PILGRIM 2011 NRC RO ADMIN JPM COO1

TITLE: **Perform a Short Form Heat Balance Comparison**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED: Not Required for NRC JPMs

SYNOPSIS: Perform a Short Form Heat Balance

TASK STANDARD: Attachment 4 of PNPS 2.1.10 is completed with no errors.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
Perform a Short Form Heat Balance Comparison	356-01-07-004	2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation	4.4

REFERENCES:

1. PNPS 2.1.10

SIMULATOR CONDITIONS:

1. IC-30 set at about 95% power (Recirc Speeds at 70.8%)
2. Turn OFF EPIC displays

GENERAL TOOLS AND EQUIPMENT:

1. Steam Tables
2. Calculator

CRITICAL ELEMENTS:

Critical elements are [redacted] within the body of this document.

INITIAL CONDITIONS:

- The plant was at approximately 80% power.
- The plant process computer has been out of service for 2.5 hours.
- An OPER-20 is in progress IAW PNPS 2.1.10 Section 7.5
- PNPS Section 7.4 has been completed
- The RE and Nuclear Computer Applications are attempting to restart the process computer.
- The previous Short Form Heat Balance was performed one hour ago.

INITIATING CUE:

Perform a Short Form Heat Balance IAW PNPS 2.1.10 Att.4.

PERFORMANCE:

EXAMINER NOTE: Provide candidate with the previously completed Short Form Heat Balance

NOTE: If the candidate notices the higher indicated reactor power on the APRMs or Generator output and asks about these indications report that rising APRMs and Generator output have been noticed and that is why the Heat Balance is required to validate these indications.

START TIME: _____

1.	Procedure Step	Operator reviews the applicable sections of the procedure.
	Standard	Reviews the following in PNPS 2.1.10: • Precautions and Limitations • Section 7.5 reviewed • Att.4
	Comments	
	Results	SAT ☐ UNSAT ☐

2.	Procedure Step	Fills out date/time and performed by on Attachment 4.
	Standard	Date/time and performed by recorded on Attachment 4.
	Comments	
	Results	SAT ☐ UNSAT ☐

3.	Procedure Step	Find and record reading for Feedwater Flow A from FI-640-24A on Panel C905.
	Standard	FI-640-24A reading recorded.
	Comments	**Approximately 3.75 Mlb/hr.**
	Results	SAT ☐ UNSAT ☐

4.	Procedure Step	Find and record reading for Feedwater Flow B from FI-640-24B on Panel C905.
	Standard	FI-640-24B reading recorded.
	Comments	**Approximately 3.85 Mlb/hr.**
	Results	SAT ☐ UNSAT ☐

5.	Procedure Step	Find and record reading for Feedwater Temperature A from TR-3496A on Panel C1.
	Standard	TR-3496A reading recorded (RED pen).
	Comments	**Approximately 360°F.**
	Results	SAT ☐ UNSAT ☐

6.	Procedure Step	Find and record reading for Feedwater Temperature B from TR-3496B on Panel C1.
	Standard	TR-3496B reading recorded (BLUE pen).
	Comments	**Approximately 360°F.**
	Results	SAT ☐ UNSAT ☐

7.	Procedure Step	Calculate Total Feedwater flow by adding the A and B Feedwater Flows.
	Standard	Total Feedwater flow calculated.
	Comments	**Approximately 7.6 Mlb/hr.**
	Results	SAT ☐ UNSAT ☐

8.	Procedure Step	Average the A and B Feedwater Temperatures loops together.
	Standard	Average Feedwater temperature calculated.
	Comments	**Approximately 360°F.**
	Results	SAT ☐ UNSAT ☐

9.	Procedure Step	Using steam tables, determine Feedwater enthalpy.
	Standard	Feedwater enthalpy is recorded.
	Cue	
	Comments	**H_f 360°F ≈ 332 BTU/lb.**
	Results	SAT ☐ UNSAT ☐

10.	Procedure Step	Determine Core Thermal Power 7.6 X $\frac{(1189.6 - 332)}{3.413}$ + 9.02 = 1918
	Standard	Core Thermal Power is calculated at approximately 1918 MWth
	Comments	**The calculated Core Thermal Power depends on how the candidate reads Feedwater Flow indications assuming a one division range of the meter scale.** **Core Thermal Power should be in a range between approximately 1892 and 1942 MWth**
	Results	SAT ☐ UNSAT ☐

Terminating Cue: **ONCE candidate discusses their findings the JPM can be terminated**

STOP TIME: _____

INITIAL CONDITIONS:

- The plant was at approximately 80% power.
- The plant process computer has been out of service for 2.5 hours.
- An OPER-20 is in progress IAW PNPS 2.1.10 Section 7.5
- PNPS Section 7.4 has been completed
- The RE and Nuclear Computer Applications are attempting to restart the process computer
- The previous Short Form Heat Balance was performed one hour ago

INITIATING CUE:

Perform a Short Form Heat Balance IAW PNPS 2.1.10 Att.4.

PILGRIM 2011 NRC RO ADMIN JPM COO2

TITLE: **Operator License Status Verification**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED: Not Required for NRC JPMs

SYNOPSIS: Given a table containing watch standing, medical and, requal training information for 3 operators, determine if the requirements for maintaining an active license have been met

TASK STANDARD: Determines that 2 of 3 operators have failed to meet 10 CFR 55 and utility requirements for maintaining an active license.

EVALUATION METHOD:

X Perform

Simulate

EVALUATION LOCATION:

Plant

Simulator/Classroom

X Classroom

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
Operator License Status Verification	XXXX	2.1.4 - Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc.	3.3

REFERENCES:

1. 10CFR55.53
2. PNPS 1.3.34

SIMULATOR CONDITIONS: N/A

GENERAL TOOLS AND EQUIPMENT: N/A

CRITICAL ELEMENTS:

Critical elements are [redacted] within the body of this document.

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- Today is January 20, 2011.
- You are the RO.
- You must leave shift.
- Three replacement operators are available.

INITIATING CUE:

Using the given information on Handout #1, determine which of the three operators, if any, are qualified to relieve you IAW procedural requirements of PNPS 1.3.34, Operations Administrative Policies and Processes.

Record your findings on Handout #2.

PERFORMANCE:

EXAMINER NOTE: Provide candidate with Handout #1

START TIME: _____

1.	**Procedure Step:**	Operator reviews the handout and applicable sections of the procedures.
	Standard	Determines eligibility of the operators in accordance with the below key
	Comments	
	Results	SAT ☐ UNSAT ☐

Terminating Cue: **ONCE candidate discusses their findings the JPM can be terminated**

Answer Key

	Qualified for Relief? (Yes/No)	If No, what requirement is not being met.
RO #1	**NO**	**Does not have a medical exam within the past 2 years** **License has expired (>6 yrs old)**
RO #2	**NO**	**Does not meet the required number of hours performing duties as a licensed operator for the last quarter** **(Because Work Control hours do NOT count – This reason is NOT Critical)**
RO #3	**YES**	**N/A**

HANDOUT #1

RO#1	RO#2
Hours Performing Operator Duties in Last Quarter 10/16/10: 0700 - 1900 - ATC 10/17/10: 0700 - 1900 - ECCS Operator 10/25/10: 0700 - 1900 - ATC 11/5/10: 0700 - 1900 - Work Control 11/6/10: 0700 - 1900 - BOP 11/7/10: 0700 - 1900 - BOP 12/4/10: 0700 - 1900 - ATC 12/5/10: 0700 - 1900 – Work Control	Hours Performing Operator Duties in Last Quarter 11/21/10: 0700 - 1900 - Work Control 11/30/10: 0700 - 1900 - ATC 12/14/10: 0700 - 1900 - ECCS Operator 12/15/10: 0700 - 1900 - Work Control 12/24/10: 0700 - 1900 - BOP 12/25/10: 0700 - 1900 - BOP 12/26/10: 0700 - 1900 - Work Control
Date of Most Recent Medical Exam - 12/10/2008	Date of Most Recent Medical Exam - 2/14/2009
License Issue Date – 1/16/2005	License Issue Date – 3/27/2005

RO#3
Hours Performing Operator Duties in Last Quarter 10/6/10: 0700 - 1900 - BOP 11/8/10: 0700 - 1900 - ATC 11/9/10: 0700 - 1900 - ECCS Operator 11/15/10: 0700 - 1900 - Work Control 12/1/10: 0700 - 1900 - BOP 12/21/10: 0700 - 1900 - BOP
Date of Most Recent Medical Exam - 6/5/2009
License Issue Date – 5/10/2005

HANDOUT #2

	Qualified for Relief? (Yes/No)	If No, what requirement(s) is/are not being met.
RO #1		
RO #2		
RO #3		

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- Today is January 20, 2011.
- You are the RO.
- You must leave shift.
- Three replacement operators are available.

INITIATING CUE:

Using the given information, determine which of the three operators, if any, are qualified to relieve you IAW PNPS 1.3.34, Operations Administrative Policies and Processes.

Record your findings on Handout #2.

Pilgrim NRC 2011 RO ADMIN JPM EC

TITLE: **Identify the tagging/clearance points for a shaft seal replacement on the "E" RBCCW pump**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	30	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED:

SYNOPSIS: Candidate must use plant prints to determine the blocking points for a shaft seal replacement on the "E" RBCCW pump, and then determine the position of the blocking point and the type of clearance tag required.

TASK STANDARD: Identify the blocking points, tag type and sequence for a clearance for a shaft seal replacement on the "E" RBCCW pump

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator/Classroom
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
CONDUCT EQUIPMENT TAGOUTS CLEARANCE AND SWITCHING.	299-03-01-012	2.2.13, Knowledge of tagging and clearance procedures.	RO 4.1 SRO 4.3

REFERENCES:

RBCCW P &ID M-215, Sheet 2
EN-OP-102-02, Fleet Tagging Assessments
EN-OP-102, Protective and Caution Tagging

SIMULATOR CONDITIONS: None

None

GENERAL TOOLS AND EQUIPMENT:

Ensure RBCCW P&IDs are available

CRITICAL ELEMENTS:

Critical elements are [redacted] within the body of this document.

