues and answer any questions you may have.

This JPM does have one time critical element associated with it.

General Conditions:

6. Reactor is approximately 90 percent power.
7. All plant systems are in their normal lineup with the exception of those supporting the HPCI surveillance.
8. There are no emergency or abnormal procedures in use.
9. There is another operator at panel 9-21 to monitor and record Suppression pool temperatures.
10. PRA risk is green.

Initiating Cue(s):

When I tell you to begin, you are to perform steps 3.59 through 3.102 of procedure 6.HPCI.103, HPCI IST AND 92 DAY TEST MODE SURVEILLANCE OPERATION. Note that vibration monitoring, stop valve transient tests, and ultrasonic flow measurements will NOT be performed as part of this surveillance. The operators on Panel 9-3 have been briefed on all the requirements associated with this surveillance. All independent verifications have been waived for the performance of this surveillance. You can assume all prerequisites and steps performed up to step 3.59 have been completed / met satisfactorily.

Before you start, I will provide the general plant conditions, the Initiating Cues and answer any questions you may have. You are to notify the CRS when the task is completed.

ATTACHMENT 2

TABLE 3

TEST INSTRUMENTS: Tachometer Number: _____

Calibration Due Date: 12/31/2006

PARAMETER	ACTUAL VALUE	REFERENCE VALUE	ALERT RANGE	OPERABILITY LIMIT
Pump Flow Rate (Q) HPCI-FIC-108	*	4250 gpm	N/A	N/A
Turbine/Pump Speed (N) Hand-Held Tachometer	3985 rpm *	3980 to 4000 rpm	N/A	N/A
Discharge Pressure (P_d) HPCI-PI-81		N/A	N/A	N/A
Post-Start Inlet Pressure (P_{ia}) HPCI-PI-99		N/A	N/A	N/A
Differential Pressure ($DP = P_d - P_{ia}$)			to <	to

* REFERENCE VALUE for Pump Flow Rate (Q) and Turbine/Pump Speed (N) shall be duplicated to provide method to analyze other parameters.

CNS OPERATIONS MANUAL SURVEILLANCE PROCEDURE 6.HPCI.103 HPCI IST AND 92 DAY TEST MODE SURVEILLANCE OPERATION	USE: CONTINUOUS QUALITY: QAPD RELATED EFFECTIVE: 4/21/06 APPROVAL: ITR-RDM OWNER: OSG SUPV DEPARTMENT: OPS

1. PURPOSE 1
2. PRECAUTIONS AND LIMITATIONS 1
3. INSTRUCTIONS 2
4. ACCEPTANCE CRITERIA 13

ATTACHMENT 1 HPCI TEST DATA SHEET 16
ATTACHMENT 2 HPCI IST DATA SHEET 19
ATTACHMENT 3 HPCI PUMP VIBRATION DATA DRAWING AND VIBRATION METER SETTINGS 23
ATTACHMENT 4 SIGN-OFF AND REVIEW SHEET 24
ATTACHMENT 5 INFORMATION SHEET 26

REVISION VERIFICATION:
(initial use + every 7 days)

REV.	DATE	CHANGES
30	3/21/06	Revised frequency statements in P&L section and throughout procedure to meet new IST Program; clarified reference value establishing steps; added ultrasonic flow measurement steps for minimum flow line; added AC step to test HPCI-CV-14CV open; added alert ranges to pump table and associated AC step; changed "RETEST" to "ACCEPTABLE RANGE"; revised retest AC to match other surveillances; added CV Engineer; updated discussion section; added reference to new ASME Code; added reference to NRC IN 95-008.
31	see above	Moved transient recorder start step.

1. PURPOSE

1.1 This procedure provides instructions for station personnel to assess operational readiness of HPCI System.

2. PRECAUTIONS AND LIMITATIONS

2.1 To prevent damage to HPCI pump, AUXILIARY OIL PUMP switch shall be maintained in START during HPCI System operation. This will allow auxiliary oil pump to start during coast down of HPCI turbine.

2.2 HPCI turbine shall <u>not</u> be operated with oil temperature < 60°F or > 160°F.

2.3 IST test frequency is once per 92 days. Pump vibration data is required to be taken on a 6 month frequency (every other quarter) or as required for a post-maintenance test.

2.4 If this surveillance is being performed as a post-maintenance test for pump replacement/overhaul or impeller replacement, contact the IST Engineer or designee to determine if testing beyond this surveillance is required.

2.5 IST test frequencies for the check valve testing in this surveillance are in accordance with the IST Check Valve Condition Monitoring Program. The frequency for obtaining the ultrasonic flow measurement for HPCI-CV-17CV is once every 2 cycles.

3. INSTRUCTIONS

NOTE – If this is a reference value establishing test, then only fixed REFERENCE VALUES (values used to set up test conditions), absolute vibration OPERABILITY LIMITS, and absolute differential pressure OPERABILITY LIMITS are required to be filled in.

3.1 For IST test, ensure required REFERENCE VALUES, ALERT RANGES, and OPERABILITY LIMITS on Attachment 2, Table 3 and Table 4, have been filled in by IST Engineer, Surveillance Coordinator, or their designee prior to commencing test. N/A vibration data if not required. Person signing below shall be person completing data for this step.

Signature/Date: N. R. Clements Today's date

NOTE – Transient recording of stop valve position and balance chamber pressure should be obtained once every 92 days. This will require installation of I&C test equipment per Procedure 14.6.10.Ⓟ

3.2 Determine if stop valve transient recordings are required:Ⓟ [ ] YES; [X] NO

3.3 Surveillance Coordinator, IST Engineer, or designee shall determine if ultrasonic flow measurement for HPCI-CV-17CV is required. N/A ultrasonic flow measurement steps if not required.

3.4 Ensure following equipment is available:

3.4.1 Stopwatches (two required); N/A if valve timing is not required.

3.4.2 Two-channel brush recorder for transient traces; N/A if stop valve transient recordings are not being taken.

3.4.3 CSI Series 2100 vibration meter; N/A if vibrations are not required.

3.4.4 One calibrated digital hand-held tachometer.

3.4.5 Portable ultrasonic flow instrument; N/A if ultrasonic flow measurement is not required.

3.5 Ensure Maintenance is available to inspect HPCI-V-44 for leakage.

3.6 Ensure Maintenance is available to adjust lube oil pressures as required.

NOTE – Steps 3.7 and 3.8 are N/A if vibration data is not required.

3.7 Ensure Predictive Maintenance is available to take vibration data during the test.

3.8 Have Predictive Maintenance set up or verify the CSI Series 2100 vibration meter is set up in accordance with Procedure 7.1.7.5.

Signature/Date: Joe Dietz Today's Date

NOTE – Step 3.9 is N/A if ultrasonic flow measurement is not required.

3.9 Ensure Engineering is available to operate ultrasonic flow instrument.Ⓟ

3.10 Record IS number and calibration due date for test instruments on appropriate attachments.

3.11 Ensure HPCI System is in standby status.

3.12 Ensure reflective tape in place on pump shaft prior to starting HPCI.

3.13 Ensure a SGT Subsystem is in standby status.

3.14 Ensure level in suppression pool low enough in green band to support addition of water due to running HPCI in Test Mode.

3.15 Notify Radiation Protection to ensure SWP is issued and High Radiation Area controls are in place for procedure performance.Ⓟ

3.16 Ensure I&C personnel are available to connect and operate transient recorder; N/A if Step 3.2 is NO.

CAUTION – To prevent over-pressurizing HPCI test return line to ECSTs, HPCI-34 and HPCI-35 must be open before HPCI System is placed in operation.

3.17 Ensure following valves are sealed open:

3.17.1 HPCI-34, TEST RETURN TO EMERGENCY CONDENSATE STORAGE TANK 1A (Control Building Basement).

3.17.2 HPCI-35, TEST RETURN TO EMERGENCY CONDENSATE STORAGE TANK 1B (Control Building Basement).

3.18 Ensure reactor pressure ≥ 920 psig and ≤ 1020 psig.

3.19 If reactor thermal power is between 25% and 30% RTP, enter appropriate Condition and Required Action of LCO 3.7.7, Main Turbine Bypass System.©

3.20 If reactor thermal power is between 30% and 35% RTP, enter appropriate Condition and Required Action of LCO 3.3.1.1, Reactor Protection System (RPS) Instrumentation.©

3.21 Shift Manager shall give permission to perform test.

SM Signature/Date: Michael Barton Today's Date

3.22 Ensure Control Room Operator has logged procedure start.

3.23 Ensure HPCI TEST is displayed on Safety Systems Status Panel.

3.24 Ensure communications between HPCI Room and Control Room are adequate.

3.25 Have I&C install test equipment per Procedure 14.6.10 if stop valve transients are to be recorded; N/A if Step 3.2 is NO.

3.26 Ensure HPCI-VBM-2795A & B, HPCI VIBRATION MONITOR A and B, are on (R-903-SW).

3.27 Open HPCI-302, INJECTION LINE VENT SHUTOFF VALVE (southwest Torus Area).

NOTE – While performing Step 3.28, estimate how long until air free water flows. Step 3.28.1 is not AC.

3.28 [redacted] Open HPCI-303, INJECTION LINE VENT SHUTOFF VALVE (southwest Torus Area), until air free water flows.

3.28.1 If air entrained water flows > ~ 15 seconds, generate a Condition Report to have Engineering evaluate air in system.

3.29 Close HPCI-303.

3.30 Close HPCI-302.

3.31 Open HPCI-311, INJECTION LINE VENT SHUTOFF VALVE (HPCI Room).

NOTE – While performing Step 3.32, estimate how long until air free water flows. Step 3.32.1 is not AC.

3.32 [redacted] Open HPCI-312, INJECTION LINE VENT SHUTOFF VALVE (HPCI Room), until air free water flows.

3.32.1 If air entrained water flows > ~ 15 seconds, generate a Condition Report to have Engineering evaluate air in system.

3.33 Close HPCI-312.

3.34 Close HPCI-311.

3.35 Observe HPCI booster pump bearing oil level sight glasses and turbine lube oil tank level sight glass to ensure there is adequate lubrication for booster pump, main pump, and turbine operation.

3.36 Check HPCI-AOV-PCV50, LUBE OIL COOLING PRESSURE CONTROL VALVE (HPCI Room), is FULL CLOSED.

3.37 Ensure HPCI-MO-14, STM TO TURB VLV, is closed.

3.38 Inform Shift Manager that HPCI System is inoperable for testing.

NOTE 1 – Stop valve opening will be timed twice in this procedure to collect trending data for analysis of hydraulic oil system preconditioning.

NOTE 2 – Stop valve opening time is measured, with stopwatch to nearest 1/10 of a second, from time auxiliary oil pump switch is placed to START until STOP VALVE green light turns off.

3.39 Start AUXILIARY OIL PUMP and time STOP VALVE; record time on Attachment 1, Table 1.

3.40 Record oil pressures on Attachment 1, Table 3.Ⓟ[1]

3.41 Lift and hold local trip knob.Ⓟ

3.42 [redacted] Check STOP VALVE closes.Ⓟ

3.43 Release local trip knob.Ⓟ

3.44 [redacted] Check STOP VALVE opens.Ⓟ

CAUTION – While preliminary adjustments can be made at any time, final pressure adjustments must be made after oil temperature has reached a steady-state, stabilized condition.

3.45 If any Actual Value pressure recorded in Step 3.40 is less than the specified range or more than 2 psig above the specified range, perform the following:Ⓟ[1]

3.45.1 Contact Maintenance to adjust lube oil pressures to within the range.

3.45.2 If adjustments are made, record AS LEFT values on Attachment 1, Table 3.

3.46 Stop AUXILIARY OIL PUMP by placing its switch to AUTO.

NOTE – Steps 3.47 and 3.48 are N/A if ultrasonic flow measurement is not required.

3.47 Have Engineering install ultrasonic flow instrument on HPCI 4" minimum flow line.Ⓟ

3.48 (Concurrent Verification) In Panel 9-39 (Auxiliary Relay Room), lift lead from TB AA, Terminal 70 (HP79-4), to maintain HPCI-MO-25, MIN FLOW BYP VLV open.

Performed By: JDB

Verified By: MAB

3.49 Record pressure on CM-PI-268 (R-881-SW Quad) and status of Reactor Building auxiliary condensate pump on Attachment 1.

CAUTION – Thermal stratification of suppression pool can occur during HPCI operation without suppression pool recirculation. Thermal stratification may not be indicated on Control Room instruments.Ⓟ

NOTE 1 – Maximum bulk heat-up rate of suppression pool due to HPCI System operation is 30°F per hour.Ⓟ

NOTE 2 – Maximum allowable suppression pool average temperature during test is 105°F and is returned to ≤ 95°F within 24 hours. This temperature is recorded per appropriate attachment of Procedure 6.LOG.601.Ⓟ

3.50 If it is possible that suppression pool average temperature could exceed 95°F while performing procedure, place an RHR Subsystem in Suppression Pool Cooling Mode per Procedure 2.2.69.3.Ⓟ

3.51 At VBD-M, ensure REC-MO-711 or REC-MO-714, CRITICAL LOOP SUPPLY (associated with an in service REC HX), is open.

3.52 Start SGT System per Procedure 2.2.73.

3.53 Start GLAND SEAL CNDSR BLOWER.

3.54 Turn on TURBINE SHAFT VIBRATION indicator.

3.55 Ensure TURBINE VIBRATION HPCI-VBR-2794 recorder is on.

3.56 Have I&C open HPCI-V-2795 and HPCI-V-2796, ROOT VALVE and ISOLATION VALVE, for HPCI-PT-2795 (above HPCI turbine stop valve); N/A if stop valve transients are not being recorded.

NOTE – Step 3.57 satisfies the requirements of SR 3.6.2.1.1.

3.57 [redacted]AC[redacted] Start recording average suppression pool temperature, per applicable attachment of Procedure 6.LOG.601, every 5 minutes.

3.58 If average suppression pool average temperature cannot be determined or suppression pool average temperature exceeds 105°F, then terminate test.

3.59 Open HPCI-MO-21, TEST BYPASS TO ECST VLV.

3.60 Open HPCI-MO-24, ECST TEST LINE SHUTOFF VLV.

CAUTION 1 – HPCI turbine speed > 5000 rpm any time during turbine operation requires tripping turbine and preventing restart.Ⓟ

CAUTION 2 – HPCI System will not respond to an automatic initiation signal as long as AUXILIARY OIL PUMP switch is in PULL-TO-LOCK.Ⓟ

CAUTION 3 – Suppression pool water level ≥ +1.5" any time during turbine operation requires securing turbine to terminate water addition.©

3.61 Ensure Operators at Panel 9-3 are aware of speed monitoring and tripping requirements.Ⓟ

3.62 Ensure Operator at Panel 9-3 is aware of suppression pool level requirements.©

3.63 Have I&C turn on transient recorder; N/A if stop valve transients are not being recorded.

NOTE 1 – Step 3.82 should be performed ~ 5 minutes after HPCI turbine start regardless of pump flow rate.

NOTE 2 – Stop valve opening time is measured, with stopwatch to nearest 1/10 of a second, from time auxiliary oil pump switch is placed to START until STOP VALVE green light turns off.

NOTE 3 – HPCI-MO-14 opening time is measured, with stopwatch to nearest 1/10 of a second, from time switch is placed to OPEN until green light turns off.

NOTE 4 – HPCI-MO-25, MIN FLOW BYP VLV, may open when HPCI turbine is started.

NOTE 5 – Expect Annunciator 9-3-1/A-9, REACTOR BLDG HIGH RAD, due to HPCI Pump Room area high radiation upon HPCI start.

3.64 Perform following concurrently:Ⓟ

3.64.1 Start AUXILIARY OIL PUMP and time STOP VALVE; record time on Attachment 1, Table 1.

3.64.2 Open and time HPCI-MO-14, STM TO TURB VLV; record time on Attachment 2, Table 1.

3.65 Check STOP VALVE opens.Ⓟ

3.66 Check TURBINE GOVERNOR VALVE opens.Ⓟ

3.67 [redacted] Check HPCI-AO-42, STEAM LINE DRAIN TO CONDENSER ISOLATION VALVE, is closed.

3.68 Check HPCI-AO-43, STEAM LINE DRAIN TO CONDENSER ISOLATION VALVE, is closed.

3.69 [redacted] Check locally FC-R-1G (HPCI Room) is running.

3.70 [redacted] Check Annunciator M-2/E-4, HPCI ROOM (SW) FCU G LOW REC FLOW, is clear.

3.71 If ultrasonic flow measurements are being taken, perform following:

3.71.1 Ensure HPCI-MO-25, MIN FLOW BYP VALVE, is open.

3.71.2 Have Engineering record flow reading on ultrasonic flow instrument on Attachment 2, Table 2.Ⓟ

NOTE – When lead HP79-4 is landed, HPCI-MO-25 will close.

3.71.3 (Independent Verification) In Panel 9-39, land lead lifted from TB AA, Terminal 70 (HP79-4).

Performed By: _____

Verified By: _____

3.71.4 (Independent Verification) Check HPCI-MO-25 is closed.

Performed By: _____

Verified By: _____

3.71.5 (Independent Verification) If HPCI-MO-25 did not close, close valve.

Performed By: _____

Verified By: _____

3.72 Check HPCI-MO-25 is closed when system flow ≥ 800 gpm; N/A if ultrasonic flow measurements being obtained.

3.73 Have I&C turn off and disconnect transient recorder; N/A if stop valve transients are not being recorded.

3.74 Performing following concurrently:

3.74.1 Adjust HPCI-FIC-108, as required, to obtain ≥ 4250 gpm flow.

3.74.2 Throttle HPCI-MO-21, as required, to obtain discharge pressure ≥ 100 psig above reactor pressure.

3.75 Record following on Attachment 1, Table 2:

3.75.1.1 HPCI-FIC-108 flow.

3.75.1.2 RFC-R-LRPR97 reactor pressure (Panel 9-5).

3.75.1.3 HPCI-PI-81 discharge pressure (LR 25-50/RHR B & D Pump Room).

3.76 Monitor suppression pool level and lower, as required, per Procedure 2.2.69.3.

3.77 Monitor and lower torus pressure per Procedure 2.2.73, as required.

3.78 Record pressure indicated at CM-PI-268 and status of Reactor Building auxiliary condensate pump on Attachment 1.

3.79 [redacted] Check CM-PI-268 is not pegged high.

NOTE – If auto initiation of HPCI occurs, HPCI-FIC-108 is immediately placed in BAL and its settape adjusted to obtain 4250 gpm.

3.80 Balance HPCI-FIC-108 and place it in MAN.

3.81 Perform following concurrently:

3.81.1 Throttle HPCI-MO-21 until flow on HPCI-FIC-108 is 4250 gpm.

3.81.2 Adjust HPCI-FIC-108 until turbine/pump speed on hand-held digital tachometer is 3980 to 4000 rpm.

3.82 Approximately 5 minutes after HPCI turbine start, record required data on Attachment 1, Table 3, regardless of pump flow rate.Ⓟ[2]

CAUTION – While preliminary adjustments can be made at any time, final pressure adjustments must be made after oil temperature has reached a steady-state, stabilized condition.

3.83 If any Actual Value pressure recorded in Step 3.82 is not within the specified range, perform the following:Ⓟ[2]

3.83.1 Contact Maintenance to adjust lube oil pressures to within the specified range.

3.83.2 If adjustments are made, record AS LEFT values on Attachment 1, Table 3.

NOTE – Step 3.85 may be performed during 2 minute flow stabilization period.

3.84 Hold flow at 4250 gpm and turbine/pump speed at 3980 to 4000 rpm (as read by the hand-held digital tachometer) for ≥ 2 minutes to allow for flow stabilization.

3.85 [redacted] Check HPCI-AOV-PCV50 is between FULL CLOSED and FULL OPEN.

NOTE 1 – Vibration readings are taken for IST Program testing by either (1) connecting the CSI Series 2100 vibration meter to HPCI-VBM-2795A and HPCI-VBM-2795B, and selecting the appropriate vibration points for monitoring, (2) taking local vibration measurements directly at the pump bearing locations using the CSI Series 2100 vibration meter, or (3) a combination of both. Use indicators listed on Attachment 2, Table 4, for data collection.

NOTE 2 – Vibration data is taken at points shown on Attachment 3 per Procedure 7.1.7.5.

NOTE 3 – HPCI-PI-99 is located on LR 25-50 in RHR B & D Pump Room.

NOTE 4 – RPM should be as close to 4000 rpm as possible to duplicate conditions for analyzing other parameters.

3.86 After 2 minute flow stabilization period and while maintaining flow at 4250 gpm and turbine/pump speed on hand-held tachometer at 3980 to 4000 rpm, record required data on Attachment 2, Table 3 and Table 4.

3.87 [redacted] Check HPCI-AOV-AO39 and HPCI-AOV-AO40 closed and Annunciator 9-3-2/D-3, HPCI GSC HOTWELL HIGH LEVEL, clear.

3.88 (Independent Verification) Balance HPCI-FIC-108 and place it in BAL.

Performed By: _____

Verified By: _____

3.89 Adjust HPCI-FIC-108, as required, to obtain 4250 gpm flow.

3.90 Record vibration on HPCI-VBR-2794 and speed from hand-held tachometer on Attachment 1, Table 4.

3.91 Check AUXILIARY OIL PUMP is off.

3.92 Ensure AUXILIARY OIL PUMP switch is in START.

3.93 At Panel 9-21, record specified temperatures on HPCI-TR-115 on Attachment 2, Table 5.

3.94 [redacted] Have Maintenance check packing and body to bonnet gasket are not leaking on HPCI-V-44, HPCI TURBINE EXHAUST TO SUPPRESSION POOL ISOLATION.©

3.95 If leakage is observed in Step 3.94 and torus temperature and condition allow, do not proceed to Step 3.97 until Engineering has performed Step 3.96.

3.96 If leakage is observed in Step 3.94, immediately have Primary Containment System Engineer or STE evaluate Primary Containment OPERABILITY.

3.97 Press and hold TURBINE TRIP button until directed to release and check following:

3.97.1 [redacted] STOP VALVE closes.

3.97.2 [redacted] (Independent Verification) HPCI-MO-25 remains closed.

Performed By: _____

Verified By: _____

3.98 (Independent Verification) Close HPCI-MO-14, STM TO TURB VLV.

Performed By: _____

Verified By: _____

3.99 When HPCI-MO-14 indicates closed, release TURBINE TRIP button and check following:

3.99.1 [redacted] STOP VALVE opens.

3.99.2 [redacted] (Independent Verification) HPCI-AO-42 is open.

Performed By: _____

Verified By: _____

3.99.3 [redacted] (Independent Verification) HPCI-AO-43 is open.

Performed By: _____

Verified By: _____

3.100 (Independent Verification) Close HPCI-MO-21. Performed By: _____

Verified By: _____

3.101 (Independent Verification) Close HPCI-MO-24. Performed By: _____

Verified By: _____

3.102 (Independent Verification) Ensure HPCI-FIC-108 setpoint tape at 4250 gpm.

Performed By: _____

Verified By: _____

3.103 (Independent Verification) Have I&C close HPCI-V-2795; N/A if stop valve transients are not being recorded.Ⓟ

Performed By: N/A_____

Verified By: N/A_____

3.104 (Independent Verification) Have I&C close HPCI-V-2796; N/A if stop valve transients are not being recorded.Ⓟ

Performed By: N/A_____

Verified By: N/A_____

NOTE – Subsequent steps may be performed while removing test equipment.

3.105 Have I&C remove test equipment installed in Steps 3.25, 3.26, and 3.120; N/A if not installed.

3.106 Have Engineering remove ultrasonic flow instrument installed in Step 3.47. N/A if not installed.

3.107 Stop 5 minute recording suppression pool temperature per Procedure 6.LOG.601.

3.108 (Independent Verification) Place GLAND SEAL CNDSR BLOWER switch in AUTO.

Performed By: _____

Verified By: _____

3.109 Turn off TURBINE SHAFT VIBRATION indicator.

3.110 Notify Radiation Protection steam flow through turbine has been stopped and controls may be returned to normal.Ⓟ

3.111 Open HPCI-311, INJECTION LINE VENT SHUTOFF VALVE (HPCI Room).

NOTE – While performing Step 3.112, estimate how long until air free water flows.
Step 3.112.1 is not AC.

3.112 [redacted]AC[redacted] Open HPCI-312, INJECTION LINE VENT SHUTOFF VALVE (HPCI Room), until air free water flows.

3.112.1 If air entrained water flows > ~ 15 seconds, generate a Condition Report to have Engineering evaluate air in system.

3.113 (Independent Verification) Close HPCI-312. Performed By: _____

Verified By: _____

3.114 (Independent Verification) Close HPCI-311. Performed By: _____

Verified By: _____

3.115 Examine HPCI booster pump and main pump mountings for loose bolts.

3.116 Open HPCI-302, INJECTION LINE VENT SHUTOFF VALVE (southwest Torus Area).

NOTE – While performing Step 3.117, estimate how long until air free water flows. Step 3.117.1 is not AC.

3.117 [AC] Open HPCI-303, INJECTION LINE VENT SHUTOFF VALVE (southwest Torus Area), until air free water flows.

3.117.1 If air entrained water flows > ~ 15 seconds, generate a Condition Report to have Engineering evaluate air in system.

3.118 (Independent Verification) Close HPCI-303. Performed By: _____

Verified By: _____

3.119 (Independent Verification) Close HPCI-302. Performed By: _____

Verified By: _____

3.120 Ensure HPCI-VBM-2795A & B, HPCI VIBRATION MONITOR A and B, are off (R-903-SW).

3.121 Remove SGT Subsystem from service and place in standby status per Procedure 2.2.73.

3.122 (Independent Verification) Record valve number and then close REC-MO-711 or REC-MO-714; N/A if an RHR pump is running in Suppression Pool Cooling Mode.

Valve Number: _____

Performed By: _____

Verified By: _____

3.123 (Independent Verification) Approximately 20 minutes after turbine has stopped turning, place AUXILIARY OIL PUMP switch to stop and release to AUTO.

Performed By: _____

Verified By: _____

3.124 (Independent Verification) Check STOP VALVE is closed.

Performed By: _____

Verified By: _____

3.125 Restore Safety System Status Panel to normal.

4. ACCEPTANCE CRITERIA

4.1 [IST] [SR 3.5.1.1] Water flow was observed from high point vent valves.

4.2 [SR 3.5.1.7] Values recorded in shaded ACTUAL VALUE blocks on Attachment 1 are within OPERABILITY LIMIT.

4.3 [SR 3.6.2.1.1] Suppression pool average temperature was verified every 5 minutes to be within the applicable limits.

4.4 STOP VALVE closed when local turbine trip knob was lifted.

4.5 STOP VALVE opened when local turbine trip knob was released.

4.6 HPCI-AO-42 closed when HPCI-MO-14 was opened.

4.7 FC-R-1G was observed to be running.

4.8 Annunciator M-2/E-4, HPCI ROOM (SW) FCU G LOW REC FLOW, cleared.

4.9 STOP VALVE closed when TURBINE TRIP button was pressed.

4.10 HPCI-MO-25 remained closed when TURBINE TRIP button was pressed.

4.11 STOP VALVE, HPCI-AO-42, and HPCI-AO-43 opened when HPCI-MO-14 was closed and TURBINE TRIP button was released.

4.12 [redacted]IST[redacted] Values recorded in shaded ACTUAL VALUE blocks on Attachment 2, Tables 1, 3, 4, and 5, are within OPERABILITY LIMIT.

4.13 [redacted]IST[redacted] CM-PI-268 was not pegged high with HPCI pump running.

4.14 [redacted]IST[redacted] HPCI-AOV-PCV50 was between full open and full closed when HPCI pump was running.

4.15 [redacted]IST[redacted] Value recorded in shaded ACTUAL VALUE block on Attachment 2, Table 2, is within OPERABILITY LIMIT.

4.16 HPCI-V-44 packing and body to bonnet gasket were not leaking.©

4.17 [redacted]IST[redacted] STROKE TIME recorded in shaded block on Attachment 2, Table 1, is within IST ACCEPTABLE RANGE.

4.18 [redacted]IST[redacted] RETEST STROKE TIME recorded in shaded block on Attachment 2, Table 1, is within IST ACCEPTABLE RANGE.

4.19 [redacted]IST[redacted] ACTUAL VALUES recorded in shaded blocks of Attachment 2, Tables 3 and 4, that fall within ALERT RANGE shall have a Condition Report generated (unless one already exists for affected parameter) documenting condition.

4.20 [redacted]IST[redacted] With HPCI-AOV-AO39 and HPCI-AOV-AO40 closed, Annunciator 9-3-2/D-3, HPCI GSC HOTWELL HIGH LEVEL, is clear, during HPCI operation.