INITIAL CONDITIONS:

The plant is at rated power. A tagout/clearance is required for maintenance work to replace the mechanical shaft seal on the "E" RBCCW pump

INITIATING CUE:

Identify the components required to be tagged, the type of tags and the position of clearance points required for a shaft seal replacement on the "E" RBCCW pump

PERFORMANCE:

START TIME: _____

1.	**Procedure Step:**	Reference P&ID M-215,
	Standard	Candidate determines correct P&ID and reviews it to determine the blocking points for the E RBCCW Pump.
	Comments	
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	Identifies isolations necessary to replace the seal on the E RBCCW Pump From EN-OP-102; and P&ID M-215 Using controlled documents, determine hazardous energy sources and isolations necessary to provide a safe work boundary for each work activity.
	Standard	See attached key
	Comments	
	Results	SAT ☐ UNSAT ☐

3.	**Procedure Step:**	Identifies valves necessary to open to replace the seal on the E RBCCW Pump [1] From EN-OP-102; Isolation Boundaries — Those components (isolation valves, vents, drains, electrical breakers, fuses, and/or switches, for example.) that are required to be positioned to provide equipment protection and personnel safety during work activity/procedural performance. One vent or drain should normally be tagged open to depressurize systems and to prevent it from re-pressurizing.
	Standard	See attached key
	Comments	
	Results	SAT ☐ UNSAT ☐

4.	**Procedure Step:**	Identifies the type of tags required to replace the seal on the E RBCCW Pump
	Standard	See attached key
	Comments	
	Results	SAT ☐ UNSAT ☐

Terminating Cue: **ONCE candidate discusses their findings the JPM can be terminated**

KEY

Component	Tag Type	Position
1. RBCCW Pump E Suction Valve 30-HO-46	Danger - RED	Closed
2. RBCCW Pump E Discharge Valve 30-HO-49	Danger - RED	Closed
3. RBCCW Pump E Discharge PI-4004 Root Valve 30-HO-240E NOTE: This isolation point is NOT required but may be chosen.	Caution - Yellow	Open/Close as necessary to vent/drain
4. RBCCW Pump E Discharge Casing Vent Valve 30-HO-52	CAUTION – Yellow OR DANGER - Red	Open
5. RBCCW Pump E (P-202E) Power Supply AUX BAY B -3	Danger - Red	Off (Removed or OPEN)
6. RBCCW Pump E (P-202E) Control Switch	Danger - Red	Pull To Lock

STOP TIME: _____

HANDOUT

Component	Tag Type	Position

Stop time: _____

INITIAL CONDITIONS:

The plant is at rated power. A tagout/clearance is required for maintenance work to replace the mechanical shaft seal on the "E" RBCCW pump

INITIATING CUE:

Identify the components required to be tagged, the type of tags and the position of clearance points required for a shaft seal replacement on the "E" RBCCW pump

Pilgrim 2011 NRC RO Admin JPM RC

TITLE: **Determine personnel available to perform a High Rad Area task**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED:

SYNOPSIS: Candidate will determine the appropriate individual(s) to perform the task IAW EP-IP-440, the reasons for those selections and exclusions and whether an Extended Exposure authorization is required.

TASK STANDARD: Candidate will determine the appropriate individual(s) to perform the task IAW EP-IP-440 and the reasons for those selections and exclusions.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator/Classroom
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
Determine personnel available to perform a High Rad Area task	XXX	2.3.4 - Knowledge of radiation exposure limits under normal or emergency conditions.	3.2

REFERENCES:

10 CFR 20.1206
EP-IP-440

SIMULATOR CONDITIONS:

N/A

GENERAL TOOLS AND EQUIPMENT:

Calculator

CRITICAL ELEMENTS:

Critical elements are [redacted] within the body of this document.

INITIAL CONDITIONS:

1. An event has occurred at the plant and the E-Plan has been entered.
2. A RCIC steam leak into the Reactor Building cannot be isolated without manually shutting the MO-1301-61 RCIC Steam Admission valve.
3. Radiation levels at the valve are 15 R/hr.
4. Rad Pro has determined the following:

   A. Time to complete the task for an experienced Licensed Reactor Operator will be 12 minutes.

   B. Time to complete the task for a recently Licensed Reactor Operator will be 25 minutes

5. Four (4) individuals are available to perform the task.

- Worker A is a volunteer who is an experienced Licensed Reactor Operator and has previously received a Planned Special Exposure of 1R at another facility this year. This individual has also received a dose of 1200 mR this year at Pilgrim
- Worker B is a volunteer who is an experienced Licensed Reactor Operator and is a declared pregnant adult worker and has received a dose of 15 mR this year at Pilgrim
- Worker C is a volunteer who is an experienced Licensed Reactor Operator that has received a dose of 1200 mR this year at Pilgrim, as well as a dose of 2400 mR during this event on another task.
- Worker D is a volunteer who is a recently Licensed Reactor Operator that has received a dose of 1400 mR this year at Pilgrim

INITIATING CUE:

1. Determine the worker(s) available to perform the task IAW EPIP-440, Emergency Exposure Controls, **WITHOUT** exceeding Emergency Exposure Limit AND why you chose the worker(s).

2. Determine the reason why you would not choose any particular worker to perform the task.

(Assume that dose rates remain at the level noted above throughout the task and it is completed.)

START TIME: _____

1.	Procedure Step	Operator will review the task conditions and obtain EP-IP-440
	Standard	Operator reviews the task conditions and obtains EP-IP-440
	Comments	Provide the candidate with a copy of EP-IP-440 if requested
	Results	SAT ☐ UNSAT ☐

2.	Procedure Step	**Operator determines the worker that may be assigned to perform the task**
	Standard	**The below workers may be chosen for the reasons noted:** **Worker A may be assigned to the task.** **Choosing this individual will result in the lowest total dose for the job of 3R. (0.2 hours X 15 R/hr = 3R) and will not exceed Emergency Exposure Limit of 5 R for this event.** **NOTE: A Planned Special Exposure is accounted for separately from dose accumulated during any other planned special exposure and year to date exposure is not included during Emergency Conditions.**
	Comments	
	Results	SAT ☐ UNSAT ☐

3.	Procedure Step	Operator determines worker(s) that may be NOT be assigned to perform the task (and the reasons)
	Standard	The below workers may NOT be chosen for the reasons noted: Worker B may NOT be assigned to the task because she is a declared pregnant adult and can not receive emergency exposure during emergency activities. Worker C may not be assigned to the task. Choosing this individual will result in a total dose to this person during this event of 5.4R. (0.2 hours X 15 R/hr = 3R plus the additional dose of 2.4R in performing another task during this event.) Worker D may NOT be assigned to the task. Choosing this individual will result in a total dose of 3.75R for the task. (0.42 Hours X 15 R/hr = 6.25R for the task.).
	Comments	
	Results	SAT ☐ UNSAT ☐

Terminating Cue: **ONCE candidate discusses their findings the JPM can be terminated**

STOP TIME: _____

HANDOUT

INITIAL CONDITIONS:

4. An event has occurred at the plant and the E-Plan has been entered.
5. A RCIC steam leak into the Reactor Building cannot be isolated without manually shutting the MO-1301-61 RCIC Steam Admission valve.
6. Radiation levels at the valve are 15 R/hr.
4. Rad Pro has determined the following:

   A. Time to complete the task for an experienced Licensed Reactor Operator will be 12 minutes.

   C. Time to complete the task for a recently Licensed Reactor Operator will be 25 minutes

6. Four (4) individuals are available to perform the task.

   - Worker A is a volunteer who is an experienced Licensed Reactor Operator and has previously received a Planned Special Exposure of 1R at another facility this year. This individual has also received a dose of 1200 mR this year at Pilgrim
   - Worker B is a volunteer who is an experienced Licensed Reactor Operator and is a declared pregnant adult worker and has received a dose of 15 mR this year at Pilgrim
   - Worker C is a volunteer who is an experienced Licensed Reactor Operator that has received a dose of 1200 mR this year at Pilgrim, as well as a dose of 2400 mR during this event on another task.
   - Worker D is a volunteer who is a recently Licensed Reactor Operator that has received a dose of 1400 mR this year at Pilgrim

INITIATING CUE:

1. Determine the worker(s) available to perform the task IAW EPIP-440, Emergency Exposure Controls, **WITHOUT** exceeding Emergency Exposure Limit AND why you chose the worker(s).

2. Determine the reason why you would not choose any particular worker to perform the task.

(Assume that dose rates remain at the level noted above throughout the task and it is completed.)

PILGRIM 2011 NRC SRO ADMIN JPM COO1

TITLE: **Perform a Short Form Heat Balance Comparison**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED: Not Required for NRC JPMs

SYNOPSIS: Perform a Short Form Heat Balance Comparison and determine that reactor power has changed then take the corrective action.

TASK STANDARD: Attachment 4 of PNPS 2.1.10 is completed with no errors. A power reduction is required based on data comparison which indicates a power change greater than 10%.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
Perform a Short Form Heat Balance Comparison	356-01-07-004	2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation	4.4

REFERENCES:

1. PNPS 2.1.10

SIMULATOR CONDITIONS:

1. IC 30, set at about 95% power (Recirc Speeds at 70.8%)
2. A completed Short Form Heat Balance with MWth indicating about 290 MWth lower than the current conditions.
3. The thermal power difference between the handout and the current conditions must be greater than 10%.
4. Turn OFF EPIC displays

GENERAL TOOLS AND EQUIPMENT:

1. Steam Tables
2. Calculator

CRITICAL ELEMENTS:

Critical elements are [redacted] within the body of this document.

INITIAL CONDITIONS:

- The plant was at approximately 80% power.
- The plant process computer has been out of service for 2.5 hours.
- An OPER-20 is in progress IAW PNPS 2.1.10 Section 7.5
- PNPS Section 7.4 has been completed
- The RE and Nuclear Computer Applications are attempting to restart the process computer.
- The previous Short Form Heat Balance was performed one hour ago.

INITIATING CUE:

Perform a Short Form Heat Balance IAW PNPS 2.1.10 Att.4 and take actions as specified in Section 7.5 of PNPS 2.1.10, Computer Data and Alarms.

EXAMINER NOTE: Provide candidate with the previously completed Short Form Heat Balance

PERFORMANCE:

NOTE: If the candidate notices the higher indicated reactor power on the APRMs or Generator output and asks about these indications report that rising APRMs and Generator output have been noticed and that is why the Heat Balance is required to validate these indications.