4.21 If Steps 4.4, 4.5, 4.7, or 4.9 through 4.14 are not satisfied, ensure HPCI System is declared inoperable.

4.22 If Step 4.6 is not satisfied, ensure HPCI-AO-42 is declared inoperable.

4.23 If Step 4.8 is not satisfied, perform Procedure 6.REC.601 to determine if FCU REC flow is within OPERABILITY LIMIT.

4.24 If Step 4.15 is not satisfied, ensure HPCI-CV-17CV is declared inoperable.

4.25 If Step 4.16 is not satisfied, perform an OPERABILITY Determination on primary containment.

4.26 If Step 4.17 is not satisfied, immediately retest valve and perform Step 4.28.

4.27 If Step 4.20 is not satisfied, ensure HPCI-CV-14CV is declared inoperable.

4.28 If valve retest was performed, perform following:

4.28.1 If Step 4.18 is satisfied, document probable cause of initial test deviation on Discrepancy Sheet.

4.28.2 If Step 4.18 is not satisfied, assess OPERABILITY per Procedure 0.5.OPS within 96 hours.

ATTACHMENT 1 HPCI TEST DATA SHEET

TABLE 1

1. Record Stopwatch Calibration Due Date: 11/02/06____

2. Record Stopwatch Identification Number: 23419_____

VALVE NUMBER	OPENING STROKE TIME seconds	RANGE * seconds
Step 3.39: STOP VALVE (HPCI-HO-HOV10)		≤ 38
Step 3.64.1: STOP VALVE (HPCI-HO-HOV10)		≤ 38

* Opening stroke time outside this range shall be evaluated by Engineering, but does not constitute failure of system to meet Acceptance Criteria.

Step 3.49 Pressure on CM-PI-268: _____

Reactor Building Auxiliary Condensate Pump Status: ON [ ]; OFF [ ]

TABLE 2

PARAMETER	COMPONENT CIC	ACTUAL VALVE	OPERABILITY LIMIT
FLOW	HPCI-FIC-108	gpm	≥ 4250 gpm
DISCH PRESS	HPCI-PI-81	psig	N/A
RX PRESS	RFC-R-LRPR97	psig	≥ 920 and ≤ 1020 psig
DISCH PRESS minus RX PRESS			≥ 100 psi above reactor pressure

Step 3.78 Pressure on CM-PI-268: _____

Reactor Building Auxiliary Condensate Pump Status: ON [ ]; OFF [ ]

TABLE 3Ⓟ[1,2]

PARAMETER	PRESSURE INDICATOR CIC NUMBER	ACTUAL VALUE (psig)		ACTUAL VALUE (psig)		RANGE (psig)*
		Step 3.40	Step 3.45.2	Step 3.82	Step 3.83.2	
THRUST BEARING OIL SUPPLY PRESSURE	HPCI-PI-2782 (0 - 30 psig)	16	NA	16	NA	15 to 17
TURBINE OUTBOARD BEARING OIL SUPPLY PRESSURE	HPCI-PI-2783 (0 - 30 psig)	10.5	NA	11	NA	10 to 12
TURBINE INBOARD BEARING OIL SUPPLY PRESSURE	HPCI-PI-2784 (0 - 30 psig)	11	NA	11.5	NA	10 to 12
HPCI MAIN PUMP BEARINGS OIL SUPPLY PRESSURE	HPCI-PI-2785 (0 - 30 psig)	22	NA	23	NA	20 to 25
OIL FILTER INLET PRESSURE	HPCI-PI-2775 (0 - 200 psig)	112	NA	111	NA	N/A
OIL FILTER OUTLET PRESSURE	HPCI-PI-2776 (0 - 200 psig)	110	NA	98	NA	N/A
PCV-2788 OUTLET PRESSURE	HPCI-PI-2788 (0 - 100 psig)	56	NA	58	NA	N/A
PCV-2770 OUTLET PRESSURE	HPCI-PI-2780 (0 - 30 psig)	27	NA	28	NA	N/A
OIL COOLER OUTLET TEMPERATURE	HPCI-TI-2790 (50°F - 400°F)	100	NA	125	NA	N/A

* Actual values found outside this range do not constitute failure of system to meet Acceptance Criteria. Initiate Condition Report to trend if Actual Values are outside range.

TABLE 4

PARAMETER	COMPONENT CIC	ACTUAL VALVE	RANGE *
VIBRATION	HPCI-VBR-2794	mils	≤ 2 mils
SPEED	___**_____	rpm	N/A

If vibration > 2 mils, notify SM or CRS to determine if immediate shutdown is required.

* Actual value found outside this range require immediate notification of SM or CRS to determine if immediate shutdown is required but do not constitute failure of system to meet Acceptance Criteria.

** Hand-held digital tachometer.

ATTACHMENT 2 HPCI IST DATA SHEET

TABLE 1

1. Record Stopwatch Calibration Due Date: _____

2. Record Stopwatch Identification Number: _____

VALVE NUMBER	OPENING STROKE TIME seconds	CLOSING STROKE TIME seconds	RETEST STROKE TIME seconds	IST ACCEPTABLE RANGE seconds	OPERABILITY LIMIT seconds
HPCI-MO-14		N/A		11.3 to 15.3	≤ 18

TABLE 2

TEST INSTRUMENTS: Ultrasonic Flow Meter Number: _____

Calibration Due Date: _____

PARAMETER	ACTUAL VALUE	OPERABILITY LIMIT
HPCI Minimum Flow Line Flow (GPM)		≥ 425

TABLE 3

TEST INSTRUMENTS: Tachometer Number: _____

Calibration Due Date: _____

PARAMETER	ACTUAL VALUE	REFERENCE VALUE	ALERT RANGE	OPERABILITY LIMIT
Pump Flow Rate (Q) HPCI-FIC-108	*	4250 gpm	N/A	N/A
Turbine/Pump Speed (N) Hand-Held Tachometer	*	3980 to 4000 rpm	N/A	N/A
Discharge Pressure (P_d) HPCI-PI-81		N/A	N/A	N/A
Post-Start Inlet Pressure (P_{ia}) HPCI-PI-99		N/A	N/A	N/A
Differential Pressure ($DP = P_d - P_{ia}$)			to <	to

* REFERENCE VALUE for Pump Flow Rate (Q) and Turbine/Pump Speed (N) shall be duplicated to provide method to analyze other parameters.

TABLE 4 - FIELD VIBRATION DATA SHEET

TEST INSTRUMENTS: Vibration Meter Instrument Number: _____

Calibration Due Date: _____

Accelerometer S/N: _____

Calibration Due Date: _____
(N/A if vibrations not taken locally)

PARAMETER	ACTUAL VALUE	REFERENCE VALUE	ALERT RANGE	OPERABILITY LIMIT
Vibration Displacement Point C (mils)			> to	≤
Vibration Displacement Point D (mils)			> to	≤
Vibration Velocity Point K (in/sec)			> to	≤
Vibration Velocity Point L (in/sec)			> to	≤
Vibration Displacement Point E (mils)			> to	≤
Vibration Displacement Point F (mils)			> to	≤
Vibration Displacement Point G (mils)			> to	≤
Vibration Velocity Point H (in/sec)			> to	≤
Vibration Velocity Point I (in/sec)			> to	≤
Vibration Velocity Point J (in/sec)			> to	≤

Vibration Reading Taken By: _____ Date: _____

TABLE 5

HPCI-TR-115	ACTUAL VALVE °F	OPERABILITY LIMIT °F	RANGE * °F
Channel 1		≤ 160	90 to 130
Highest of Channels 2 and 3		N/A	< 300
Highest of Channels 6 and 7		N/A	< 180

* Actual values found outside this range require immediate notification of SM or CRS to determine if immediate shutdown is required but do not constitute failure of system to meet Acceptance Criteria.

ATTACHMENT 3 HPCI PUMP VIBRATION DATA DRAWING AND VIBRATION METER SETTINGS

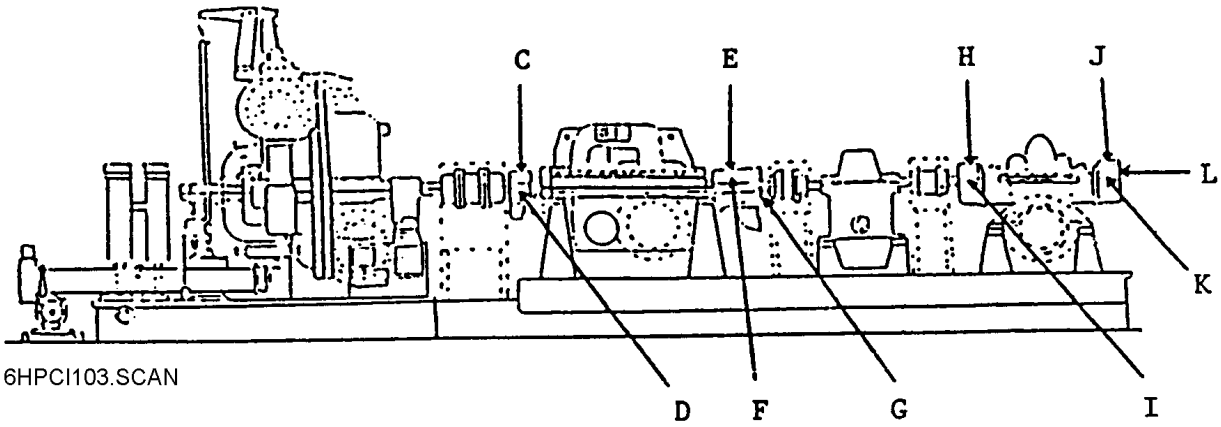


Figure 1

Turbine	Main Pump	Reduction Gear	Booster Pump
2050 to 4000 rpm	4000 rpm	1.983:1	2017 rpm
	4250 gpm		4320 gpm

Diagram shows view from east. Actual point locations are marked on west side.

ATTACHMENT 4 SIGN-OFF AND REVIEW SHEET

Initials	Printed Name	Initials	Printed Name
_____ /	_____	_____ /	_____
_____ /	_____	_____ /	_____
_____ /	_____	_____ /	_____
_____ /	_____	_____ /	_____

Acceptance Criteria Satisfied: [ ] YES; [ ] NO Initials/Date: _____

Shift Manager Review: _____ Date: _____

System Engineer Review (required): _____ Date: _____

IST Engineer Review (required): _____ Date: _____

CV Engineer Review (required): _____ Date: _____

RECORDS

Copy of Attachments 1 and 2 are sent to Engineering Clerk for Engineering Reviews. Attachments 1, 2, and 4 are sent to CNS Records (quality records upon final review signatures).

Initial/date by each discrepancy or resolution listed.

#	DISCREPANCIES	#	RESOLUTIONS

ATTACHMENT 5 INFORMATION SHEET

1. SURVEILLANCE REQUIREMENTS - TECHNICAL SPECIFICATIONS

1.1 This procedure satisfies:

1.1.1 SR 3.5.1.7.

1.1.2 SR 3.6.2.1.1.

1.2 This procedure satisfies part of:

1.2.1 SR 3.5.1.1.

1.2.2 Section 5.5.6.

2. DISCUSSION

2.1 HPCI-MO-14, pump OPERABILITY, pump flow controller, pump flow rate, and pump pressure are checked during this test using the HPCI test flow path. The pump discharge piping is vented and water flow observed to satisfy SR 3.5.1.1 requirements. The local trip (overspeed) mechanism is testing once per 92 days to ensure it will cause the turbine stop valve to close and to ensure it moves freely. Although not required for system or component OPERABILITY, HPCI stop valve stroke time and oil system parameters will be recorded for trending purposes.

2.2 The following criteria satisfies IST requirements:

2.2.1 CM-PI-268 <u>not</u> pegged high with HPCI pump running satisfies closed exercise requirements for HPCI-CV-18CV and HPCI-CV-19CV.

2.2.2 Water flow observed from the high point vent valves satisfies the open exercise requirements for HPCI-CV-18CV and HPCI-CV-19CV.

2.2.3 HPCI pump flow $\geq$ 4250 gpm satisfies open exercise requirements for HPCI-CV-10CV.

2.2.4 HPCI-AOV-PCV50 between full open and closed when HPCI pump is running satisfies partial open exercise requirements.

2.2.5 Pump DP and operations within OPERABILITY LIMIT satisfies pump OPERABILITY requirements and HPCI-CV-15CV and HPCI-V-44 open exercise requirements.

2.2.6 HPCI-MO-14 valve stroke time, listed on Attachment 2, within OPERABILITY LIMIT satisfies open exercise requirements.

2.2.7 Oil temperature below the upper OPERABILITY LIMIT satisfies the open exercise requirements for HPCI-CV-13CV.

2.2.8 Not receiving Annunciator 9-3-2/D-3, HPCI GSC HOTWELL HIGH LEVEL, during HPCI Operation with HPCI-AOV-AO39 and HPCI-AOV-AO40 closed, satisfies the open exercise requirement for HPCI-CV-14CV.

2.2.9 Portable ultrasonic flow reading of ≥ 425 gpm satisfies the open exercise requirement for HPCI-CV-17CV.

2.2.10 Successful HPCI pump/turbine operation satisfies the IST exercise requirements for skid-mounted component, HPCI-HOV-HOV10.

2.3 The following check valves are included in the CNS IST Check Valve Condition Monitoring Program: HPCI-CV-10CV, HPCI-CV-14CV, HPCI-CV-15CV, HPCI-CV-17CV, HPCI-CV-18CV, HPCI-CV-19CV, and HPCI-V-44.