START TIME: _____

1.	Procedure Step	Operator reviews the applicable sections of the procedure.
	Standard	Reviews the following in PNPS 2.1.10: • Precautions and Limitations • Section 7.5 reviewed • Att.4
	Comments	
	Results	SAT ☐ UNSAT ☐

2.	Procedure Step	Fills out date/time and performed by on Attachment 4.
	Standard	Date/time and performed by recorded on Attachment 4.
	Comments	
	Results	SAT ☐ UNSAT ☐

3.	Procedure Step	Find and record reading for Feedwater Flow A from FI-640-24A on Panel C905.
	Standard	FI-640-24A reading recorded.
	Comments	**Approximately 3.75 Mlb/hr.**
	Results	SAT ☐ UNSAT ☐

4.	Procedure Step	Find and record reading for Feedwater Flow B from FI-640-24B on Panel C905.
	Standard	FI-640-24B reading recorded.
	Comments	**Approximately 3.85 Mlb/hr.**
	Results	SAT ☐ UNSAT ☐

5.	Procedure Step	Find and record reading for Feedwater Temperature A from TR-3496A on Panel C1.
	Standard	TR-3496A reading recorded (RED pen).
	Comments	**Approximately 360°F.**
	Results	SAT ☐ UNSAT ☐

6.	Procedure Step	Find and record reading for Feedwater Temperature B from TR-3496B on Panel C1.
	Standard	TR-3496B reading recorded (BLUE pen).
	Comments	**Approximately 360°F.**
	Results	SAT ☐ UNSAT ☐

7.	Procedure Step	Calculate Total Feedwater flow by adding the A and B Feedwater Flows.
	Standard	Total Feedwater flow calculated.
	Comments	**Approximately 7.6 Mlb/hr.**
	Results	SAT ☐ UNSAT ☐

8.	Procedure Step	Average the A and B Feedwater Temperatures loops together.
	Standard	Average Feedwater temperature calculated.
	Comments	**Approximately 360°F.**
	Results	SAT ☐ UNSAT ☐

9.	Procedure Step	Using steam tables, determine Feedwater enthalpy.
	Standard	Feedwater enthalpy is recorded.
	Cue	
	Comments	**H, 360°F ≈ 332 BTU/lb.**
	Results	SAT ☐ UNSAT ☐

10.	Procedure Step	Determine Core Thermal Power 7.6 X $\frac{(1189.6 - 332)}{3.413}$ + 9.02 = 1918
	Standard	Core Thermal Power is calculated at approximately 1918 MWth
	Comments	**The calculated Core Thermal Power depends on how the candidate reads Feedwater Flow indications assuming a one division range of the meter scale.** **Core Thermal Power should be in a range between approximately 1892 and 1942 MWth**
	Results	SAT ☐ UNSAT ☐

11.	Procedure Step	Compares data obtained above with the previously provided Short Form Heat Balance. Baseline data will show that CTP was 1628 MWth
	Standard	Compares data and determines that reactor power change greater than 10% has occurred which requires lowering reactor power with recirc flow. PNPS step 7.5[2](c)
	Comments	When the candidate compares the Short Form Heat Balance just completed against the provided form, they should note the increase in core thermal power. A recommendation must be made for a reduction in power IAW PNPS step 7.5[2](b).4) In this situation, IAW STEP 7.5(2)(b)(4), a >10% power change has occurred and therefore a power reduction is required. (1918 – 1628 = 290), 290 MWth change is >10% change. A 10% change would have been 162.8 MWth. NOTE: Based on allowable band of one division on each Feedwater flow instrument, the minimum change in CTP could be 264 MWth, and the maximum change in CTP could be 314 MWth.
	Results	SAT ☐ UNSAT ☐

Terminating Cue: **ONCE candidate discusses their findings the JPM can be terminated**

STOP TIME: _____

INITIAL CONDITIONS:

- The plant was at approximately 80% power.
- The plant process computer has been out of service for 2.5 hours.
- An OPER-20 is in progress IAW PNPS 2.1.10 Section 7.5
- PNPS Section 7.4 has been completed
- The RE and Nuclear Computer Applications are attempting to restart the process computer
- The previous Short Form Heat Balance was performed one hour ago

INITIATING CUE:

Perform a Short Form Heat Balance IAW PNPS 2.1.10 Att.4 and take actions as specified in Section 7.5 of PNPS 2.1.10, Computer Data and Alarms. Here is the previous hours heat balance which did not deviate from the initial baseline data.

HANDOUT

ATTACHMENT 4
Sheet 1 of 1

SHORT FORM HEAT BALANCE

Date/Time ___Today___ / _1 Hour Ago_ _____

Performed By ____SXD_____

OPERATING DATA:

Item		Panel	Instrument	Reading	Units
①	Feedwater Flow A	C905	FI-640-24A	3.10	Mlb/hr
②	Feedwater Flow B	C905	FI-640-24B	3.23	Mlb/hr
③	Feedwater Temp A	C1	TR-3496A	345	°F
④	Feedwater Temp B	C1	TR-3496B	345	°F

CALCULATION:

NOTE

The circled numbers are item numbers; i.e., Total Feedwater Flow is equal to Item ① (Feedwater Flow A) plus Item ② (Feedwater Flow B).

⑤ Total Feedwater Flow: ① + ② 3.10 + 3.23 = 6.33 Mlb/hr

⑥ Ave. Feedwater Temp: 1/2(③ + ④) .5 (345 +345) = 345 °F

⑦ Feedwater Enthalpy: Stm. Tables, ⑥ 316.5 Btu/lb

⑧ Core Thermal Power: ⑤ X $\frac{(1189.6 - ⑦)}{3.413}$ + 9.02 =

6.33 XE6 X (1189.6 - 316.5)/3.413 + 9.02 = 1628.3 MWth

Comments:

NRC 2011 SRO ADMIN JPM COO2

TITLE: **Perform a Review of the Control Room Daily Logs**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	25	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED: Not Required for NRC JPMs

SYNOPSIS: Perform a Review of the Control Room Daily Logs

TASK STANDARD: Attachment 1 of PNPS 2.1.15 is reviewed with OOS items identified, TS/FSAR applicability determined and other notifications made as required

EVALUATION METHOD:

- **X** Perform
- Simulate

EVALUATION LOCATION:

- Plant
- Simulator
- **X** Classroom

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
Perform a Review of the Control Room Daily Logs	XX	2.1.18 - Ability to make clear, accurate and concise logs, records, status boards, and reports.	3.8

REFERENCES:

1. PNPS 2.1.15, Att.1

SIMULATOR CONDITIONS:

1. None required

GENERAL TOOLS AND EQUIPMENT:

Partially completed Att.1 of PNPS 2.1.15 – Daily Log Tests
Tech Specs
FSAR Section 10.8

CRITICAL ELEMENTS:

Critical elements are [redacted] within the body of this document.

INITIAL CONDITIONS:

- The plant is at approximately 100% power.

INITIATING CUE:

Perform a review of the Attachment 1 of the Control Room Daily Logs beginning at Daily Log Test #8. When the review is completed through Daily Log Test #37, inform the examiner of findings and any Technical Specification, FSAR and/or procedural required actions, if any, from your review.

PERFORMANCE:

EXAMINER NOTE: Provide candidate with the Handout – Partially completed Att.1 of PNPS 2.1.15 – Daily Log Tests

DO NOT PROVIDE FSAR SECTION UNLESS REQUESTED

START TIME: _____

1.	Procedure Step	Daily Log Test #16 (Step 2) – Sheet 21 of 66
	Standard	Identifies that Recirc Flow Converter readings are not within 6% as required – determines that a work request must be issued.
	Comments	If the candidate states that they must initiate a work request state, "Another operator will issue the work request". If the operator reports that they are notifying the Shift Manager, as the Shift Manager reply, "I understand. Determine required T.S., FSAR and/or procedural requirements".
	Results	SAT ☐ UNSAT ☐

2.	Procedure Step	Daily Log Test #31 – Sheet 41 of 66
	Standard	Identifies that boron concentration is OOS LOW – (Step 1. - 8.16%) – determines that TS 3.4.A. applies and that concentration must be restored to within limits within 72 hours. Also, notifies Chemistry.
	Comments	The notification to Chemistry is NOT CRITICAL for this step. The TS application is critical The candidate may reference TS 3.4.C which refers to TS 3.4.A.
	Results	SAT ☐ UNSAT ☐

3.	Procedure Step	Daily Log Test #35 – Sheet 45 of 66
	Standard	Identifies that Fire Water Storage tank Levels are OOS LOW. Refers to FSAR Section 10.8.4.2.1 and determines that levels must be restored within 7 days.
	Comments	Provide FSAR Section if requested.
	Results	SAT ☐ UNSAT ☐

Terminating Cue: **ONCE candidate discusses their findings the JPM can be terminated**

STOP TIME: _____

INITIAL CONDITIONS:

The plant is at approximately 100% power.

INITIATING CUE:

Perform a review of the Attachment 1 of the Control Room Daily Logs beginning at Daily Log Test #8. When the review is completed through Daily Log Test #37, inform the examiner of findings and required actions, if any, from your review.

NRC 2011 SRO ADMIN JPM EC

TITLE: **Analyze a Solomon case from 3D Monicore and determine the appropriate action.**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED: Not Required for NRC JPMs

SYNOPSIS: With the plant operating in the Buffer Zone on the Pilgrim Power/Flow Map analyze a Solomon case from 3D Monicore and determine the appropriate action.

TASK STANDARD: Following a dual Recirculation Pump runback the candidate will review a Solomon Case and determine that the Hot Channel Decay Ratio is higher than allowable, then determine power must be lowered using the RPR array instruction sheet.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
Simulator
X Classroom

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
3D Monicore review		2.2.38 - Knowledge of conditions and limitations in the facility license.	4.5

REFERENCES:

1. PNPS 2.4.20, Reactor Recirculation System Speed or Flow Control System Malfunction
2. Solomon Case
3. PNPS 2.1.14, Station Power Changes
4. PNPS 2.4.165 – Reactor Core Instability

SIMULATOR CONDITIONS: N/A

GENERAL TOOLS AND EQUIPMENT:

Solomon Stability Evaluation Report (attached)

CRITICAL ELEMENTS:

Critical steps are [redacted] within the body of this document.

INITIAL CONDITIONS:

- Both Recirculation Pumps have run back due to a flow control system malfunction
- The plant has entered PNPS 2.4.20 and Immediate actions completed including the lock up of both Recirculation Pump Scoop Tubes
- Maintenance has requested that Recirculation Pump speed NOT be changed.
- Reactor operation is in the Buffer Zone
- Operation is above the 60% Rod Line
- There are no LPRM alarms
- There are no APRM or LPRM oscillations occurring
- A Solomon Case has been printed and will be provided

INITIATING CUE:

Evaluate plant conditions in accordance with PNPS 2.4.20, and determine required actions, if any.

Examiner Note: provide the candidate with the Solomon Case Handout

([redacted])

PERFORMANCE:

Examiner Note: **Provide Solomon Stability Evaluation (attached).**

START TIME: _____

1. Performance Step Reviews 2.4.20 – Reactor Recirculation System Speed or Flow Control System Malfunction, step 4.0 [1] (a)

> **4.0 SUBSEQUENT OPERATOR ACTIONS**
>
> [1] **ASSESS** operating conditions by plotting power versus core flow on the Pilgrim Power/Flow Map.
>
> (a) **IF** operating in a region of instability (Exclusion Region or Buffer Zone), **THEN REFER TO** PNPS 2.4.165 **AND PERFORM CONCURRENTLY.**
> **[NRC GL94-02 (BWROG-94078)]**

Standard Operator reviews 2.4.20 –step 4.0 [1] (a) and enters 2.4.165 – Reactor Core Instability step 4.0 [4]

Comment Results SAT ☐ UNSAT ☐

2. Performance Step Enters and Reviews 2.4.165 – Reactor Core Instability step 4.0 [4]

> [5] **IF** operating in the Buffer Zone **AND** SOLOMON is available,
>
> (a) **THEN DEMAND** a SOLOMON case from 3D Monicore **AND VERIFY** the following:
>
> - Core Decay Ratio (DR) is < 0.70.
> - Hot Channel Decay Ratio is < 0.55.

Standard Operator reviews 2.4.165 – Reactor Core Instability step 4.0 [4] and obtains and the Solomon Case

Cue

Comment:

Results SAT ☐ UNSAT ☐

3. Performance Step **Reviews the Solomon Case Printout**

(a) **THEN DEMAND** a SOLOMON case from 3D Monicore **AND VERIFY** the following:

- Core Decay Ratio (DR) is < 0.70.
- Hot Channel Decay Ratio is < 0.55.

(b) **IF** the Core Decay Ratio (DR) is ≥ 0.70 **OR** the Hot Channel Decay Ratio is ≥ 0.55, **THEN IMMEDIATELY EXIT** the Buffer Zone by either:

- Raising core flow, unless restricted by another Off-Normal Operating Procedure.

OR

- Inserting control rods in accordance with PNPS 2.1.14 Section 7.9.

Standard **Operator reviews the Solomon Case and determines that Core Decay Ratio is <0.70 and Hot Channel Decay Ratio is >0.55 and the operator must immediately exit the Buffer Zone.**

Note **The critical portion of this step is determining the Hot Channel Decay Ratio is greater than the allowable value.**

Comment

Results **SAT** ☐ **UNSAT** ☐

4. Performance Step Enters and Reviews 2.1.14 – Station Power Changes section 7.9

7.9 POWER DECREASE EFFECTED BY RPR ARRAY/ROPS

[1] **WHEN** power reduction below that achieved by executing Section 7.11 is required, **THEN PERFORM** the following steps until the desired power level is attained:

Standard Candidate may go to section 7.11 to determine the correct actions.

Comment Candidate may know that 2.1.14, Section 7.11 is for lowering power using recirculation flow and not required and skip the next step

Results SAT ☐ UNSAT ☐

5. Performance Step Reviews 2.1.14 – Station Power Changes section 7.11, Power Reductions during Abnormal Conditions.

Standard Identifies that 7.11, Power Reductions during Abnormal Conditions, does not apply since flow has already been lowered and operation is above the 60% Rod Line.

Comment Results SAT ☐ UNSAT ☐

6. Performance Step Enters and Reviews 2.1.14 – Station Power Changes section 7.9

Greater than or equal to 60% load line

(1) **VERIFY/REDUCE** total core flow to achieve as close to, but less than 43 Mlb/hr.

(2) This method shall only be utilized during events that require rapid power reduction, when directed by Off-Normal Procedures, or as directed by the SM/CRS. **OTHERWISE**, **REDUCE** power in accordance with Step 7.9[1](b), "ROPS".

(3) **INSERT** control rods as specified by the RPR array instruction sheet, as required, to the desired load line (**REFER TO** PNPS 9.13).

Standard **Identifies that that core flow is less than 43 Mlb/hr by reviewing the power flow map (Att 1A of the procedure) Also determines that 2.4.165 requires immediate exit from the Buffer Zone and inserts control rods as specified by the RPR array instruction sheet.**

Comment Results SAT ☐ UNSAT ☐

Terminating Cue: **ONCE candidate discusses their findings the JPM can be terminated**

STOP TIME: _____

INITIAL CONDITIONS:

- Both Recirculation Pumps have run back due to a flow control system malfunction
- The plant has entered 2.4.20 and Immediate actions completed including the lock up of both Recirculation Pump Scoop Tubes
- Maintenance has requested that Recirculation Pump speed NOT be changed.
- Reactor operation is in the Buffer Zone
- Operation is above the 60% Rod Line
- There are no LPRM alarms
- There are no APRM or LPRM oscillations occurring
- A Solomon Case has been printed

INITIATING CUE:

Determine the required action(s), if any.

PLANT NAME: PILGRIM CYCLE 18 PAGE 1 OF 2
SOLOMON STABILITY EVALUATION REPORT XX-JAN-2011 12:00 CALCULATE
XX-JAN-2011 12:01 PRINTED

CORE DECAY RATIO = 0.69 CASE ID FMLD1101018120004
HOT CHANNEL DECAY RATIO = 0.60 RESTART FMLD11O1O18110004

CORE POWER MWT = 912 LOAD LINE SUMMARY
CORE FLOW MLB/HR = 29.643 CORE POWER 44.9%
CORE FLOW 42.0%
INITIATED BY: 3D MONICORE LOAD LINE 80%

CORRECTION FACTORS: MFLCPR= 1.001 MFLPD= 0,999 MAPRAT= 0.999 ZPP= 3.25 f
OPTION: ARTS 2 LOOPS ON MANUAL FLOW MCPRLIM= 1.5.10 FCBB= N/A

	VALUE	LOCATION
MFLCPR	0.880	23-26
MF L PD	0.676	25-32-17
MAP RAT	0.704	23-26-18
PC RAT	0.994	27-20-17

STABILITY ANALYSIS TYPE: OFFICIAL

SEQ. A2 C=MFLCPR D=MFLPD M=MAPRAT P=PCRAT *_MULTIPLE

```
51                                                                  NOTCH  REL PW  LOC
                                                                    00     0.187   24
47                                                                  02     0.138
   L                                                                04     0.802
43                          08                                      06     0.936
                                                                    08     1.058
39       00                                                  00     10     1.108
   L                                                                12     1.136
35                   00                   00                      14     1.189
                               D                                    16     1.168
31                                                                  18     1.195
   L                                                                20     1.311
27            08                                 08                 22     1.315
                             *                                      24     1.328
23                                                                  26     1.320
   L                           P                                    28     1.246
19                   00                   00                      30     1.193
                                                                    32     1.177
15                                                                  34     1.121
   L                                                                36     1.055
11                          08                                      38     1.021
                                                                    40     0.959
07                                                                  42     0.858
   L                                                                44     0.730
03                                                                  46     0.269
      L
   02   06   10   14   18   22   26   30   34   38   42   46   50
```

CORE AVERAGE RADIAL POWER DISTRIBUTION

RING #	1	2	3	4	5	6	7
REL PW	1.269	1.449	1.372	1,274	1.305	1.171	0.466

NRC 2011 SRO ADMIN JPM RC

TITLE: **Determine the ODCM requirements for both Reactor Building Effluent Monitoring Systems inoperable.**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED: Not Required for NRC JPMs

SYNOPSIS: Candidate will determine the actions required when both channels of the Reactor Building Effluent Monitoring System become inoperable the ODCM

TASK STANDARD: With Reactor Building Effluent Monitoring System "A" RM-1705-32A out of service the control room will must determine the ODCM 3.1 requirements when the "B" monitor becomes inoperable. This includes that grab samples are taken, that auxiliary sampling equipment is operable and flow rates are estimated.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
Simulator
X Classroom

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
Determine and apply ODCM requirements		2.3.11 - Ability to control radiation releases.	4.3

REFERENCES:

ODCM Section 3.1 and 3.3

SIMULATOR CONDITIONS:

1. N/A

GENERAL TOOLS AND EQUIPMENT:

1. None

CRITICAL ELEMENTS:

Critical steps are [redacted] within the body of this document.

INITIAL CONDITIONS:

- The plant is at 100% power
- Reactor Building Effluent Monitoring System "A" RM-1705-32A became inoperable due to a vacuum pump failure at 20:00 yesterday.

INITIATING CUE:

As the SM you have just been told that the vacuum pump on the "B" Reactor Building Effluent Monitoring System, RM-1705-32B failed. Determine the ODCM 3.1 requirements for continued operation including the times when actions must occur.

([redacted])

START TIME: _____

1. Performance Step: Obtain and review ODCM Section 3.1.2, Radioactive Gaseous Effluent Monitoring Instrumentation

   Standard: Obtains and reviews ODCM Section 3.1.2, Radioactive Gaseous Effluent Monitoring Instrumentation

   Comment Results: SAT ☐ UNSAT ☐

2. **Performance Step: Determines from ODCM Table 3.1-2 past 2 that the minimum number of Reactor Building Effluent Monitoring System channels is NOT met.**

   Standard: Determines from ODCM Table 3.1-2 past 2 that the minimum of one channel of the Reactor Building Effluent Monitoring System channels is required, with both "A" and "B" inoperable there are no channels available.

   Comment Results: SAT ☐ UNSAT ☐

3. **Performance Step** Evaluates how the instrument inoperability effects the five required functions of the Reactor Building Effluent Monitoring System are inoperable.

Standard Determines from ODCM Table 3.1-2 part 2 that all five functions of the Reactor Building Effluent Monitoring System are inoperable. That notes (1) (2) and (3) are applicable.

Comment Results SAT ☐ UNSAT ☐

4. **Performance Step** Action 1. With the number of OPERABLE channels less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and these samples analyzed for activity within 24 hours.

Standard Determines that grab samples must be taken within 12 hours and analyzed for activity within 24 hours.

Comment Results SAT ☐ UNSAT ☐

5. **Performance Step** Action 2. With the number of OPERABLE channels less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided samples are continuously collected wit auxiliary sampling equipment as required in table 4.3-1.

Standard: Candidate goes to Table 4.3-1 and determines the following continuous sampling is required:

- Weekly Charcoal Sample for I-131
- Weekly Particulate Sample for Principal Gamma Emitters
- Monthly Composite Particulate Sample for Gross Alpha
- Quarterly Composite Particulate Sample for Sr-89, Sr-90
- Continuous Noble Gas Monitor for Noble Gas Gross Gamma

Comment:

Results SAT ☐ UNSAT ☐

6. **Performance Step** Action 3. With the number of OPERABLE channels less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

Standard Determines that the flow rate is estimated at least once per 4 hours.

Comment

Results SAT ☐ UNSAT ☐

Terminating Cue **Determines that grab samples are taken, that auxiliary sampling equipment is operable and flow rates are estimated.**

STOP TIME: _____

INITIAL CONDITIONS:

- The plant is at 100% power
- Reactor Building Effluent Monitoring System "A" RM-1705-32A became inoperable due to a vacuum pump failure at 20:00 yesterday.

INITIATING CUE:

As the SM you have just been told that the vacuum pump on the "B" Reactor Building Effluent Monitoring System, RM-1705-32B failed. Determine the ODCM 3.1 requirements for continued operation including the times when actions must occur.

NRC 2011 SRO ADMIN JPM EP – Scenario #2

TITLE: **Evaluate Plant Event and Determine Appropriate EAL Classification (Scenario #2)**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED: Not Required for NRC JPMs

SYNOPSIS: Evaluate Plant Event and Determine Appropriate EAL Classification

TASK STANDARD: Candidate will review the plant events and conditions at the end of NRC Scenario #2 and determine the Emergency Classification as a Site Area Emergency due to EAL: 2.3.1.3, Reactor power > 3% and boron injection into the RPV intentionally initiated.

EVALUATION METHOD:

- **X** Perform
- Simulate

EVALUATION LOCATION:

- Plant
- **X** Simulator
- **OR**
- **X** Classroom

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
Evaluate Plant Event and Determine Appropriate EAL Classification	XXXX	2.4.41 - Knowledge of the emergency action level thresholds and classifications.	4.6

REFERENCES:

EALs

SIMULATOR CONDITIONS: N/A

GENERAL TOOLS AND EQUIPMENT:

EAL Chart

CRITICAL ELEMENTS:

Critical steps are [redacted] within the body of this document.