2.4 Procedure 6.LOG.601 satisfies continual monitoring requirements of SR 3.6.2.1.1.

3. EFFECT ON PLANT CONDITIONS

3.1 The following annunciators not checked by steps in the procedure may alarm and clear due to performance of the procedure:

3.1.1 Annunciator 9-3-1/A-9, REACTOR BUILDING HI RAD (1405 RX BLDG HPCI PUMP ROOM AREA RAD HIGH).

3.1.2 Annunciator 9-3-2/B-1, HPCI TURBINE TRIP.

3.1.3 Annunciator 9-3-2/C-2, HPCI TURBINE INLET DRAIN POT HI LEVEL.

3.1.4 Annunciator 9-3-2/C-4, HPCI DISCH PIPE LOW PRESS.

3.1.5 Annunciator 9-3-2/D-4, HPCI PUMP SUCTION HIGH PRESSURE.

3.1.6 Annunciator 9-3-2/F-2, HPCI TURB EXH DRIP LEG HIGH LEVEL.

3.1.7 Annunciator 9-3-2/F-4, HPCI PUMP LOW FLOW.

3.1.8 Annunciator 9-3-2/E-2, HPCI TURBINE EXH DRIP LEG HI-HI LEVEL.

3.1.9 Annunciator 9-3-3/E-2, RHR LOOP B DISCH PIPE LOW PRESS.

3.1.10 Annunciator 9-4-1/D-2, RCIC PUMP SUCTION HIGH PRESSURE.

4. REFERENCES

4.1 TECHNICAL SPECIFICATIONS

4.1.1 LCO 3.3.5.1, Emergency Core Cooling System (ECCS) Instrumentation.

4.1.2 LCO 3.5.1, ECCS - Operating.

4.1.3 LCO 3.6.2.1, Suppression Pool Average Temperature.

4.1.4 Section 5.5.6, Inservice Testing Program.

4.2 UPDATED SAFETY ANALYSIS REPORT

4.2.1 Section VI-4.1, High Pressure Coolant Injection System.

4.2.2 Section VII-4.5.2, High Pressure Coolant Injection System (HPCI) Control and Instrumentation.

4.3 CODES AND STANDARDS

4.3.1 ASME Code for Operation and Maintenance of Nuclear Power Plants.

4.3.2 CNS IST Program.

4.4 DRAWINGS

4.4.1 B&R Drawing 2041, Reactor Building Main Steam System.

4.4.2 B&R Drawing 2044, HPCI System.

4.4.3 B&R Drawing 3007, Auxiliary One Line Diagram.

4.4.4 B&R Drawing 3010, Vital One Line Diagram.

4.4.5 B&R Drawing 3046, Control Elementary Diagram.

4.4.6 B&R Drawing 3058, DC One Line Diagram.

4.4.7 GE Drawing 791E271, HPCI Elementary Diagram.

4.4.8 GE Drawing 729E589, Functional Control Diagram.

4.5 VENDOR MANUALS

4.5.1 CNS Number 1025, Volume VIII.

4.6 PROCEDURES

4.6.1 System Operating Procedure 2.2.69.3, RHR Suppression Pool Cooling and Containment Spray.

4.6.2 System Operating Procedure 2.2.73, Standby Gas Treatment System.

4.6.3 Surveillance Procedure 6.LOG.601, Daily Surveillance Log Modes 1, 2, and 3.

4.6.4 Surveillance Procedure 6.REC.601, REC Flow Balancing and Flow Verification.

4.6.5 Maintenance Procedure 7.1.7.5, CSI Series 2100 Data Collector Operation.

4.6.6 Instrument and Control Procedure 14.6.10, HPCI Stop Valve Instrumentation Calibration and Test Setup.

4.7 MISCELLANEOUS

4.7.1 EE 01-037, Evaluation of the Need for Technical Specification Upper Limits for Closure of ECCS Minimum Flow Valves.

4.7.2 Ⓟ GE SIL-106, Revision 2, Suppression Temperature Monitoring and Control. Affects CAUTION and NOTE 1 above Step 3.50 and Step 3.50 [071760883].

4.7.3 Ⓟ GE SIL-336, Surveillance Testing Recommendations for HPCI and RCIC Systems. Affects Step 3.64 [063090412].

4.7.4 Ⓟ[1] GE SIL-336, Revision 1, Surveillance Testing Recommendations for HPCI and RCIC Systems. Affects Steps 3.40 and 3.45, and Attachment 1, Table 3 [070290075].

4.7.5 Ⓟ GE SIL-352, HPCI Turbine Stop Valve Steam Balance Chamber Pressure Adjustment Implemented. Affects NOTE above Step 3.2 and Step 3.2 [063090559].

4.7.6 GEK 34564, HPCI.

4.7.7 Ⓟ[2] INPO OMR 353, Inoperable HPCI System Due to Mispositioned Throttle Valves. Affects Steps 3.82 and 3.83, and added additional oil pressure checks on Attachment 1, Table 3 [067881889].

4.7.8 Ⓟ INPO SOER 89-01, Testing of Steam Turbine/Pump Overspeed Trip Devices. Affects Steps 3.41 through 3.44, 3.65, and 3.66.

4.7.9 NEDC 97-023, HPCI Minimum Flow Line Evaluation.

4.7.10 Ⓟ NRC Information Notice 90-45, Overspeed of Turbine Driven Auxiliary Feedwater and Overpressurization of Associated Piping. Affects CAUTIONs 1 and 2 above Step 3.61 and Step 3.61 [070750494].

4.7.11 Ⓟ NRC Information Notice 95-008, Inaccurate Data Obtained with Clamp-On Ultrasonic Flow Measurement Instruments. Affected Steps 3.9, 3.47, and 3.71.2.

4.7.12 Ⓟ NRC Inspection Report 90-022, HPCI Testing Caused Elevated Suppression Pool Water Temperature. Affects NOTE 2 above Step 3.50 [251910212].

4.7.13 Ⓟ RSIR 90-01, High Radiation Area was Found not Properly Posted, Guarded, or Locked. Affects Steps 3.15 and 3.110.

4.7.14 Ⓟ SCAQ 96-0763, Connection of Stop Valve Transient Recorder while HPCI System is Operable was Inadequately Evaluated. AOT steps were moved before and after HPCI-V- 2795 was opened and closed. Affects Steps 3.103 and 3.104.

4.8 NRC COMMITMENT

4.8.1 LER 97-012, Suppression Pool Design and Technical Specification Maximum Water Volume.

4.8.2 © LER 97-012, Suppression Pool Design and Technical Specification Maximum Water Volume Exceeded. Commitment affects CAUTION 3 prior to Step 3.61 and Step 3.62.

4.8.3 © Letter NSD940550 from G. R. Horn to NRC, dated June 29, 1994. Commitment affects Steps 3.94 and 4.16 [0754116].

4.8.4 © SCR 2000-0024 (Commitment Number NLS200001103), Turbine Bypass Valve Control Circuit Setpoint Concern. Commitment affects Steps 3.19 and 3.20.

Task No.: 217004O0101

Manually Start RCIC for RPV Pressure Control (Hard Card) (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. 3.Evaluation Method: Perform
4. Performance Time: 8 minutes
5. NRC K/As 217000 A4.03 (3.4/3.3) and 217000 A4.08 (3.7/3.6)

Directions to Examiner:

NOTE: THIS IS AN **ALTERNATE PATH** JPM. THE FLOW CONTROLLER WILL FAIL TO OPERATE IN AUTOMATIC AND MUST BE PLACED IN MANUAL.

1. This JPM evaluates the trainee's ability to operate RCIC in the "pressure control mode" per the hard card in procedure 2.2.67.1, Reactor Core Isolation Cooling System Operations.
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space, if desired, by the examiner.
4. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when ready to start the JPM.
5. Brief the trainee and tell the trainee to begin.

Task No.: 217004O0101

Manually Start RCIC for RPV Pressure Control (Hard Card) (Alternate Path)

Directions to Trainee:

When I tell you to begin, you are to operate RCIC in the pressure control mode using the hard card. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

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

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

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

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

General Conditions:

1. The Reactor is shutdown following a scram.
2. Reactor water level is being controlled by another Operator.
3. Reactor pressure is currently being by another Operator.
4. Suppression Pool Cooling will be placed in service by another Operator.

General References:

1. Procedure 2.2.67.1, Reactor Core Isolation Cooling System Operation.

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to place RCIC in the pressure control mode using the hard card. Inform the CRS when RCIC is operating in the pressure control mode.

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

Task No.: 217004O0101

Manually Start RCIC for RPV Pressure Control (Hard Card) (Alternate Path)

Performance Checklist	Standards	Initials
1. Obtains Hard Card	The Operator obtains the RCIC Hard Card for Pressure Control.	_____
2. Ensure **RCIC** auto initiation signal is clear.	The operator checks RCIC for indications of an auto initiation signal present and verifies RPV water level above -42". **CUE**: RPV water level is +20" on the narrow range.	_____
3. Open **RCIC-MO-33,** ECST TEST LINE SHUTOFF VLV.	The operator places the control switch for RCIC-MO-33 to OPEN. **CUE**: RCIC-MO-33 red light is on, green light is off.	_____*
4. Start GLAND SEAL VACUUM PUMP.	The operator places the control switch for GLAND SEAL VACUUM PUMP to START. **CUE**: The GLAND SEAL VACUUM PUMP red light is on, green light is off.	_____
5. Open **RCIC-MO-132**, TURB OIL COOLING WTR SUPP VLV.	The operator places the control switch for RCIC-MO-132 to OPEN. **CUE**: RCIC-MO-132 red light is on, green light is off.	_____*
6. Open **RCIC-MO-30,** TEST BYP TO ECST VLV.	The operator places the control switch for RCIC-MO-30 to OPEN. **CUE**: RCIC-MO-30 red light is on, green light is off.	_____*
7. Open **RCIC-MO-131**, STM SUPP TO TURB VLV.	The operator places the control switch for RCIC-MO-131 to OPEN. **CUE**: RCIC-MO-131 red light is on, green light is off.	_____*

Performance Checklist	Standards	Initials
8. Adjust **RCIC-FIC-91**, RCIC FLOW CONTROLLER, as required, to maintain desired RPV pressure.	Operator attempts to control RCIC flow with the Set Tape. **CUE**: RCIC flow remains almost 2200zero, irrespective of Set Tape setting.	_____
9. Operator recognizes and reports failed controller	Operator reports to CRS that RCIC controller has failed in automatic. #**CUE**: CRS acknowledges, directs operator to control RCIC with controller in manual.	_____
10. Operator places RCIC controller in manual.	Operator turns RCIC controller AUTO/BAL/MAN switch to MAN. **CUE**: RCIC controller AUTO/BAL/MAN switch is in MAN.	_____*
11. Operator adjusts RCIC controller in manual to control flow and cooldown rate.	Operator turns RCIC controller manual knob clockwise to raise flow, counter-clockwise to lower flow. **CUE**: RCIC flow responds to manual control knob adjustment as appropriate.	_____*
12. Ensure REC-MO-711 or REC-MO-714, CRITICAL LOOP SUPPLY, is open.	Operator verifies that REC-MO-711 or REC-MO-714 is open. **CUE**: Both REC-MO-711 and REC-MO-714 are open.	_____
13. Operator reports RCIC is in pressure control mode.	Operator reports to the CRS that RCIC is in pressure control mode per the hard card. **#CUE**: The CRS acknowledges the report. The JPM is complete.	_____

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials required

None

B. Initialize the Simulator in any IC that will support RCIC pressure control mode (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

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial

3. Remotes

Number	Title	Trigger	Value	Ramp

4. Overrides

Instrument	Tag	Trigger	TD	Value	Ramp
RCIC Set Tape Setpoint	ZAIRCICFIC91[2]	A	0	20	0

5. Panel Set-up (suggested. Any setup is allowed that supports performance of the RCIC pressure control mode)

   a.Place the Simulator in RUN.

   b.Place the Simulator in FREEZE.

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

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to operate RCIC in the pressure control mode using the hard card. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

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

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

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

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

==========

General Conditions:

1. The Reactor is shutdown following a scram.
2. Reactor water level is being controlled by another Operator.
3. Reactor pressure is currently being maintained by another Operator.
4. Suppression Pool Cooling will be placed in service by another Operator.

Initiating Cue(s):

The Control Room Supervisor directs you to place RCIC in the pressure control mode using the hard card. Inform the CRS when RCIC is operating in the pressure control mode.

Task No.: 259058G401

Perform a Quick Restart of RFPT B (Hard Card) (Alternate Path)

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

THIS IS AN ALTERNATE PATH JPM

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 259001 A4.02 (3.9/3.7)

Directions to Examiner:

NOTE:	THIS IS AN **ALTERNATE PATH** JPM. THE INITIAL ATTEMPT TO RESET THE RFPT TRIP WILL FAIL AND REQUIRE USE OF THE ALTERNATIVE METHOD TO RESET THE TRIP.

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

Task No.: 259058G401

Perform a Quick Restart of RFPT B (Hard Card) (Alternate Path)

Directions to Trainee:

When I tell you to begin, you are to perform a quick start of the “B” RFPT. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

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

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

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

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

General Conditions:

1. Reactor Power is approximately 60%.
2. A RFPT is running but must be secured within the next 15 minutes.
3. The B RFPT inadvertently tripped instead of A and B needs to be restarted quickly.

General References:

1. Procedure 2.2.28
8. Procedure 2.2.28.1

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

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

Task No.: 259058G401

Perform a Quick Restart of RFPT B (Hard Card) (Alternate Path)

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to restart “B” RFP using the quick start hard card and procedure 2.2.28.1. Notify the CRS when the B RFPT is running and injecting to the RPV.

Task No.: 259058G401

Perform a Quick Restart of RFPT B (Hard Card) (Alternate Path)

Performance Checklist	Standards	Initials
1. Obtain the Quick Start Hard Card	The Operator obtains the Reactor Feed Pump Quick Start Hard Card from its location on the front of panel 9-5	_____
2. Ensure RFPT time limit is met.	The Operator ensures RFPT coasting from trip or not on turning gear > 5 minutes after trip. **#CUE**: RFPT B has only been tripped for 2 minutes.	_____
3. Ensure RFPT trips are reset.	The Operator ensures RFPT trips are reset. Check the following annunciators are clear: - A-2/A-3 (Low Suction Pressure), - A-2/B-1 (Exhaust Hood High Temp), - A-2/B-2 (Low Vacuum Trip), - A-2/B-3 (Thrust Bearing Trip), - A-2/C-1 (Low Oil Pressure Pre Trip) **CUE**: All trip Annunciators are clear.	_____
4. Ensure RFP-CS-RFPTB RFPT B Control Station is in MDVP	The Operator ensures RFP-CS-RFPTB is in MDVP. **CUE**: RFP-CS-RFPTB is in MDVP	_____
5. Ensure OUTPUT on RFP-CS-RFPTB is adjusted to minimum.	The Operator ensures OUTPUT on RFP-CS-RFPTB is adjusted to minimum. **CUE**: OUTPUT on RFP-CS-RFPTB is adjusted to minimum.	_____

Task No.: 259058G401

Perform a Quick Restart of RFPT B (Hard Card) (Alternate Path)

6. Ensure RF-11B is OPEN	The Operator ensures RF-FCV-11B, MIN FLOW VALVE, is open. **CUE**: RF-FCV-11B Red light is **ON** and Green light **OFF.**	_____
7. Attempt to reset B RFPT	The Operator Presses and holds RFPT B TRIP RESET button. Note the RFPT B HP and LP STOP valves are NOT open. **CUE**: HP and LP STOP valves red light are **OFF** Green lights are **ON**.	_____
8. Check the Reset light.	The Operator checks light above RFPT B TRIP RESET button is on. **CUE**: The light is **OFF**.	_____
9. Recognize and report the trip reset failure.	The Operator recognizes and reports the B RFPT trip reset failure.	_____
10. Reset B RFPT	The Operator presses and holds RFPT B OVERSPEED TRIP BLOCK and RFPT B OVERSPEED TRIP RESET. **CUE**: HP and LP STOP valves red lights are **ON** Green lights are **OFF**.	_____*
11. Ensure Feedwater system lineup on Panel A is correct.	The Operator verifies that the feedwater system lineup on panel A is correct.	_____
12. Raise “B” RFPT speed.	The Operator raises RFPT B speed on RFC-CS-RFPTB using the UP/DOWN arrows until speed is 500 to 1000 rpm. **CUE**: Speed is 520 RPM	_____

Task No.: 259058G401

Perform a Quick Restart of RFPT B (Hard Card) (Alternate Path)

13. Transfer control mode.	The Operator places RFC-CS-RFPTB in MDEM. **CUE**: RFC-CS-RFPTB is in MDEM.	_____*
14. Raise RFP speed.	The Operator raises speed of “B” RFP using UP/DOWN arrows on RFC-CS-RFPTB until the RFP is feeding the RPV. **CUE**: “B” RFP flow is rising.	_____*
15. Inform the CRS that the task is Complete.	Inform the Control Room Supervisor that 1B RFP has been restarted and injecting into the RPV **#CUE: CRS acknowledges the report.**	_____

Task No.: 259058G401

Perform a Quick Restart of RFPT B (Hard Card) (Alternate Path)

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required		None					
B. Initialize the Simulator in IC		Any IC 16					
C. Run Batch File		None					
D. Change the simulator conditions as follows:	Number	Title	Tgr	TD	Sev	Ramp	Initial
1. Triggers	None						
2. Malfunctions	None						
	N/A	N/A					
3. Remotes	None						
	N/A	N/A					
4. Overrides	ZDIRFSWRFTRB[1]	RFPT-B Trip Reset Pushbutton			OFF		
5. Panel Setup	a. Place the Simulator in run. b. Ensure that the A Feed Pump will handle the loss of the B Feed Pump c. Trip B Feed pump. d. Ensure the “B” RFP is still coasting down or is on the turning gear. e. Ensure RPV water level is approximately 35" (narrow range). f. Insert listed switch override. g. Place the Simulator in FREEZE until the operator is ready to begin.						
Note: If this JPM is to be performed more than once, take a SNAPSHOT after the panel setup is complete.							