INITIAL CONDITIONS:

- The plant was operating at 90% power
- A Recirc pump outboard seal failure occurred and the pump was tripped and isolated
- The other recirc pump tripped
- The reactor was scrammed and several control rods failed to insert
- Boron was injected to the vessel
- EOP-3 was entered due to Suppression Pool Temperature >80°F
- Injection to the RPV was terminated and prevented IAW EOPs
- All Control Rods were inserted using methods in PNPS 5.3.23

INITIATING CUE:

Determine the EAL classification based on the scenario events.

([redacted])

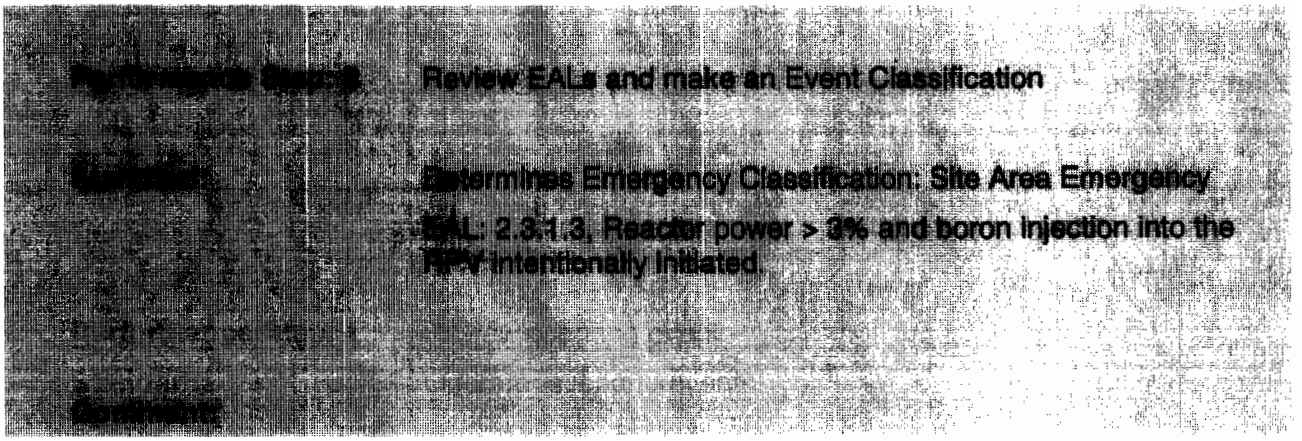
PERFORMANCE:

START TIME: _____

Performance Step: 1 Review scenario events

Standard: Operator scenario events

Comment:



Terminating Cue: **ONCE candidate discusses their findings the JPM can be terminated**

STOP TIME: _____

INITIAL CONDITIONS:

- The plant was operating at 90% power
- A Recirc pump outboard seal failure occurred and the pump was tripped and isolated
- The other recirc pump tripped
- The reactor was scrammed and several control rods failed to insert
- Boron was injected to the vessel
- EOP-3 was entered due to Suppression Pool Temperature >80°F
- Injection to the RPV was terminated and prevented IAW EOPs
- All Control Rods were inserted using methods in PNPS 5.3.23

INITIATING CUE:

Determine the EAL classification based on the scenario events.

NRC 2011 SRO ADMIN JPM EP – Scenario #3

TITLE: **Evaluate Plant Event and Determine Appropriate EAL Classification (Scenario #3)**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS: SAT UNSAT
(Circle one)

COMMENT SHEET ATTACHED: Not Required for NRC JPMs

SYNOPSIS: Evaluate Plant Event and Determine Appropriate EAL Classification

TASK STANDARD: Candidate will review the plant events and conditions at the end of NRC Scenario #3 and determine the Emergency Classification as a Site Area Emergency due to EAL 3.4.1.3: Torus bottom pressure cannot be maintained below the "Pressure Suppression Pressure" (PSP) EOP Figure 6.

EVALUATION METHOD:

- **X** Perform
- Simulate

EVALUATION LOCATION:

- Plant
- **X** Simulator
- **OR**
- **X** Classroom

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training
(or Designee)

TASK Title:	Task Number	K&A:	K&A RATING:
Evaluate Plant Event and Determine Appropriate EAL Classification	XXXX	2.4.41 - Knowledge of the emergency action level thresholds and	4.6

classifications.

REFERENCES:

EALs

SIMULATOR CONDITIONS: N/A

GENERAL TOOLS AND EQUIPMENT:

EAL Chart

CRITICAL ELEMENTS:

Critical steps are [redacted] within the body of this document.

INITIAL CONDITIONS:

- The plant was operating at 90% power
- An SRV stuck and a manual scram was inserted
- All Control Rods inserted Full In
- EOP-3 was entered due to High Suppression Pool temperature
- Torus Bottom pressure exceeded 16 psig
- Drywell Sprays could not maintain containment pressure below the PSP curve
- An Emergency Depressurization was performed

INITIATING CUE:

Determine the EAL classification based on the scenario events.

([redacted])

PERFORMANCE:

START TIME: _____

Performance Step: 1	Review scenario events
Standard:	Operator scenario events

Comment:

Performance Step: 2	**Review EALs and make an Event Classification**
Standard:	**Determines Emergency Classification: Site Area Emergency** **EAL 3.4.1.3: Torus bottom pressure cannot be maintained below the "Pressure Suppression Pressure" (PSP) EOP Figure 6.**
Comment:	

Terminating Cue:	**ONCE candidate discusses their findings the JPM can be terminated**

STOP TIME: _____

INITIAL CONDITIONS:

- The plant was operating at 90% power
- An SRV stuck and a manual scram was inserted
- All Control Rods inserted Full In
- EOP-3 was entered due to High Suppression Pool temperature
- Torus Bottom pressure exceeded 16 psig
- Drywell Sprays could not maintain containment pressure below the PSP curve
- An Emergency Depressurization was performed

INITIATING CUE:

Determine the EAL classification based on the scenario events.

PILGRIM 2011 NRC
JPM S-1

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(RO/SRO)

TITLE: **CONTROL ROD EXCERCISING IAW 8.3.2 (ALTERNATE PATH)**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	**20**	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: The reactor is at power. The weekly control rod exercising in accordance with procedure 8.3.2 is required. When a coupling check is performed on a rod being withdrawn, the rod will go into an overtravel condition. The operator is expected to recouple the rod per off-normal procedure 2.4.11. The JPM will end when the rod is recoupled.

TASK STANDARD: Control rod exercising will be performed IAW procedure 8.3.2, Station Power Changes. When an uncoupled rod is discovered the rod will be recoupled IAW off-normal procedure 2.4.11. There shall be no failure of critical elements

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number	Date	Description
1	08/19/10	Revised a control rod movement JPM to reflect new format and different procedure for 2011 LOT NRC Exam

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
RESPOND TO A DRIFTING CONTROL ROD	201-04-01-010	201002	201002

REFERENCES:

2.4.11, Rev 21
8.3.2, Rev 54

SIMULATOR CONDITIONS:

1. Initialize the simulator to an Exam full power IC 30 and start Lesson Plan 30. Perform the following:
2. Verify control rods 14-51 and 18-51 are at position 48 and that 18-51 will be uncoupled, by inserting malfunction RD10, Rod Uncoupled when it is exercised.
3. Condition RD10 to DELETE when the "right digit" on the 4-rod display for control rod 18-51 is TRUE for position 4.

GENERAL TOOLS AND EQUIPMENT:

1. **Printout of the current Control Rod positions (OD-3)**
2. Applicable sections of 8.3.2 filled out; Section 7 and 8 (check the Normal Surveillance box)
3. 8.3.2, Attachments 1, 2, 3, and 5 (Multiple copies of Att.3)

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:

   a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin."

2. Always state the following two paragraphs:

   a) "The title of this JPM is: **CONTROL ROD EXCERCISING IAW 8.3.2**

   a) "The task conditions are as follows:

      i) The reactor is at 100 % power.

      ii) Weekly Control Rod exercising shall be performed IAW procedure 8.3.2, Section 8.1. Starting with control rod 14-51, proceeding to 18-51 then working across the top of the core from the left to the right continuing down each subsequent row of control rods.

      iii) Reactor Engineering has directed that single notch exercising is required for this surveillance.

      iv) Reactor Engineering has determined there are no control rods that have demonstrated excessive movement speeds.

      v) Sections 7.0 and 8.0 of 8.3.2 already been completed.

      vi) A current control rod printout has just been printed

      vii) A Reactivity Manager has been stationed and reactivity brief conducted.

      viii) An operator (state the individual's/evaluator's name) has been assigned to verify control rod withdraw.

3. Solicit and answer any questions the operator may have. (Step 1 of the JPM has answers to some anticipated questions. Refer to step 1 as necessary.)

INITIATING CUE:

- "[State the operator's name], commence the weekly control rod exercising IAW procedure 8.3.2, Section 8.1."

PERFORMANCE:

Notes This task is covered in procedure 8.3.2 and 2.4.11

All controls associated with this JPM are located on C905.

All critical steps must be performed in order written unless otherwise noted

START TIME: _____

1.	**Procedure Step:**	Obtains procedure 8.3.2 and goes to section 4.1 Control Rod Exercise at power. Reviews procedure:
	Standard	Obtains current revision of PNPS 8.3.2 and enters section 4.1, reviews procedure
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	[2] **PRIOR** to rod exercise, **OBTAIN** a control rod printout [Format 500 or 3D Monicore Control Rod Position Log (F9 key)].
	Standard	Operator obtains control rod printout of Control Rod Positions.
	Cue	Role play as second operator and provide a control rod printout of the current Control Rod Positions
	Notes	Printout of the current Control Rod Positions was made prior to starting the JPM.
	Results	SAT ☐ UNSAT ☐

3.	**Procedure Step:**	[3] **ENSURE** a second licensed Reactor Operator is stationed at Panel C905 to verify proper control rod movement.
	Standard	Operator verifies a second operator is available at the C905 Panel as a verifier.
	Cue	State you will act as second operator and perform verifications Role play as verifier, read from the sequence sheet and communicate to the operator the following: - rod number - initial rod position - final rod position.
	Notes	These steps are to be repeated prior to each rod withdrawn.
	Results	SAT ☐ UNSAT ☐

4.	**Procedure Step:**	[4] **ENSURE** the Rod Select Power Switch is ON.
	Standard	Operator verifies Rod Select Power switch is in the ON position.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

5.	**Procedure Step:**	NOTES 1. Attachments 1 and 2 are provided as placekeeping aids for Control Room Operators. Use of either Attachments 1 and/or 2 is at the discretion of the CRS. Neither Attachment is required to be maintained with the completed copy of this Procedure. 2. If the selected rod does not withdraw using normal drive water differential pressure, then elevating drive water differential pressure is preferred to "double clutching" the rod. Refer to PNPS 2.4.11.1 Attachment 1. This will lessen the potential for a rod mispositioning. 3. At the discretion of the SM/CRS, control rods may be exercised in any sequence provided that the core conditions and limitations specified by Reactor Engineering are met.
	Standard	Operator may select to use Attachments 1 and 2 during this evolution. The order of control rod selection for testing was stated in the initial conditions.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