Task No.: 259058G401

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to perform a quick start of the “B” RFPT. Before you start, I will state the general plant conditions, the Initiating Cues and answer any questions you may have.

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

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

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

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

General Conditions:

1. Reactor Power is approximately 60%.
2. A RFPT is running but must be secured within the next 15 minutes.
3. The B RFPT inadvertently tripped instead of A and B needs to be restarted quickly.

Initiating Cue(s):

The Control Room Supervisor directs you to restart “B” RFP using the quick start hard card and procedure 2.2.28.1. Notify the CRS when the B RFPT is running and injecting to the RPV.

Task No.:

Start Suppression Pool Cooling with Failed 2/3 Core Coverage Permissive (Alt Path)

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature:_____ Date: _____

ALTERNATE PATH

Additional Program Information:

1. Appropriate Performance Locations: SIM
2. Appropriate Trainee Level: RO/SRO
3. Evaluation Method: Perform
4. Performance Time: 18 minutes
5. NRC K/A 295013 AA1.01 3.9/3.9

Directions to Examiner:

This is an ALTERNATE PATH JPM, the 2/3 Core Height Permissive logic is malfunctioning requiring the operator to bypass it.

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

General Conditions:

1. The RPV is isolated following a transient; RCIC is maintaining level above -42”.
2. Suppression Pool temperature is currently 93°F and is rising slowly.

General References:

Task No.:

Start Suppression Pool Cooling with Failed 2/3 Core Coverage Permissive (Alt Path)

1. CNS procedure 2.2.69.3, RHR Suppression Pool Cooling and Containment Spray
2. CNS EOP 3A, Primary Containment Control

General Tools and Equipment:

None

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to place RHR train A in Suppression Pool Cooling Mode with maximum cooling with one pump. Notify the CRS when the task is complete.

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

Task No.:

Start Suppression Pool Cooling with Failed 2/3 Core Coverage Permissive (Alt Path)

Performance Checklist	Standards	Initials
1. Locate procedure.	Reference procedure 2.2.69.3, Attachment 1, RHR System Operations Hard Card.	_____
2. Start SW Booster.	Start a single Service Water Booster Pump for the A RHR Heat Exchanger.	_____*
3. Adjust SW flow.	Adjust **SW-MO-89A** to maintain flow between 2500 and 4000 gpm.	_____*
4. Tries to Open Suppression Pool Cooling valve.	The Operator rotates handle for RHR-MO-39A clockwise, and reports that the valve did not open. **#CUE:** Respond and tell the Operator that A loop RHR must be placed in Torus Cooling.	_____
5. Tries the Containment Cooling Valve Control Permissive Switch.	The Operator tries the Containment Cooling Valve Control Permissive Switch and again attempts to OPEN the RHR-MO-39A. Reports that the Containment Cooling Valve Control Permissive Switch did not work. **#CUE:** Respond and tell the Operator that A loop RHR must be placed in Torus Cooling.	_____
6. Tries the 2/3 Core Height Permissive Switch.	The Operator tries the 2/3 core coverage permissive switch by using a key and placing it to Override. Again attempts to OPEN the RHR-MO-39A. Reports that the RHR-MO-39A OPENED. #CUE: Understand the 2/3 core coverage permissive worked.	_____*

Task No.:

Start Suppression Pool Cooling with Failed 2/3 Core Coverage Permissive (Alt Path)

Performance Checklist	Standards	Initials
7. Starts RHR pump.	The Operator places the control switch to the start position for the “A” RHR Pump and verifies that the run light lit and motor amps came up.	_____*
8. Set RHR flow.	The Operator throttles the RHR-MO-34A to obtain RHR flow greater than 7700 gpm as read on RHR-FI-133A.	_____*
9. Set cooling rate.	The Operator throttles RHR-MO-66A CLOSED for maximum cooling.	_____*
10. Ensure REC cooling.	If PCIS Group 6 lights lit, ensure either REC-MO-711 or REC-MO-714 is open.	_____
11. Inform the CRS that the task is complete.	Inform Control Room Supervisor that Suppression Pool Cooling is maximized for train A. #CUE: The CRS Acknowledges the report. This JPM is complete.	_____

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

None

B. Initialize the Simulator in any power IC.

Batch File Name - none.

C. Change the simulator conditions as follows:

1. Triggers
   None

2. Malfunctions
   None

3. Remotes
   None

4. Overrides
   RHR MO 39 Control Switch

5. Panel Setup
   None

D. Place the Simulator in RUN to allow conditions to stabilize.

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 Candidate:

When I tell you to begin, you are to start Suppression Pool Cooling. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

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

General Conditions:

1. The RPV is isolated following a transient; RCIC is maintaining level above -42”.
2. Suppression Pool temperature is currently 93°F and rising slowly.

Initiating Cues:

The Control Room Supervisor directs you to place RHR train A in Suppression Pool Cooling Mode with maximum cooling with one pump. Notify the CRS when the task is complete.

Task No.: 245004O0101

Adjust Generator Voltage Regulator In Manual

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: CR/SIM
2. Appropriate Trainee Levels: RO/SRO
3. Evaluation Method: _____Perform _____Simulate
4. Performance Time: 22 minutes
5. NRC K/A 262001.A4.05 3.3/3.3

Directions to Examiner:

1. This JPM evaluates the trainee's ability to transfer the Main Generator Voltage Regulator to Manual and adjust MVARs.
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.
5. All blanks must be filled out with either examiner's initials or an "NP" for "not performed," and an explanation may also be written in the space if desired by the examiner.
6. Give the trainee his copy of the Directions to the Trainee (Attachment 2) when the trainee is ready to start the JPM.
7. Brief the trainee, place the Simulator in run, and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to transfer the Main Generator Voltage Regulator to manual and adjust MVARs to obtain the maximum allowed. 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 transfer the Main Generator Voltage Regulator to manual and adjust MVARs to the maximum allowed by this procedure. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The Main Generator Voltage Regulator is not working.
2. MVARs are low and require adjusting.

Task No.: 245004O0101

Adjust Generator Voltage Regulator In Manual

General References:

1. Procedure 2.2.14 22 KV Electrical System

General Tools and Equipment:

None

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to transfer the Main Generator Voltage Regulator to manual and adjust MVARs to the maximum allowed by this procedure. Inform the CRS when you have completed the task.

NOTE: Place the Simulator in RUN (if used) and tell the trainee to begin.

Task No.: 245004O0101

Adjust Generator Voltage Regulator In Manual

Performance Checklist	Standards	Initials
1. Obtains procedure	The Operator gets a current copy of Procedure 2.2.14 and determines that section 8 and 11 are needed. **#CUE:** Provide a copy of the sections identified.	_____
2. Adjust Reg Volt to 0	The Operator uses the GEN BASE ADJUST switch and sets REG BAL Volts to 0.0V. **CUE:** Indicate REG BAL VOLTS is 0.0V.	_____
3. Ensures PSS is Neutral	The Operator calls the Station Operator to ensure that the PSS is in NUTRAL after OFF. **#CUE:** Report as the Station Operator that the PSS is in NUTRAL after OFF.	_____
4. Places GEN VOLTAGE REG to OFF	The Operator places the GEN VOLTAGE REGULATOR switch to OFF. **CUE:** Indicate GEN VOLTAGE REGULATOR switch is in the OFF position.	_____ *
5. Moves to section 11	The Operator then moves to section 11 of the procedure to adjust MVARS and determines from the Generator Capability Curve the Maximum MVARs allowed for this condition. **CUE:** Indicate from the Generator Capability Curve that maximum MVARs is limited to 150 MVARs	_____
6. Selects PMIS points E002 and E003	The Operator displays PMIS Points E002 and E003 for Megawatts and Megavars. **CUE:** Indicate E002 and E003 are displayed	_____
7. Adjust MVARS down	The Operator uses the GEN BASE ADJUST switch and raise MVARs to Maximum of 150. **CUE:** Indicate MVARS indicate 150.	_____ *

Task No.: 245004O0101

Adjust Generator Voltage Regulator In Manual

Performance Checklist	Standards	Initials
8. Notifies the CRS	The Operator notifies the CRS that the Main Generator Voltage Regulator is in Manual and MVARS have been maximized. **#CUE:** Respond as the CRS and acknowledge the report.	_____

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

None

B. Initialize the Simulator in IC 20.

Batch File Name - none.

C. Change the simulator conditions as follows:

1. Triggers

2. Malfunctions

3. Remotes
None

4. Overrides
None

5. Panel Setup

a. Place the Simulator in RUN.

b. Adjust MVARS to +10.

g. Allow conditions to stabilize.

i. FREEZE the Simulator.

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

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to transfer the Main Generator Voltage Regulator to manual and adjust MVARs. 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 transfer the Main Generator Voltage Regulator to manual and adjust MVARs to maximum allowed by this procedure. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The Main Generator Voltage Regulator is not working.
2. MVARs are high and require adjusting.

Initiating Cue(s):

The Control Room Supervisor directs you to transfer the Main Generator Voltage Regulator to manual and adjust MVARs to the maximum allowed by this procedure.

Perform RWM Startup Checks

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

1. Appropriate Performance Locations: SIM
2. Appropriate Trainee Level: RO/SRO
3. Evaluation Method: Perform
4. Performance Time: 25 minutes
5. NRC K/A 201006 A3.02

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform the Panel 9-5 section of the Rod Worth Minimizer functional test.
2. If this JPM is performed on the Simulator, only cues preceded by "#" should be given.
3. Observe the trainee during performance of the JPM for proper use of self-checking methods.
4. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.
5. Brief the trainee, place the simulator in run, and tell the trainee to begin.

General Conditions:

1. The plant is in mode 5 with all rods in.
2. RWM is ready for its functional test.

General References:

1. CNS Procedure 6.RWM.301, Rod Worth Minimizer Functional Test for Startup, Rev. 7

General Tools and Equipment:

None

Perform RWM Startup Checks

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to perform 6.RWM.301 “RWM Functional Test for Startup”.

- All of the requirements for procedure 6.RWM.301 have been met.
- The procedure has been completed through step 4.4.
- The Control Room Supervisor has directed you to complete the procedure through step 4.21. (You need to complete steps 4.5 through 4.21)
- No control rods should be selected or moved during your portion of the procedure.
- Notify the CRS when the task is complete.

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

Perform RWM Startup Checks

Performance Checklist	Standards	Initials
1. Correct Procedure.	Candidate procures correct procedure, 6.RWM.301, and starts at step 4.5.	_____
2. Mode Switch and Rod Check.	At Panel 9-5, ensure REACTOR MODE switch is in REFUEL, all rods are fully inserted, and no rod is selected.	_____
3. Check Bypass in Normal.	At Panel 9-5, ensure RWM BYPASS keylock switch is in NORMAL and MANUAL bypass light is off.	_____
4. Demand RWM.	At an IDT, demand RWM.	_____
5. Key F4.	At IDT, press function Key F4.	_____
6. System Initialize.	At Panel 9-5, press SYSTEM INITIALIZE button.	_____
7. Press INOP/RESET button.	Press INOP/RESET button.	_____
8. Check IDT.	On IDT, check following: – INSERT BLOCK indicator is green. – WITHDRAW BLOCK indicator is green. – RWM On Line indicator is green and reads RWM ON LINE. – RWM MODE reads OPERATING < LPSP.	_____*
9. Check 9-5.	On Panel 9-5, check following: – Annunciator 9-5-1/A-5, RWM ROD BLOCK, is clear. – INSERT BLOCK light is off. – WITHDRAW BLOCK light is off. – RWM, PROGR, and BUFF quadrants of INOP/RESET light are off.	_____*

Perform RWM Startup Checks

Performance Checklist	Standards	Initials
10. Press F4.	On IDT: – 1 is displayed in GROUP display window. – RWM On Line indicator is green and reads RWM ON LINE. – RWM MODE reads 9-5 PANEL OFF-LINE. – Appropriate sequence from control rod sequence package is displayed in SEQUENCE display window. **#CUE.** A2 is the Correct Sequence On Panel 9-5: – Annunciator 9-5-1/A-5 alarms. – RWM quadrant of INOP/RESET light is on. – PROGR quadrant of INOP/RESET light is on.	_____*
11. Re-Initialize.	Press SYSTEM INITIALIZE button and check Annunciator 9-5-1/A-5 clears.	_____*
12. INOP to check BUFF light.	Press and hold INOP/RESET button and check BUFF quadrant of light turns on.	_____*
13. Release INOP / RESET button.	Release INOP/RESET button and check all three quadrants of light turn off.	_____
14. Check RWM Mode.	At IDT, check RWM MODE reads OPERATING < LPSP.	_____
15. RWM Bypass.	At Panel 9-5, place RWM BYPASS keylock switch to BYPASS	_____
16. Check Manual.	On Panel 9-5: Check MANUAL bypass light turns on.	_____
17. Check INOP light.	On Panel 9-5: Check RWM quadrant of INOP/RESET light turns on.	_____

Perform RWM Startup Checks

Performance Checklist	Standards	Initials
18. Check IDT.	On IDT, RWM MODE reads 9-5 PANEL OFF-LINE.	_____
19. RWM to Normal.	At Panel 9-5, place RWM BYPASS keylock switch to NORMAL and check following: – Annunciator 9-5-1/A-5 alarms. – MANUAL bypass light turns off.	_____*
20. RWM Initialize.	At Panel 9-5, press SYSTEM INITIALIZE button and check following: – Annunciator 9-5-1/A-5 clears. – On IDT, RWM MODE reads OPERATING < LPSP.	_____*
21. Press INOP.	At Panel 9-5, press INOP/RESET button and check RWM quadrant of INOP/RESET light turns off.	_____
22. RWM Diagnostic.	At IDT, press function Key F6, check DIAG TEST indicator is red, and check following repeats approximately every 15 seconds: On Panel 9-5: – Annunciator 9-5-1/A-5 alarms, then clears. – Alarm CRT displays 2159 RWM ROD INSERT BLOCK, then 2159 RWM ROD INSERT BLOCK RESET. – Alarm CRT displays 2158 RWM ROD WITHDRAWAL BLOCK, then 2158 RWM ROD WITHDRAWAL BLOCK RESET. – AC INSERT BLOCK light turns on, then off. – AC WITHDRAW BLOCK light turns on, then off. On IDT: – AC INSERT BLOCK indicator turns red, then green. – AC WITHDRAW BLOCK indicator turns red, then green.	_____*

Perform RWM Startup Checks

Performance Checklist	Standards	Initials
23. Check RWM Mode.	At IDT, press function Key F6, and checks that the previous alarms clear and that the diagnostic test block is green.	_____
24. Inform the CRS that the task is complete.	Inform Control Room Supervisor that the assigned portion of the RWM Functional Test is Complete. **#CUE:** The CRS Acknowledges the report. This JPM is complete.	_____

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials Required

None

B. Initialize the Simulator in IC1

Batch File Name - none.