6.	**Procedure Step:**	**CAUTIONS** 1. For control rods that have previously demonstrated excessive movement speeds and have the potential to "double notch", it is permissible to reduce the CRD System drive water differential pressure setpoint to 200 psid as indicated by dPI-340-4 in order to mitigate the possibility of a mispositioning event. The CRD System drive water differential pressure setpoint shall be returned to 250 psid immediately following the movement of the control rod in question to its intended position. 2. During the control rod exercise, only the control rods specified by Reactor Engineering on Attachment 6 are to be left inserted one notch.
	Standard	Operator recalls from the initial conditions that there are NO control rods that have demonstrated excessive movement speeds.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

7.	**Procedure Step:**	[5] **EXERCISE** the fully withdrawn, operable control rods as follows: (a) **VERIFY OR ADJUST** MO-302-8 to obtain a CRD drive water differential pressure setpoint as indicated on dPI-340-4 of: • 200 psid for control rods that have previously demonstrated excessive movement speeds. **OR** • 250 psid for all other control rods.
	Standard	Operator maintains CRD Drive pressure at 250 psid.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

8.	**Procedure Step:**	(b) **INSERT** the rod to be exercised to position 46 or, as evaluated by Reactor Engineering, to position 44 in accordance with Attachment 1 Step [1]. From Attachment 1: a. **MOMENTARILY TURN** the ROD CONTROL switch to the "ROD OUT NOTCH" position **AND RELEASE** the control switch. b. **OBSERVE** the control rod is latched in an even-numbered position and that it is in the latched position before the SETTLE light goes off. c. **IF** performing two notch exercise, **OBSERVE** control rod movement **AND IF** movement speed appears fast, **ADJUST** MO-302-8 to obtain a CRD drive water differential setpoint as indicated on dPI-340-4 of 200 psid. d. **IF** the control rod is at position 48, **THEN PERFORM** a control rod coupling check in accordance with Attachment 2. e. **IF** performing two notch exercise in accordance with base document Step 8.2[6](b), **REPEAT** Steps [3](b)(1)a and b above.
	Standard	Operator selects Control Rod 14-51 and inserts the control rod to position 46 and observes the SETTLE light OFF.
	Cue	Role play as verifier
	Notes	
	Results	SAT ☐ UNSAT ☐

9.	**Procedure Step:**	(d) **WITHDRAW** the rod to position 48 unless otherwise instructed by Reactor Engineering. Rod withdrawal to be in accordance with Attachment 1 Steps [3](a) and [3](b)(1).
	Standard	Operator withdraws Control Rod 14-51 to position 48 and observes the SETTLE light OFF. .
	Cue	Role play as verifier,
	Notes	This step is redundant to the step in PNPS 8.3.2, Attachment 1
	Results	SAT ☐ UNSAT ☐

10.	**Procedure Step:**	(e) **PERFORM** a control rod coupling test in accordance with Attachment 2 (PNPS 2.2.88 Section 7.6). **[SR4.3.B.1.3]** **Verifies** (a) Position indication on the four rod display momentarily goes "BLACK/BLACK" and returns to indicate position 48. (b) The FULL OUT red indicating light on the full core display will momentarily go off and then re-illuminate. (c) Alarm **"ROD OVERTRAVEL"** (C905L-B3) does NOT actuate.
	Standard	**Operator may either attempt to withdraw Control Rod 14-51 or attempt a continuous control rod withdrawal from position 48.** **Verifies coupling check is satisfactory:**
	Cue	**Role play as verifier**
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

11.	**Procedure Step:**	[6] **INITIAL** (two persons' initials required) the appropriate square on the Control Rod Exercise Signoff Sheet (Attachment 3). These initials indicate that the control rod has been placed in its correct position.
	Standard	Operator initials Attachment 3 for Control Rod 14-51.
	Cue	Role play as verifier and also initial Control Rod that candidate initialed.
	Notes	
	Results	SAT ☐ UNSAT ☐

12.	**Procedure Step:**	[7] **IF** the coupling test was satisfied, **INITIAL** the appropriate square on the Control Rod Coupling Test Signoff Sheet (Attachment 5). A second person's verification is required if the coupling test will be used to support the implementation of an alternate BPWS sequence for shutdown.
	Standard	Operator initials Attachment 5 for Control Rod 14-51.
	Cue	Role play as verifier and also initial Control Rod that candidate initialed.
	Notes	
	Results	SAT ☐ UNSAT ☐

13.	**Procedure Step:**	(b) **INSERT** the rod to be exercised to position 46 or, as evaluated by Reactor Engineering, to position 44 in accordance with Attachment 1 Step [1]. From Attachment 1: a. **MOMENTARILY TURN** the ROD CONTROL switch to the "ROD OUT NOTCH" position **AND RELEASE** the control switch. b. **OBSERVE** the control rod is latched in an even-numbered position and that it is in the latched position before the SETTLE light goes off. c. **IF** performing two notch exercise, **OBSERVE** control rod movement **AND IF** movement speed appears fast, **ADJUST** MO-302-8 to obtain a CRD drive water differential setpoint as indicated on dPI-340-4 of 200 psid. d. **IF** the control rod is at position 48, **THEN PERFORM** a control rod coupling check in accordance with Attachment 2. e. **IF** performing two notch exercise in accordance with base document Step 8.2[6](b), **REPEAT** Steps [3](b)(1)a and b above.
	Standard	**Operator selects Control Rod 18-51 and inserts the control rod to position 46 and observes the SETTLE light OFF**
	Cue	**Role play as verifier**
	Notes	
	Results	SAT ☐ UNSAT ☐

14.	**Procedure Step:**	(d) **WITHDRAW** the rod to position 48 unless otherwise instructed by Reactor Engineering. Rod withdrawal to be in accordance with Attachment 1 Steps [3](a) and [3](b)(1).
	Standard	**Operator withdraws Control Rod 18-51 to position 48 and observes the SETTLE light OFF**
	Cue	**Role play as verifier,**
	Notes	**This step is redundant to the step in PNPS 8.3.2, Attachment 1**
	Results	SAT ☐ UNSAT ☐

15.	**Procedure Step:**	(e) **PERFORM** a control rod coupling test in accordance with Attachment 2 (PNPS 2.2.88 Section 7.6). **[SR4.3.B.1.3]** **Verifies** (a) Position indication on the four rod display momentarily goes "BLACK/BLACK" and returns to indicate position 48. (b) The FULL OUT red indicating light on the full core display will momentarily go off and then re-illuminate. (c) Alarm **"ROD OVERTRAVEL"** (C905L-B3) does NOT actuate.
	Standard	**Operator may either attempt to withdraw Control Rod 18-51 or attempt a continuous control rod withdrawal from position 48.** **Verifies acknowledges (C905L-B3), ROD OVERTRAVEL alarming and observes blank position indication for Control Rod 18-51, determines coupling check is Unsatisfactory and Control Rod 18-51 is uncoupled** **Announces control rod overtravel and rod drift alarms and refers to ARPs.**
	Cue	**Role play as verifier**
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

16.	**Procedure Step:**	[4] **IF** any control rod coupling test has failed, **THEN REFER TO** PNPS 2.4.11, *"Control Rod Positioning Malfunctions"*.
	Standard	Operator refers to PNPS 2.4.11, Attachment 1
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

17.	**Procedure Step:**	(a) **ATTEMPT TO RECOUPLE** the drive by inserting it two notches.
	Standard	**Operator selects Control Rod 18-51 and inserts the control rod to position 46, waits for settle step then inserts the control rod to position 44.**
	Cue	**Role play as verifier**
	Notes	
	Results	SAT ☐ UNSAT ☐

18.	**Procedure Step:**	(b) **WITHDRAW** the rod by notching it out.
	Standard	**Operator withdraws Control Rod 18-51 to position 46, waits for settle step then withdraws the control rod to position 48.**
	Cue	**Role play as verifier**
	Notes	
	Results	SAT ☐ UNSAT ☐

19.	**Procedure Step:**	(c) **WHEN** the drive is withdrawn to position 48, **THEN PERFORM** a rod coupling check in accordance with Attachment 5. [1] **PERFORM** a control rod coupling check as follows: (a) With a control rod at position 48, **PERFORM** the following: (1) **SELECT/VERIFY SELECTED** the control rod for coupling test. (2) **ATTEMPT TO NOTCH WITHDRAW OR CONTINUOUSLY WITHDRAW** the selected control rod from position 48.
	Standard	**Operator may either attempt to withdraw Control Rod 18-51 or attempt a continuous control rod withdrawal from position 48.** **Verifies coupling check is satisfactory:**
	Cue	**Role play as verifier**
	Notes	
	Results	SAT ☐ UNSAT ☐

20.	**Procedure Step:**	(d) **IF** the drive has recoupled, **THEN RESET** the **"ROD DRIFT"** (C905L-A3) alarm **AND RETURN TO** normal operation.
	Standard	Operator resets "ROD DRIFT" and verifies Rod Drift Annunciator clears then returns to the performance of Control Rod Exercising per PNPS 8.3.2
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

21.	**Procedure Step:**	[6] **INITIAL** (two persons' initials required) the appropriate square on the Control Rod Exercise Signoff Sheet (Attachment 3). These initials indicate that the control rod has been placed in its correct position.
	Standard	Operator initials Attachment 3 for Control Rod 18-51.
	Cue	Role play as verifier and also initial Control Rod that candidate initialed.
	Notes	
	Results	SAT ☐ UNSAT ☐

22.	**Procedure Step:**	[7] **IF** the coupling test was satisfied, **INITIAL** the appropriate square on the Control Rod Coupling Test Signoff Sheet (Attachment 5). A second person's verification is required if the coupling test will be used to support the implementation of an alternate BPWS sequence for shutdown.
	Standard	Operator initials Attachment 5 for Control Rod 18-51.
	Cue	Role play as verifier and also initial Control Rod that candidate initialed. Inform the operator that this JPM is completed.
	Notes	
	Results	SAT ☐ UNSAT ☐

Cue: **This completes this JPM.**

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

- The reactor is at 100 % power.
- Weekly Control Rod exercising shall be performed IAW procedure 8.3.2, Section 8.1. Starting with control rod 14-51, proceeding to 18-51 then working across the top of the core from the left to the right continuing down each subsequent row of control rods.
- Reactor Engineering has directed that single notch exercising is required for this surveillance.
- Reactor Engineering has determined there are no control rods that have demonstrated excessive movement speeds.
- Sections 7.0 and 8.0 of 8.3.2 have already been completed.
- A current control rod printout has just been printed
- A Reactivity Manager has been stationed and reactivity brief conducted.
- An operator (state the individual's/evaluator's name) has been assigned to verify control rod withdraw.

INITIATING CUE:

- "[State the operator's name], commence the weekly control rod exercising IAW procedure 8.3.2, Section 8.1."

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(RO/SRO)

TITLE: **HPCI SWAPOVER FROM PRESSURE CONTROL TO INJECTION (ALTERNATE PATH)**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	**8**	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: HPCI is operating in pressure control mode and must be swapped to injection mode. When HPCI is placed in injection mode and the candidate attempts to raise injection flow the HPCI Flow Controller FIC-2340-1 fails high, the operator must place the controller in manual to raise flow.