C. Change the simulator conditions as follows:

1. Triggers

None

2. Malfunctions

None

3. Remotes

None

4. Overrides

None

5. Panel Setup

Place the MODE Switch in the Refuel Position

D. Place the Simulator in RUN to allow conditions to stabilize.

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 Candidate:

When I tell you to begin, you are to perform the RWM Functional Test. Before you start, I will state the general plant conditions, the initiating cues and answer any questions you may have.

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

General Conditions:

1. The plant is in mode 5 with all rods in.
2. RWM is ready for its functional test.

Initiating Cues:

The Control Room Supervisor directs you to perform 6.RWM.301 “RWM Functional Test for Startup”.

- All of the requirements for procedure 6.RWM.301 have been met.
- The procedure has been completed through step 4.4.
- The Control Room Supervisor has directed you to complete the procedure through step 4.21. (You need to complete steps 4.5 through 4.21)
- No control rods should be selected or moved during your portion of the procedure.
- Notify the CRS when the task is complete.

TASK 200141P0501

Perform Control Room Operator Action During a Fire

Trainee: _____ Examiner: _____

Pass ☐ Fail ☐ Examiner Signature: _____ Date: _____

Additional Program Information:

ALTERNATE PATH

1. Appropriate Performance Locations: CR
2. Appropriate Trainee Levels: RO/SRO
3. Evaluation Method: _____Perform _____Simulate
4. Performance Time: 10 minutes
5. NRC K/A 600000.AA2.03 (2.8 / 3.2)

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform the Reactor Operator actions for a Fire.
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.
5. All blanks must be filled out with either examiner's initials or an "NP" for "not performed," and an explanation may also be written in the space if desired by the examiner.
6. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when the trainee is ready to start the JPM.

This is an ALTERNATE PATH JPM, the RO will need to address the annunciators that indicate a need to start additional Fire Pumps.

Directions to Trainee:

When I tell you to begin, you are to perform the RO actions for a fire in the plant. 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 to perform the actions of the Reactor Operator for a fire in the plant. State the position of controls as you would have manipulated them to perform those actions. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

TASK 200141P0501

Perform Control Room Operator Action During a Fire

General Conditions:

1. The Diesel Fire Pump is tagged out for rebuild.
2. It is the middle of the night on the weekend.
3. The following annunciators have just been received.
   a. FP-3/E-1 RX BLDG 958' RRMG OIL PUMPS SYS 4 SPKLR FLOW
   b. FP-4/D-4 FIRE SYSTEM LOW PRESSURE
4. Fire Header Pressure on FP-PI-651E (VBD-FP) is reading 120 psig.

General References:

1. Procedure 2.3_FP-3
2. Procedure 2.3_FP-4
3. Procedure 5.4FIRE
4. Procedure 2.2.30

General Tools and Equipment:

None

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to perform the Reactor Operator actions for a fire in the plant. Inform the CRS when you have completed the task.

TASK 200141P0501

Perform Control Room Operator Action During a Fire

Performance Checklist	Standards	Initials
1. Obtains procedure	The Operator gets a current copy of Procedure 5.4FIRE and the two Fire Panel Alarms. #CUE: Provide a copy of the procedures identified.	_____
NOTE: The Operator may perform the 5.4FIRE actions first, but may also elect to perform the 2.3FP Fire annunciator sections first.		
2. Responds to the fire alarm	The Operator responds to the fire alarm FP-3/E-1 and notes the requirement to enter 5.4FIRE. CUE: Provide a copy of 5.4FIRE if not already provided.	_____
3. Responds to the fire alarm	The Operator responds to the fire alarm FP-4/D-4 and checks the header pressure on FP-PI-651E on vertical board FP. CUE: Indicate FP-PI-651E is reading 120 psig.	_____
4. Starts the E Fire Pump	The Operator starts Fire Pump E by placing ELECTRICAL FIRE PUMP E switch to START on panel FA. CUE: Indicate The Fire Pump is running by the red light being illuminated and the green light off and that Header pressure is up to approximately 180 psig.	_____ *
NOTE: Make sure that the Operator knows not to depress the fire alarm or make any announcement over the Gaitronics.		
5. Sounds the fire alarm	The Operator performs 5.4FIRE Attachment 1, and sounds the fire alarm pulse for tem seconds by pushing the alarm push button. CUE: The alarm has sounded for ten seconds.	_____*

TASK 200141P0501

Perform Control Room Operator Action During a Fire

Performance Checklist	Standards	Initials
6. Makes announcement	The Operator then makes the following announcement "ATTENTION, A FIRE HAS BEEN DETECTED IN THE Rx Recirc Oil Pump area. FIRE BRIGADE REPORT TO THE 903' Rx Corridor FIRE EQUIPMENT LOCKER. Reactor Building Operator GO TO the 958' Reactor Bldg and REPORT CONDITIONS TO THE CONTROL ROOM".	_____*
7. Sounds the fire alarm again	The Operator repeats the sounding of the fire alarm pulse for tem seconds by pushing the alarm push button again. CUE: The alarm has sounded for ten seconds.	_____
8. Makes announcement again	The Operator then makes the following announcement again "ATTENTION, A FIRE HAS BEEN DETECTED IN THE Rx Recirc Oil Pump area. FIRE BRIGADE REPORT TO THE 903' Rx Corridor FIRE EQUIPMENT LOCKER. Reactor Building Operator GO TO the 958' Reactor Bldg and REPORT CONDITIONS TO THE CONTROL ROOM".	_____
9. Switch radio to Base 2	The Operator switches the Fire Brigade Radio to Base 2. CUE: The switch is in Base 2 position.	_____*
CUE: Tell the Operator that the following people have called in; Shift Manager, Fire Brigade Leader, and the dispatched Station Operator.		
10. Notifies security	The Operator notifies Security (CAS). CUE: Respond as CAS to the notification.	_____

Performance Checklist	Standards	Initials
11. Determines OWC and Power limitations	The Operator determines that Optimum Water Chemistry can remain in operation and that power may need to be reduced. CUE: Indicate the Shift Manager is making those decisions.	_____
CUE: The Fire Brigade Leader reports that the fire is in the Rx Recirc MG Set area and he believes the fire brigade can handle it without outside assistance.		
12. Notifies CRS	The Operator reports to the CRS that all RO actions are completed for the fire. CUE: Respond to the notification.	_____

ATTACHMENT 1

Directions to Trainee:

When I tell you to begin, you are to perform the RO actions for a fire in the plant. 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 to perform the actions of the Reactor Operator for a fire in the plant. State the position of controls as you would have manipulated them to perform those actions. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The Diesel Fire Pump is tagged out for rebuild.
2. It is the middle of the night on the weekend.
3. The following annunciators have just been received.
    a. FP-3/E-1 RX BLDG 958' RRMG OIL PUMPS SYS 4 SPKLR FLOW
    b. FP-4/D-4 FIRE SYSTEM LOW PRESSURE
4. Fire Header Pressure on FP-PI-651E (VBD-FP) is reading 120 psig.

Initiating Cue(s):

The Control Room Supervisor directs you to perform the Reactor Operator actions for a fire in the plant. Inform the CRS when you have completed the task.

Task No.: 206029P0201

==========

Task Title: OPERATE HPCI IN PRESSURE CONTROL (Hard Card) (Alternate Path)

==========

Trainee: _____ Examiner: _____

Pass:_____ Fail:_____ Examiner Signature:_____Date:_____

ALTERNATE PATH

Additional Program Information:

1. Appropriate Performance Locations: SIM
2. Appropriate Trainee level: RO / SRO
3. Evaluation Method: Perform
4. Performance Time: 8 minutes
5. NRC K/As 206000 K3.02 (3.8/3.8) and A4.01 (3.8/3.7)

Directions to Examiner:

NOTE: THIS IS A ALTERNATE PATH JPM. THE FLOW CONTROLLER WILL FAIL TO OPERATE IN AUTOMATIC AND MUST BE PLACED IN MANUAL.

1. This JPM evaluates the trainee's ability to perform the "pressure control mode" of operation of HPCI per the guidance of procedure 2.2.33.1, High Pressure Coolant Injection System Operations.
2. If this JPM is performed on the Simulator, only the cues preceded by "#" should be given.
3. All blanks must be filled out with either initials or an "NP" for "not performed"; an explanation may also be written in the space, if desired, by the examiner.
4. Brief the trainee, place the Simulator in RUN, and tell the trainee to begin.

Task No.: 206029P0201

==========

Task Title: OPERATE HPCI IN PRESSURE CONTROL (Hard Card) (Alternate Path)

==========

Directions to Trainee:

When I tell you to begin, you are to operate HPCI in the pressure control mode using the hard card. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

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

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

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

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

==========

General Conditions:

1. Reactor water level is being controlled by another operator.
2. Reactor pressure is currently being maintained by the turbine.
3. Pressure control needs to be transferred to HPCI before losing both DEH pumps.
4. Suppression Pool Cooling is in service and will be controlled by another licensed operator.

General References:

1. Procedure 2.2.33.1, High Pressure Coolant Injection System Operation.

Task No.: 206029P0201

==========

Task Title: OPERATE HPCI IN PRESSURE CONTROL (Hard Card) (Alternate Path)

==========

General Tools and Equipment:

1. None

Special Conditions, References, Tools, Equipment:

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

Task Standards:

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

Initiating Cue(s):

The Control Room Supervisor directs you to place HPCI in the pressure control mode using the hard card and maintain Reactor pressure from 980 to 1000 psig. Inform the CRS when HPCI is operating in the pressure control mode.

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

Task No.: 206029P0201

==========

Task Title: OPERATE HPCI IN PRESSURE CONTROL (Hard Card) (Alternate Path)

==========

Performance Checklist	Standards	Initials
1. Place GLAND SEAL CNDSR BLOWER control switch in START.	The operator places the control switch for the GLAND SEAL CNDSR BLOWER in START. CUE: The red light for the GLAND SEAL CNDSR BLOWER is lit, the green light is out.	_____
2. Open HPCI-MO-21, TEST BYPASS TO ECST.	The operator places the control switch for the HPCI-MO-21 in OPEN. CUE: HPCI-MO-21 red light is on, green light is off.	_____*
3. Open HPCI-MO-24, ECST TEST LINE SHUTOFF VLV.	The operator places the control switch for the HPCI-MO-24 in OPEN. CUE: HPCI-MO-24 red light is on, green light is off.	_____*
4. Open HPCI-MO-14, STM TO TURB VLV.	The operator places the control switch for the HPCI-MO-14 in OPEN. CUE: HPCI-MO-14 red light is on, green light is off.	_____*
5. Start AUXILIARY OIL PUMP by placing control switch in START.	The operator places the control switch for the Auxiliary Oil Pump switch to START. CUE: HPCI Aux Oil pump red light is on, green light is off.	_____*

Task No.: 206029P0201

==========

Task Title: OPERATE HPCI IN PRESSURE CONTROL (Hard Card) (Alternate Path)

==========

Performance Checklist	Standards	Initials
6. Adjust FLOW CONTROLLER HPCI-FIC-108 setpoint to maintain desired RPV pressure, as necessary.	Operator attempts to control HPCI flow with the Set Tape. CUE: HPCI flow remains almost zero, irrespective of Set Tape setting.	_____
7. Operator recognizes and reports failed controller	Operator reports to CRS that HPCI controller has failed in automatic. #CUE: CRS acknowledges, directs operator to control HPCI with controller in manual.	_____
8. Operator places HPCI controller in manual.	Operator turns HPCI controller AUTO/BAL/MAN switch to MAN. CUE: HPCI controller AUTO/BAL/MAN switch is in MAN.	_____*
9. Operator adjusts HPCI controller in manual to control flow and cooldown rate.	Operator turns HPCI controller manual knob clockwise to raise flow, counter-clockwise to lower flow. CUE: HPCI flow responds to manual control knob adjustment as appropriate.	_____*
10. Operator reports HPCI is in pressure control mode.	Operator reports to the CRS that HPCI is in pressure control mode per the hard card. CUE: The CRS acknowledges the report. This JPM is complete.	_____

Task No.: 206029P0201

==========

Task Title: OPERATE HPCI IN PRESSURE CONTROL (Hard Card) (Alternate Path)

==========

ATTACHMENT 1

SIMULATOR SET-UP

A. Materials required

None

B. Initialize the Simulator in any IC that will support HPCI pressure control mode after a scram (IC-18, 19 or 20 suggested)

Batch File name - none.

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

1. Triggers

Number	File Name	Description
	None	

2. Malfunctions

Number	Title	Trigger	TD	Severity	Ramp	Initial
	None					

3. Remotes

Number	Title	Trigger	TD	Value	Ramp
	None				

4. Overrides

Instrument	Tag	Trigger	TD	Value	Ramp
HPCI Set Tape	ZAIHPCIFC108[2]	A	0	200	0

Task No.: 206029P0201

==========

Task Title: OPERATE HPCI IN PRESSURE CONTROL (Hard Card) (Alternate Path)

==========

5. Panel Set-up (suggested. Any setup is allowed that supports performance of the HPCI pressure control mode)

   a. Place the Simulator in RUN.

   b. Insert listed override.

   c. Place the Simulator in FREEZE.

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

ATTACHMENT 2

Directions to Trainee:

When I tell you to begin, you are to operate HPCI in the pressure control mode using the hard card. Before you start, I will state the general plant conditions, the Initiating Cues, and answer any questions you may have.

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

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

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

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

General Conditions:

1. Reactor water level is being controlled by another operator.
2. Reactor pressure is currently being maintained by the turbine.
3. Pressure control needs to be transferred to HPCI before losing both DEH pumps.
4. Suppression Pool Cooling is in service and will be controlled by another licensed operator.

Initiating Cue(s):

The Control Room Supervisor directs you to place HPCI in the pressure control mode using the hard card and maintain Reactor pressure from 980 to 1000 psig. Inform the CRS when HPCI is operating in the pressure control mode.

Task No.:

RPS Motor Generator Startup and Return to Normal

Trainee: Examiner:

Pass ☐ Fail ☐ Examiner Signature: Date:
Start Time: Finish Time:
Comments:

Additional Program Information:

1. Appropriate Performance Location: Plant
2. Appropriate Trainee Level: RO / SRO
3. Evaluation Method: __ Simulate __ Perform
4. Validation Time: 30 minutes
5. NRC K/A 2.1.30 3.9/3.4

Directions to Examiner:

1. This JPM evaluates the trainee's ability to startup an RPS motor generator set and return RPS to a normal electrical lineup.
2. All blanks should be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space, if desired, by the examiner.
3. Give the trainee his copy of the Directions to the Trainee (Attachment 1) when ready to start the JPM.
4. Brief the trainee and tell the trainee to begin.

Directions to Trainee:

When I tell you to begin, you are to inject to the RPV with the CRD system. 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. Reactor is at 90 percent power.
2. Maintenance has completed the replacement of EPA 1A1 in RPS A and post maintenance testing has been completed.
3. Division I of RPS is currently on the alternate power supply.

Task No.:

RPS Motor Generator Startup and Return to Normal

General References:

1. System Operating Procedure 2.2.22, Vital Instrument Power System, Rev. 47.

General Tools and Equipment:

1. Standard PPE for in plant

Special Conditions, References, Tools, Equipment:

1. Critical checks denoted by "*."

Task Standards:

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

Initiating Cue(s):

The plant is currently at 90 percent rated power with all equipment in a normal lineup with the exception of RPS. PRA risk is green with no emergent activities anticipated. The CRS directs you to start RPS Motor Generator A and return RPS to a normal electrical lineup by performing Section 5 and Section 7 of System Operating Procedure 2.2.22, Vital Instrument Power System. You are to notify the CRS when the task is completed.

Task No.:

RPS Motor Generator Startup and Return to Normal

Performance Checklist	Standards/Cues	Initials
1. At REACTOR PROTECT SYS MOT AND GEN SET #1A CONTROL CUBICLE (RPS MG Set Room A), perform following: Ensure AC OUTPUT GEN breaker is OFF. Ensure AC INPUT MOT breaker is OFF.	Locates RPS MG Set A Control Cubicle. CUE: Breaker is OFF CUE: Breaker is OFF	_____
2. At MCC-L (Control Building 882'), ensure Breaker 3D, RPS-MG-RPSA, REACTOR PROT SYS A MOTOR GEN SET, is closed.	Locates Breaker on MCC-L and verifies it is closed. CUE: Breaker 3D is closed.	_____
3 At REACTOR PROTECT SYS MOT AND GEN SET #1A CONTROL CUBICLE, perform following: Check VOLTAGE ADJ is at approximately midpoint position. Close AC INPUT MOT breaker.	CUE: The voltage adjust has not been moved. CUE: The position of the VOLTAGE ADJ is as it indicates Locates and simulates closing breaker.	_____

Task No.:

RPS Motor Generator Startup and Return to Normal

Performance Checklist	Standards/Cues	Initials
4. Press MOTOR ON button for ~ 15 seconds to allow MG Set to come up to speed and release when A-C VOLTS are > 110V. Check A-C VOLTS have stabilized between 114V and 126V. If yellow OVERVOLTAGE light is on, turn off light by pressing MOT ON button.	CUE: Voltage is as indicated. CUE: Overvoltage light is not on.	*_____
5. Close AC OUTPUT GEN breaker.	Locates and simulates closing AC breaker.	*_____
6. Verify LEDs on front of panel, for EPA 1A1, are off. Verify LEDs on front of panel, for EPA 1A2, are off.	CUE: All LEDs are OFF.	_____
7. At ELECTRICAL PROTECTION ASSEMBLY 1A1 (RPS MG Set Room A), ensure breaker is OFF. At ELECTRICAL PROTECTION ASSEMBLY 1A1, place breaker to ON.	CUE: 1A1 is OFF	*_____

Task No.:

RPS Motor Generator Startup and Return to Normal

Performance Checklist	Standards/Cues	Initials
8. At ELECTRICAL PROTECTION ASSEMBLY 1A2, ensure breaker is OFF. At ELECTRICAL PROTECTION ASSEMBLY 1A2, place breaker to ON.	CUE: EPA breaker 1A2 is OFF. Closes EPA 1A2.	*_____
9. At Panel 9-16 (Control Room), check white GEN A FEED light above RPS BUS A PWR TRANSFER switch turns on.	Locates and verifies light is lit. CUE: Light is as indicated.	_____
	CUE: Inform the applicant steps 7.2.1 through 7.2.6 have been completed by the control room staff.	
10. Place RPS BUS A PWR TRANSFER switch to TRANS.	Locate and simulate placing the transfer switch in TRANS.	*_____
11. Reset scram per Procedure 2.1.5.	CUE: This step will be performed by the RO.	

ATTACHMENT 1

Trainee Handout

When I tell you to begin, you are to inject to start RPS Motor Generator A and place the RPS system in a normal lineup. Before you start, I will provide 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.

This is not a time critical JPM.

General Conditions:

1. Reactor is at 90 percent power.
2. RPS A is currently aligned to the alternate power supply.
3. There are no emergency or abnormal procedures in use.

Initiating Cues:

The plant is currently at 90 percent rated power with all equipment in a normal lineup with the exception of RPS. RPS A is currently being supplied by the alternate power supply. PRA risk is green with no emergent activities anticipated.

Maintenance has completed the replacement of Electrical Protection Assembly (EPA) 1A1 and all post maintenance testing has been performed. The CRS directs you to place RPS Motor Generator A in service and return RPS to a normal electrical lineup in accordance with Sections 5 and 7 of System Operating Procedure 2.2.22, Vital Instrument Power System. You are to notify the CRS when the task is complete.

Manually Vent the Scram Air Header

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: 18 minutes
5. NRC 295037 EA1.05 3.9/4.0

Directions to Examiner:

1. This JPM evaluates the trainee's ability to perform the EOP action of manually venting the scram air header.
2. Observe the trainee during performance of the JPM for proper use of self-checking methods.
3. All blanks must be filled out with either initials or an “NP” for “not performed”; an explanation may also be written in the space if desired by the examiner.

General Conditions:

1. The plant is in an ATWS condition.
2. Alternate Rod Insertion Methods are being used.

General References:

1. 5.8.3, Alternate Rod Insertion Methods, Rev. 11, Section 8

General Tools and Equipment:

None

Special Conditions, References, Tools, Equipment:

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

Manually Vent the Scram Air Header

Task Standards:

1. Accurately locate, identify, operate and/or manipulate all component controls required to be utilized to manually vent the scram air header.
2. Correctly interpret instrument and system responses and their interrelationships when manually venting the scram air header.

Initiating Cue(s):

The Control Room Supervisor directs you to manually vent the scram air header per procedure 5.8.3.

Manually Vent the Scram Air Header

Performance Checklist	Standards	Initials
1. Obtain Procedure	The Operator obtains the most current revision of 5.8.3.	_____
2. Close air supply.	Close IA-985, CRD SCRAM DISCHARGE VOLUME & SCRAM PILOT AIR SUPPLY (R-903-SE). Candidate: Rotate the handwheel CLOCKWISE. #CUE: The handle is turning, the stem is moving in, the handle will not turn any further.	_____*
3. Check root valve open.	Check open IA-244, PI-229 & PS-230 ROOT (R-903-SE). #CUE: The valves are as you see them.	_____
4. Remove swagelok.	Remove 3/4" swagelok female connector with 1/4" plug from IA-1601, IA-PI-229 & IA-PS-230 DRAIN (R-903-SE). Candidate WITH TOOL: Rotate tool on connector COUNTER-CLOCKWISE. If correct tool used: #CUE: The connector is backing off, the connector is disconnected.	_____*

Manually Vent the Scram Air Header

Performance Checklist	Standards	Initials
5. Open valve for air to escape.	Open IA-1601, IA-PI-229 & IA-PS-230 DRAIN (R-903-SE). Candidate: Rotate the handwheel COUNTER-CLOCKWISE. #CUE: The handle is turning, you hear a hissing getting louder, the stem is moving out, the handle will not turn any further. NOTE: If candidate waits to contact CRS, after a minute, CUE that the hissing is getting softer and stops.	_____*
6. Inform the CRS that the task is complete.	Inform Control Room Supervisor that scram air header venting is in progress/finished. #CUE: The CRS Acknowledges the report. This JPM is complete.	_____

ATTACHMENT 1

Directions to Candidate:

When I tell you to begin, you are to manually vent 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 to manually vent the scram air header. During performance, state the actions you are taking, e.g.: repositioning controls and observing instrumentation.

General Conditions:

1. The plant is in an ATWS condition.
2. Alternate Rod Insertion Methods are being used.

Initiating Cues:

The Control Room Supervisor directs you to manually vent the scram air header per procedure 5.8.3.

Facility: CNS Scenario No.: 1 Op-Test No.: _____

Examiners: _____ Operators: _____

Initial Conditions: The plant is operating at 100% power near the end of the current fuel cycle when the crew takes the shift. The plant is in a normal configuration with the B REC Heat Exchanger in Standby, and the A REC Heat Exchanger in service.

Turnover: The plant is operating at 100% power near the end of the current fuel cycle. The plant is in a normal configuration with the A REC Heat Exchanger in Standby, and the B REC Heat Exchanger in service. Procedure 2.2.65.1 is to be used to swap heat exchangers. REC HX A is in Standby in accordance with Section 19, and an Operator is standing by in R-931-REC HX area. River temperature is 65. REC temperature will be locally controlled after the HX swap.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Swap REC Heat Exchangers.
2	1	I	LPRM fails downscale.
3	N/A	C	Condensate Booster Pump failure. Rapidly decrease Reactor power using Recirculation
4	2	C	HPCI inadvertently starts. (Damaged so that it will not start if needed.)
5	3	M	All Bypass Valves open. Reactor reaches level 8. Bypass valves close. Reactor does not scram (ATWS).
6	N/A	C	HPCI fails to start. Feedwater pumps fail to restart.
7	N/A	N	Emergency Depressurization

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

SCENARIO SUMMARY

The crew is instructed to swap the in service heat exchanger. After the evolution is complete, a single LPRM fails downscale. The operators must bypass the LPRM in the APRM channel, but the APRM remains operable. The operators receive a fire alarm, and a call that the B Condensate Booster Pump is smoking. The operators commence a rapid power reduction and remove the pump from service. The power reduction is with Recirc only, and no rods will need to be moved immediately. There is no fire, and the pump stops smoking after it is de-energized. After the plant has stabilized, and the fire is not a threat, HPCI inadvertently starts. The operators respond by securing the system. However, one of the critical breakers is damaged so that the system will not restart. The bypass valves go full open, causing Reactor level to reach 8. Most of the control rods do not scram due to channel bowing. HPCI and the A Feedwater Pump will not start, but RCIC starts and injects. However, the Reactor is at approximately 25% power, so the crew is forced to Emergency Depressurize. When the crew Emergency Depressurizes, The Scenario ends with RCIC controlling level, boric acid injected, and rods driven in.

CRITICAL TASK

1. Insert Control Rods by RMCS or by Scram

2. Emergency Depressurize to allow low pressure systems to recover level.

Op-Test No.: _____ Scenario No.: _1____ Event No.: _1____ Page _1_ of _6_

Event Description: _Normal - Swap REC Heat Exchangers.

Time	Position	Applicant's Actions or Behavior
0000	BOP	Begin swapping REC HX using procedure 2.2.65.1, Section 9.1
	BOP	Ensure SW-TCV-451A, REC HX A SW OUTLET TEMPERATURE CONTROL, switch is in OPEN.
	ATC/BOP	While maintaining SW pressure ≥ 38 psig on SW-PI-2715A, SW LOOP A PRESSURE, and SW-PI-2715B, SW LOOP B PRESSURE, slowly throttle open SW-MO-650, REC HX A SERVICE WATER OUTLET, to match REC HX B SW flow rate.
	BOP	The BOP may call the operator in the HX area to confirm that the operator is there.
	BOP	While maintaining REC header pressure ≥ 65 psig, slowly throttle open REC-MO-712, HX A OUTLET VLV.
	BOP	SW is available to the A HX, so SW-TCV-451A should be placed in auto, and SW-MO-650 OPEN.
	BOP	Close REC-MO-713, HX B OUTLET VLV
	BOP	Close SW-MO-651, REC HX B SERVICE WATER OUTLET.
	BOP	Either place SW-TCV-451B in OPEN OR ensure REC-TIC-451B is in AUTO and adjust setpoint so that SW-TCV-451B stays closed.
		Event ends with REC HX A in service, and the outlet temperature being adjusted by the local operator.

Op-Test No.: _____ Scenario No.: _1____ Event No.: _2____ Page _2_ of _6_

Event Description: _Component - LRPM fails upscale.