TASK STANDARD: HPCI injecting to the RPV. The HPCI System shall be operated in accordance with all applicable precautions and limitations. The HPCI procedure shall be followed and there shall be no failure of critical elements.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number: 5	**Date Originated: 7/20/2005**
Pages Affected: All	Description: New template
Revision Number: 6	**Date Originated: 8/10/2010**
Pages Affected: All	Description: Revised for NRC exam and faulted JPM

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
HPCI Swapover from Pressure Control to Injection	206-01-01-005	206000	A4.02 4.0/3.8

REFERENCES:

Procedure 5.3.35.1, Attachment 23

SIMULATOR CONDITIONS:

1. Exam IC-54, this will:
   - Trip all three feed pumps
   - Trip RCIC
   - Initiate HPCI in full flow test for pressure control
   - Reactor water level is about -20"
   - Insert malfunction HPCI Flow Controller FIC-2340-1 fails high with the controller in AUTO occurs when the full flow test valve MO-2301-10 is fully closed as indicated by the red light going OFF.

GENERAL TOOLS AND EQUIPMENT:

1. N/A

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
   a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. Always state the following two paragraphs:
   a) "The title of this JPM is: **HPCI SWAPOVER FROM PRESSURE CONTROL TO INJECTION**"
   b) "The task conditions are as follows:
      i) The reactor has scrammed on low level following a loss of feed.
      ii) RCIC has tripped.
      iii) HPCI is presently operating in pressure control mode and has been manually initiated in accordance with PNPS 2.2.21.5.
      iv) Current RPV level is approximately -20 inches."
3. Solicit and answer any questions the operator may have.

INITIATING CUE:
State the following:

"[Operator's name], swap HPCI from pressure control to injection in accordance with procedure 5.3.35.1, Attachment 23. Restore and maintain level -20" to +45". Inform me when HPCI is aligned for injection and maintaining RPV level -20" to +45".

PERFORMANCE:

Notes This task is covered in 5.3.35.1, Attachment 23.
All controls are located on control room panel C903/904.
All critical steps must be performed in order unless otherwise noted.

START TIME: _____

1.	**Procedure Step:**	
	Standard	Review the applicable sections of the procedure.
	Cue	None
	Notes	
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	**SLOWLY JOG OPEN** MO-2301-10, HPCI FULL FLOW TEST VLV, **AND USE (DECREASE)** FIC-2340-1, INJECTION FLOW CONTROL, as required, to adjust pump discharge pressure to less than reactor pressure.
	Standard	Operator lowers discharge pressure below RPV pressure.
	Cue	
	Notes	RPV pressure may be obtained from any valid RPV pressure indicator.
	Results	SAT ☐ UNSAT ☐

3.	**Procedure Step:**	**OPEN** MO-2301-8, INJ VLV #2.
	Standard	Red light on, green light off for MO-2301-8.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

4.	Procedure Step:	**CLOSE** MO-2301-10, HPCI FULL FLOW TEST VLV.
	Standard	Green light on, red light off for MO-2301-10.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

5.	Procedure Step:	**ADJUST** FIC-2340-1 as necessary to maintain desired reactor water level.
	Standard	Attempts to adjust FIC-2340-1 to maintain reactor water level, **DIAGNOSES** FIC-2340-1 failed high in AUTO.
	Cue	
	Notes	HPCI Flow Controller FIC-2340-1 fails high with the controller in AUTO.
	Results	SAT ☐ UNSAT ☐

6.	Procedure Step:	**PLACES** FIC-2340-1 in MANUAL and adjusts as necessary to maintain desired reactor water level.
	Standard	RPV level is restored to -20 to +45".
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

Cue: **This completes this JPM.**

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

- The reactor has scrammed on low level following a loss of feed.
- RCIC has tripped.
- HPCI is presently operating in pressure control mode and has been manually initiated in accordance with PNPS 2.2.21.5.
- Current RPV level is approximately -20 inches."

INITIATING CUE:
State the following:

"[Operator's name], swap HPCI from pressure control to injection in accordance with procedure 5.3.35.1, Attachment 23. Restore and maintain level -20" to +45". Inform me when HPCI is aligned for injection and maintaining RPV level -20" to +45".

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE (RO/SRO)

TITLE: **RE-OPEN AN MSIV FOLLOWING CLOSURE**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: The plant is at 50% power. The "D" outboard MSIV inadvertently closed early on the previous shift due to a broken airline which has since been repaired.

TASK STANDARD: MSIVs shall be opened without causing inadvertent actuations and shall be accomplished in accordance with all system precautions and limitations. 2.2.92 shall be followed without failure of any critical elements.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number: 0	**Date Originated: 8/10/2010**
Pages Affected: All	Description: Revised for NRC exam and faulted JPM

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
RESPOND TO MSIV CLOSURE	200-05-01-003	239001	A2.03 4.0/4.2

REFERENCES:

Procedure 2.2.92, Revision 52

SIMULATOR CONDITIONS:

1. Exam IC: 37, Reactor power ~50%
2. Initialize the simulator.
3. Close Main Steam Line D Outboard and Inboard MSIVs.
4. Complete PNPS 2.2.92 section 7.2 Steps [1] thru [4]
   a) MO-220-1 and MO-220-2 closed
   b) Open MO-220-3 and jog open MO-220-4 to establish and maintain a Main Steam Line low point drain temperature (TE-3604) as close to BUT NOT GREATER THAN 520°F.

GENERAL TOOLS AND EQUIPMENT:

1. N/A

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
   a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. Always state the following two paragraphs:
   a) "The title of this JPM is: **RE-OPEN AN MSIV FOLLOWING CLOSURE**
   b) "The task conditions are as follows:
      i) The plant is at 50% power
      ii) The "D" outboard MSIV inadvertently closed early on the previous shift due to a broken airline which has since been repaired
3. Solicit and answer any questions the operator may have.

INITIATING CUE:

"[State the operator's name] reopen the outboard and inboard "D" MSIVs IAW PNPS 2.2.92 Section 7.2 beginning at step [5]."

PERFORMANCE:

Notes

START TIME: _____

1.	**Procedure Step:**	Verify drainage of the Main Steam Line through MO-220-3 (MAIN STEAM LINE DRN VLV) and MO-220-4 (MAIN STEAM LINE DRN TO CONDR) according to the table below:
	Standard	Operator determines that the limitations of the table have been met.
	Cue	As the CRS inform the Operator that MO-220-3 and MO-220-4 have been open for 30 minutes.
	Notes	Initiating cue states the MSIV closed on the previous shift. Operator determines that the limitations of the table have been met. MSIV closed on the previous shift (less than 12 hours ago) and MO-220-3 and MO-220-4 have been open for greater than 10 minutes.
	Results	SAT ☐ UNSAT ☐

TIME AFTER MSIV CLOSURE THAT DRAIN PATH WAS ESTABLISHED	DRAIN TIME TO CONDENSER
≤ 15 minutes	NONE REQUIRED
> 15 minutes to ≤ 24 hours	≥ 10 minutes
> 24 hours	≥ 1 hour

2.	**Procedure Step:**	**WHEN** the above time limitations are satisfied, **THEN CLOSE** the Main Steam Line drain valve, MO-220-4, MAIN STEAM LINE DRN TO CONDR
	Standard	**Operator CLOSES MO-220-4**
	Cue	
	Notes	**Operator observes green indicating lights on and red lights off for MO-220-4 on the PCIS status board or apron section of C904.**
	Results	**SAT** ☐ **UNSAT** ☐

3.	**Procedure Step:**	**OPEN** the following valves: • MO-220-1, MSIV DRNS INBD ISOL VLV • MO-220-2, MSIV DRNS OUTBD ISOL VLV
	Standard	Operator OPENS MO-220-1 and MO-220-2.
	Cue	
	Notes	Operator observes red indicating lights on and green lights off for MO-220-1, and MO-220-2 on the PCIS status board or apron section of C904.
	Results	SAT ☐ UNSAT ☐

4.	**Procedure Step:**	**SLOWLY JOG OPEN**, until FULLY OPEN, MO-220-4, (MAIN STEAM LINE DRN TO CONDR). (1) **DRAIN** the Main Steam Line for 10 minutes.
	Standard	Operator Jogs MO-220-4 FULL OPEN and marks time.
	Cue	Wait until annunciator C905R, E8, MAIN STM LINE TO TURBINE STM FLOW MISMATCH, alarms (~30 secs after MO-220-4 is opened) After operator confirms alarm inform Operator that 10 minutes has elapsed.
	Notes	Operator observes red light on and green light off for MO-220-4.
	Results	SAT ☐ UNSAT ☐

5.	**Procedure Step:**	Annunciator 905R, E-8, MAIN STM LINE TO TURBINE STM FLOW MISMATCH may alarm. 1. Confirm Alarm a) Compare main steam flow (PR/FR-640-27, RX WIDE RANGE PRESSURE RX STEAM FLOW) and Turbine steam flow (PR/FR/LR-640-28, RX STM FLOW/NARROW RANGE WTR LVL RX NARROW RANGE PRESSURE) on Panel C905
	Standard	Operator determines that this is an expected alarm because of the steam flow being diverted to the condenser by the open steam line drain valve.
	Cue	After operator confirms alarm inform Operator that 10 minutes has elapsed.
	Notes	
	Results	SAT ☐ UNSAT ☐

6.	**Procedure Step:**	OPEN all outboard MSIV's that are currently closed: • AO-203-2A, Main Steam Line A Outboard Isolation Valve • AO-203-2B, Main Steam Line B Outboard Isolation Valve • AO-203-2C, Main Steam Line C Outboard Isolation Valve • AO-203-2D, Main Steam Line D Outboard Isolation Valve
	Standard	Operator selects and OPENS AO-203-2D.
	Cue	
	Notes	Operator observes green indicating light off, red indicating light on.
	Results	SAT ☐ UNSAT ☐

7.	**Procedure Step:**	Open MO-220-3. (MAIN STEAM LINE DRN VLV).
	Standard	Operator locates and verifies open MO-220-3.
	NOTE Cue	**The following cue should be given for time compression to permit continuing the task in atimely manner.** AFTER MO-220-3 is OPEN, STATE that "10 minutes have elapsed".
	Notes	Operator observes GREEN indicating light OFF, RED indicating light LIT.
	Results	SAT ☐ UNSAT ☐

8.	**Procedure Step:**	**OPEN**, one at a time, all inboard MSIVs that are currently closed: • AO-203-1A, Inboard Main Steam Isolation Valve A • AO-203-1B, Inboard Main Steam Isolation Valve B • AO-203-1C, Inboard Main Steam Isolation Valve C • AO-203-1D, Inboard Main Steam Isolation Valve D •
	Standard	Operator selects and OPENS AO-203-1D.
	Cue	
	Notes	Operator observes GREEN indicating light OFF, RED indicating light LIT.
	Results	SAT ☐ UNSAT ☐

9.	**Procedure Step:**	**CLOSE** the following valves: (1) MO-220-4 (MAIN STEAM LINE DRN TO CONDR) (2) MO-220-2 (MSIV DRNS OUTBD ISOL VLV) (3) MO-220-1 (MSIV DRNS INBD ISOL VLV)
	Standard	Operator locates and closes MO-220-4, MO-220-2 and MO-220-1.
	Cue	
	Notes	Operator observes GREEN indicating lights LIT, RED indicating lights OFF.
	Results	SAT ☐ UNSAT ☐

This JPM is complete.