Time	Position	Applicant's Actions or Behavior
	ATC	Notes LPRM Upscale Alarm, and reports this to CRS. Consults ARP 2.3_9-5-1
	ATC	Determines which LPRM is alarming by looking at the Full Core Display.
	ATC	Selects Control Rod so that alarming LPRM is displayed on 4 rod display.
	ATC/CRS	Notes that power is stable, and enters procedure 10.19
	ATC/CRS	Verify 2 LPRM inputs per level and 11 LPRMs per APRM channel.
	ATC/BOP	Bypasses the failed LPRM
	CRS	Write a notification for the bypassed LPRM.
	CRS	Demand an Official Case or Core Power and Flow Log.
	ATC/BOP	Verify APRM Gain Adjustment Factor meets Procedure 6.LOG.601 surveillance requirements for affected APRM.
	CRS	Consult TS 3.3.1.1 to confirm that only 11 LPRMs are required for operability.
		The Event ends when Tech Specs have been reviewed and the inoperable LPRM is bypassed

Op-Test No.: _____ Scenario No.: _1____ Event No.: _3____ Page _3_ of _6_

Event Description: Component – Hot running Condensate Booster Pump forces down power.

Time	Position	Applicant's Actions or Behavior
	BOP	Reports fire alarm, opens annunciator procedure 2.3_FP-1
	BOP	Receives call from Turbine Building Station Operator that the B Condensate Booster Pump motor is running extremely hot.
	CRS	IF CRS does not order down power, THEN Station Operator should request pump to be deenergized within three minutes.
	CRS	Enters procedure 2.4MC-RF for impending CBP trip.
	CRS/ATC	Immediate action is to reduce power according to procedure 2.1.10. Procedure 2.4MC-RF directs to lower core flow to 44 mlbm/hr
	CRS	Enters procedure 2.1.10, Section 8, Rapid Power Reduction
	BOP	Secure Hydrogen Injection?
	CRS	Monitor Gland Steam Condenser level locally?
	BOP	Monitor Gland Steam Pressure
	CRS/BOP	Trip the Condensate Booster Pump.
		The event ends when core flow is reduced to 44 mlbm/hr and the Condensate Booster Pump is tripped. The CRS may order thermal limits to be checked.

Op-Test No.: _____ Scenario No.: _1____ Event No.: _4____ Page _4_ of _6_

Event Description: Component - HPCI inadvertently starts.

Time	Position	Applicant's Actions or Behavior
	BOP/ATC	Announces that HPCI has started.
	BOP/ATC	Announces that plant conditions are incorrect for HPCI start.
	CRS	Orders that HPCI be shut down.
	BOP/ATC	Manually trips HPCI.
	CRS	Orders investigation by Maintenance into the cause.
	CRS	Technical Specifications 3.5.1 (C) HPCI is inoperable. LCO time of 14 days. RCIC must be administratively verified operable within one hour.
	CRS	Contacts Work Control to confirm that RCIC surveillance was successful and within periodicity.
		Event ends with system declared inoperable and RCIC verified operable

Op-Test No.: _____ Scenario No.: _1____ Event No.: _5____ Page _5_ of _6_

Event Description: Major - Rx Level 8 ATWS.

Time	Position	Applicant's Actions or Behavior
		All Bypass Valves open, Rx reaches level 8, but Reactor does not scram (some rods insert, most do not due to channel bowing?). Bypass valves shut, and both Main Feedwater Pumps have tripped. RCIC can be manually started.
	ATC/BOP	Announces Bypass valves open and the tripping of the Main Turbine and Reactor Feed Pumps on high level, failure to scram.
	ATC/BOP	Announces failure to restart Feed Pumps.
	CRS	Enters EOPs 1A and transitions to 6A and 7A due to ATWS. (Condition which requires reactor scram, and reactor power above 3%)
	ATC	Depress both RX scram pushbuttons.
	ATC	Place mode switch in Shutdown.
	CRS	Directs the initiation of ARI.
	ATC	Initiates ARI and announces that it did not insert the control rods.
	CRS	Directs the Recirc Pumps runback.
	ATC	Runback Recirc Pumps.
	CRS	Directs the tripping Recirc Pumps.
	ATC	Trip Recirc Pumps.
	BOP	Ensure RCIC is running.

Time	Position	Applicant's Actions or Behavior
	CRS	Directs Inhibiting ADS
	BOP	Inhibit ADS
	CRS	May request that someone start defeating low level MSIV closure signal in accordance with 5.8.20
	CRS	Directs the initiation of SLC
	ATC	Initiate SLC and reports initial SLC Tank level.
	CRS	Makes determination that RPV level cannot be maintained above -25in FZ.
	CRS/BOP	Stop and prevent injection except for CRD, SLC, and RCIC.
	CRS/ATC	Open 6 SRVs
	CRS/BOP	When below Minimum Steam Cooling Pressure, raise injection to maintain water level between -25in FZ and LL.

Facility: Cooper Nuclear Station Scenario No.: 2 No.: _____

Examiners: _____ Operators: _____

Initial Conditions: The plant is operating at 100% power at the End of Cycle. The plant is in a 7 day LCO due to 1A SLC pump being out of service to replace the discharge relief valve that has failed open.

Turnover: Today is not a red light day. Start SW Pump B and secure D SW Pump.

Event No.	Malf. No.	Event Type*	Event Description
1.	N/A	N	Swap Service Water Pumps
2.	1	C	Service Water Pump D trip and LCO
3.	2	C,R	Feedwater Heater 5A Tube Failure 2.4Ex-Stm; Reduce power to exit the Loss of Feedwater Heating Region.
4.	3	I	NBI-LIS-101B failure that causes a ½ scram.
5.	4	C,R	Hydrogen leak entry into 2.4GEN-H2; Reduce power to allow repair of H2 Regulator.
6.	5	C	CRD Pump B Trip
7.	6	M	RR Pump vibration and eventual LOCA and Scram.
8.	6	C	Loss of the Startup Transformer and Lockout of 4160 1G,
9.	7	C	Failure of CS injection valve to auto open. Use of RHR and CS to restore reactor water level; Control Restore Reactor water level/Cool Containment

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

SCENARIO SUMMARY

The plant is operating at 100% power with “A” SLC pump tagged out when the crew assumes the shift.

The crew performs a swap of the operating Service Water Pumps. When the B SW Pump is started the D SW Pump trips requiring entry into LCO 3.7.2. After the SW pumps are swapped and Tech Specs are addressed, the 5A Feedwater Heater develops a tube leak and causes a lowering feedwater temperature.

After power is lowered, the NBI-LIS-101 B fails low due to a partially open equalizing valve, resulting a ½ scram that can be fixed and the ½ scram reset. Once the ½ scram is reset, a hydrogen leak develops and lowers pressure to approximately 40 psig. Power will be reduced to approximately 85% to allow repairs. When the repairs are in progress, the B CRD Pump trips requiring the RO to startup the standby pump.

The major event starts as a vibration of the A Reactor Recirc Pump requiring the eventual tripping of the pump and entry into 2.4RR. The vibrations will cause a preexisting flaw in the RR pipe to fail resulting in a large RR pump discharge line break that is not isolable. When the turbine is tripped the Startup Transformer locks out and the emergency transformer picks up only 4160 1F. The CS and RHR pumps powered from 4160 1F automatically start but the CS injection fails to automatically open and must be manually opened. The leak is large enough so that RHR alone has insufficient capacity to refill the RPV and the CS valve must be opened to restore level.

The scenario ends when RPV level is being maintained 3" to 54".

CRITICAL TASKS

1. The crew shall restore 41601F to service to provide containment and core cooling.
2. The crew shall align CS injection valve to restore and maintain reactor water level greater than TAF.

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

Event Description: Normal - Swap Service Water Pumps

Time	Position	Applicant's Actions or Behavior
	BOP	Obtains Procedure
	BOP	Notifies the Station Operator to perform presort checks on the B SW Pump.
	BOP	Ensures that the Zurn Strainer is in continuous
	BOP	Places the Pump start switch to Start and verifies proper response on discharge pressure and motor amps.
		Event ends with Service Water Pump B in service.

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

Event Description: Component - Service Water Pump Trip

Time	Position	Applicant's Actions or Behavior
	BOP	Identifies that the D SW Pump Trips and pulls the annunciator card and reports it to the CRS.
	BOP	Sends Station Operators to investigate the breaker and the pump.
	CRS	Determines that the SW pump is inoperable and references Tech Specs 3.7.2 (30 Day LCO) and 3.8.1 (Momentary during the time the SW Pump Selector switch is not in Standby declares DG 2 Inop).
	CRS	Announces the inoperability of the SW Pump to the Crew.
	CRS	Contacts the Work Control Center for assistance.
	CRS	Contacts Operations Supervisor of the LCO.
		Event ends with 1D SW Pump declared inoperable (30 day LCO)

Op-Test No.: 1 Scenario No.: 2 Event No.: 3 Page 3 of 9

Event Description: Component – Feedwater 5A tube leak

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to annunciator for 5A FW Heater level.
	BOP	Identifies that the condensate system flow has risen and that a tube leak is occurring.
	RO	Checks Reactor Power and notices that it is rising.
	BOP	Checks Feedwater temperature lowering and enters 2.4EX-STM
	CRS	Directs the entry into Abnormal
	CRS	Directs the lowering of reactor power to exit the "Loss of Feedwater Heating Region" as displayed on PMIS.
	RO	Reduces Reactor power to exit the "Loss of Feedwater Heating Region"
		Event ends with power reduced

Op-Test No.: 1 Scenario No.: 2 Event No.: 4 Page 4 of 9

Event Description: Instrumentation – NBI-LIS-101B failure.

Time	Position	Applicant's Actions or Behavior
	RO	Responds to the ½ Scram received.
	RO	Investigates and determines that the NBI-LIS-101B is the cause of the event.
	CRS	Contacts Work Control to send people to investigate the failure.
	RO	Sends Station Operator to Instrument Racks 25 and 26 to investigate.
	CRS	Respond to the report that I&C has found the equalizing valve partially open.
	CRS	Directs the reclosing of the out of position equalizing valve
	CRS	Directs the Reactor Operator to reset the ½ Scram.
	RO	Resets ½ Scram.
	CRS	References Tech Specs and determines that LCO 3.3.1.1 applies and that the instrument is in the tripped state.
		Event ends with Tech Specs addressed and the ½ Scram reset.

Op-Test No.: 1 Scenario No.: 2 Event No.: 5 Page 5 of 9

Event Description: Component – Generator Hydrogen leak and regulator failure.

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to hydrogen low pressure alarm
	BOP	Enters 2.4GEN-H2 Attachment 4 - Makes announcement for personnel to stay clear of Turbine Building due to potential hydrogen leak.
	CRS	Directs the actions of 2.4GEN-H2
	BOP	Sends the Station Operator with Health Physic person to investigate the failure.
	BOP	Sends another Station Operator to the Hydrogen bank to investigate.
	BOP	Monitors Stator and Generator Temperatures and the Capability Curve for the Generator.
	CRS	Directs power reduction if needed.
	RO	Reduces Reactor power by lowering on the Recirc Pump Controllers.
	BOP	Directs the Station Operator to bypass the failed Pressure Regulator and control pressure 49 to 54 psig.
	CRS	Respond to the report from Work Control that the bypass and regulator is stuck and power needs to be reduced to 85% to allow repair.
	CRS	Directs the reduction in power to 85% if not already there.
	RO	Lowers power if needed.
		Event ends with Reactor Power at 85% and Generator hydrogen pressure approximately 40 psig.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 Page 6 of 9

Event Description: Component – CRD Pump Trip

Time	Position	Applicant's Actions or Behavior
	RO	Respond to the tripping of the CRD Pump per the Annunciator Card, and restarting the standby pump.
	CRS	Determines that entry into 2.4CRD is not required.
	RO	Sends the Station Operator to investigate the tripping of the pump.
	CRS	Directs the recovery of the CRD system.
	BOP	Monitors CRD Drive temperatures
	CRS	Contacts the Work Control Center and request a team to investigate the tripping of the CRD Pump.
		Event ends with A CRD Pump in service and work control working on the problem.

Op-Test No.: 1 Scenario No.: 2 Event No.: 7 Page 7 of 9

Event Description: Major – Reactor Recirc Pump Vibration and LOCA

Time	Position	Applicant's Actions or Behavior
	RO	Responds to the annunciator concerning the Vibration Alert alarm on the A RR Pump and begins monitoring RR Pump indications.
	CRS	Determines that entry into 2.4RR is required and directs the execution of the procedure.
	RO	Sends the Station Operator to provide the readings from the vibration indicators locally.
	CRS	Directs the tripping of the pump when vibration exceeds to monitors greater than the danger setpoint
	RO	Trips the A RR Pump and notices Drywell pressure rising.
	CRS	Contacts the Work Control Center and request a team to investigate the Recirc Pump.
	CRS	As Drywell pressure rises, directs the RO to Scram the unit when pressure reaches 1.5 psig.
	RO	Scrams the plant when DW Pressure reaches 1.5 psig.
	BOP	Monitors and reports DW Pressure and ECCS initiations and DG starts.
	CRS	Enters EOP 1A and 3A and directs the RO and BOP to control level between +3" to +54" and pressure less than 1050 psig.
	RO	Starts Available Injection systems and injects to try to maintain level in desired band.
		Event ends with the Crew in EOP 1A and 3A attempting to maintain level.

Op-Test No.: 1 Scenario No.: 2 Event No.: 8 Page 8 of 9

Event Description: Component – Loss of Startup Transformer and Bus 1G

Time	Position	Applicant's Actions or Behavior
	BOP	Investigates the loss of power on board C. Determines that the 1G buss is locked out and the startup transformer is deenergized.
	BOP	Enters 5.3 EM-PWR due to a loss of the G 4160 bus and Startup Transformer.
	CRS	Directs the BOP to restore available power per 5.3EM-PWR.
	CRS	Directs the restoration of REC, Instrument Air and Service Water in accordance with Emergency Procedure 5.3EM-PWR.
	BOP	Calls the Station Operator to monitor the Diesels and to investigate the loss of bus 1G.
	BOP	Restores REC per the Hard Card in the back panels.
	BOP	Sends the Station Operator to reset the Air Compressor trips.
	BOP	BOP Restarts an Air Compressor.
	CRS	Contacts the Work Control Center and request a team to investigate the electrical problems.
		Event ends with an Air Compressor running supplying loads, REC restarted and the WCC working on the Electrical failures.

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

Event Description: Component – Failure of the Core Spray Injection valve to auto open

Time	Position	Applicant's Actions or Behavior
	RO	Observes Core Spray injection valve not responding to an initiation signal and opens it to inject into the RPV.
	RO	Reports the failure of the CS Injection valve to the CRS.
	BOP/RO	Coordinates and injects into the RPV to restore level into the desired band.
	CRS	Contacts WCC about the CS Valve problem.
	BOP/RO	Monitors Drywell pressure and reports Drywell and Torus Pressures to the CRS.
	CRS	Directs Torus Sprays
		Event ends with All Available Low Pressure Injection/Spray systems injecting into the RPV to maintain level between +3 to 54" and Torus sprays in service.