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

The plant is at 50% power.

The "D" outboard MSIV inadvertently closed early on the previous shift due to a broken airline which has since been repaired

INITIATING CUE:

"[State the operator's name] reopen the outboard and inboard "D" MSIVs IAW PNPS 2.2.92 Section 7.2 beginning at step [5]."

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(RO/SRO)

TITLE: **CONNECT THE TURBINE GENERATOR TO THE GRID**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: A plant startup is progress. The Turbine Generator is ready to be synchronized to the grid. The TG will be synched to the grid.

TASK STANDARD: The TG synched to grid by the operator.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number: 7	**Date Originated: 03/10/09**
Pages Affected: All	Description: Converted to Alternate Path for 2009 Audit Exam
Revision Number:8	**Date Originated: 08/10/11**
Pages Affected: All	Description: Revised for Cold Turbine Startup instead of Hot Turbine Startup, Removed Alternate Path for 2011 NRC Exam

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
CONNECT THE TURBINE GENERATOR TO THE GRID	245-01-01-007	245000	A4.09 3.1/2.9

REFERENCES:

PNPS 2.1.1

SIMULATOR CONDITIONS:

1. NRC Exam IC 56, @ approx. 18 - 20% power
2. Reset C100 alarms.

GENERAL TOOLS AND EQUIPMENT:

1. N/A

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
   a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. Always state the following two paragraphs:
   a) "The title of this JPM is: **CONNECT THE TURBINE GENERATOR TO THE GRID**"
   b) "The task conditions are as follows:
      i) A Plant startup is in progress
      ii) Turbine speed is 1800 RPM and being controlled by the speed load changer
      iii) Currently on Step 127 of PNPS 2.1.1
      iv) A TG Cold Startup is being performed
3. Solicit and answer any questions the operator may have.

INITIATING CUE:

"[State the operator's name], sync the Turbine Generator to the grid using ACB 104 IAW PNPS 2.1.1, and connect the ring bus and pick up the initial load for a cold turbine."

PERFORMANCE:

Notes Reviews precautions & limitations of 2.1.1.

START TIME: _____

1.	**Procedure Step:**	[127] (a) **APPLY** Exciter field, by closing the Exciter Field Breaker.
	Standard	**Exciter field breaker applied by pushing in the control switch and taking it the CLOSE position. RED light ON, GREEN light OFF.**
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	(b) **APPLY** Generator field, by closing the Main Generator Field Breaker.
	Standard	**Field applied by pushing in the control switch and taking it to the CLOSE position. RED light ON, GREEN light OFF.**
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

3.	**Procedure Step:**	(c) **GRADUALLY RAISE** the MANUAL VOLTAGE ADJUSTER on Panel C3 **AND SLOWLY BUILD UP** Generator voltage to 23kV.
	Standard	**Verifies voltage is 23kV and raises as required with the MANUAL VOLTAGE ADJUSTER**
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

4.	**Procedure Step:**	(d) **VERIFY** alarm **"MAIN XFMR UNDERVOLTAGE"** (C3L-E8) clears.
	Standard	**Verifies alarm is clear**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

5.	**Procedure Step:**	(e) **SEND** an Operator to Main Transformer to verify that AT LEAST one Cooling Group is operating.
	Standard	**Contacts filed operator to check at least one cooling group is operating**
	Cue	**Respond as field operator that one cooling group is operating.**
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

6.	**Procedure Step:**	[128] **TEST** the manual voltage controls by turning control switch to "LOWER" **AND OBSERVE** the response on the GENERATOR VOLTAGE meter. (a) **READJUST** the MANUAL VOLTAGE ADJUSTER to approximately 23kV on GENERATOR VOLTAGE meter.
	Standard	The manual voltage control switch is taken to LOWER and a response is verified on the Generator Voltage meter. Voltage is then returned to 23kV.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

7.	**Procedure Step:**	(b) **TEST** the operability of the auto voltage regulator before going on line as follows: (1) **RAISE**, **THEN** **LOWER** the Main Generator VOLTAGE REGULATOR SETPOINT ADJUSTER C/S **AND** **PRODUCE** a buck-boost indication on the VOLTAGE REGULATOR TRANSFER VOLTMETER.
	Standard	The VOLTAGE REGULATOR SETPOINT ADJUSTER control switch is raised and then lowered until a buck-boost indication on the VOLTAGE REGULATOR TRANSFER VOLTMETER is observed.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

8.	**Procedure Step:**	(2) **READJUST** the Main Generator VOLTAGE REGULATOR SETPOINT ADJUSTER C/S until a null-zero reading shows on the VOLTAGE REGULATOR TRANSFER VOLTMETER.
	Standard	The VOLTAGE REGULATOR SETPOINT ADJUSTER control switch is adjusted to a null-zero reading on the VOLTAGE REGULATOR TRANSFER VOLTMETER.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

9.	**Procedure Step:**	**(3)** **PLACE** the VOLTAGE REGULATOR TRANSFER SWITCH to the "AUTO" position.
	Standard	**The VOLTAGE REGULATOR TRANSFER Switch is placed in AUTO operator observes amber A light lit is ON and amber M light is OFF.**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

10.	**Procedure Step:**	[129] **PREPARE TO SYNCHRONIZE** Generator in accordance with the following: (a) **TURN** the AUTO SYNC SELECTOR SWITCH on Panel C3 from the "OFF" position to position "ACB-104" or position "ACB-105" for the selected ACB to be used for synchronizing.
	Standard	**The AUTO SYNC SELECTOR SWITCH is moved to the ACB-104 position**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

11.	**Procedure Step:**	(b) **TURN** to the "ON" position either ACB-104 SYNC switch or ACB-105 SYNC switch, whichever has been selected, for synchronizing. **IF** BOTH ACB-104 and ACB-105 are equally available, it may be desirable to alternate ACBs and use a different breaker each time the unit is paralleled to the system.
	Standard	**The ACB-104 SYNC switch is turned to the ON position**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

12.	**Procedure Step:**	(c) **INITIALLY ADJUST** the Turbine Generator speed to produce a slow rotation in either direction on the MAIN GENERATOR SYNCHROSCOPE. **USE** the SPEED/LOAD CHANGER raise and lower control switch on Panel C3.
	Standard	The SPEED/LOAD CHANGER is used to produce a slow rotation in either direction.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

13.	**Procedure Step:**	(d) **INITIALLY ADJUST** the Generator voltage to the 345kV system by matching the INCOMING VOLTAGE Meter indication to the RUNNING VOLTAGE Meter using the AUTO VOLTAGE REGULATOR SETPOINT ADJUSTER control switch.
	Standard	INCOMING VOLTAGE meter indication is matched to the RUNNING VOLTAGE meter indication
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

14.	**Procedure Step:**	(e) **REPEAT** voltage and speed adjustments as necessary in order to match INCOMING VOLTAGE and RUNNING VOLTAGE indications while at the same time producing a slow clockwise rotation on the MAIN GENERATOR SYNCHROSCOPE on Panel C3.
	Standard	**INCOMING and RUNNING VOLTAGE are matched with a slow clockwise rotation on the MAIN GENERATOR SYNCHROSCOPE**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

15.	**Procedure Step:**	(f) **RECHECK** Generator incoming voltage and Generator speed. **READJUST** as necessary prior to closing ACB.
	Standard	Generator incoming voltage and speed are rechecked
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

16.	**Procedure Step:**	NOTE With the synchroscope indicating approximately 5 degrees before 12 o'clock position **AND** the INCOMING and RUNNING VOLTAGEs equal, the synchronizer should permit closure of the selected ACB.
	Standard	Reviews NOTE
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

17.	**Procedure Step:**	(g) **TURN** the selected ACB control switch to CLOSE at 5 degrees before the 12 o'clock position on the MAIN GENERATOR SYNCHROSCOPE. _____ time unit synchronized
	Standard	**The ACB-104 control switch is moved to CLOSE at 5 degrees before the 12o'clock position on the synch scope.** **Observes ACB-104 closed. red light ON, green light OFF.** **Records time of synchronization.**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

18.	**Procedure Step:**	(h) **TURN** to "OFF" position either ACB-104 SYNC switch or ACB-105 SYNC switch, whichever has just been synchronized.
	Standard	Places the ACB-104 synchronizing switch to "OFF".
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

19.	**Procedure Step:**	[130] **PICK UP** some load immediately after closing-in. **USE** the SPEED/LOAD CHANGER **AND** **BRING** the unit to its initial load: Cold Startup: 3% - 20MWe Warm Startup: 5% - 34MWe Hot Startup: 15% - 100MWe
	Standard	**Uses SPEED/LOAD CHANGER to bring load to approx 20 MWe**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

20.	**Procedure Step:**	[131] **PLACE** the AUTO SYNC SELECTOR SWITCH on Panel C3 to "OFF".
	Standard	The AUTO SYNC SELECTOR SWITCH is placed in OFF
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

21.	**Procedure Step:**	[132] **MANUALLY CLOSE** the remaining ACB. (a) At Panel C3, **TURN** applicable SYNC switch (ACB-104 or ACB-105) to "ON". (b) **CLOSE IN** the remaining ACB. (c) At Panel C3, **TURN** applicable SYNC switch to "OFF".
	Standard	**Turns the ACB-105 SYNC switch ON, CLOSES ACB-105 and observes red light ON, green light OFF. Turns SYNC switch to the OFF position.**
	Cue	
	NOTES	
	Results	**SAT** ☐ **UNSAT** ☐

22.	**Procedure Step:**	[133] **OBSERVE** balanced Generator amps on the ammeters and balanced three-phase voltages.
	Standard	Observes Main Generator three-phase voltage amps are balanced on the ammeters.
	Cue	Notify the operator that the turbine/generator will remain at this load and that the JPM is completed.
	Notes	
	Results	SAT ☐ UNSAT ☐

This JPM is complete.

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

- A Plant startup is in progress
- Turbine speed is 1800 RPM and being controlled by the speed load changer
- Currently on Step 127 of PNPS 2.1.1
- A TG Cold Startup is being performed

INITIATING CUE:

"[State the operator's name], sync the Turbine Generator to the grid using ACB 104 IAW PNPS 2.1.1, and connect the ring bus and pick up the initial load for a cold turbine."

PILGRIM 2011 NRC
JPM S-5

LICENSED OPERATOR JOB PERFORMANCE MEASURE
(RO/SRO)

TITLE: **MANUALLY START SBGT AND VENT THE TORUS (ALTERNATE PATH)**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	**20**	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: The operator will align standby gas to vent the torus and re-establish the Drywell to Torus D/P. After establishing the lineup, a reactor coolant pressure boundary leak develops in the drywell. The operator will secure the standby gas vent alignment IAW Section 7.10 of 2.2.70.

TASK STANDARD: The torus is initially aligned for the torus venting evolution. The operator diagnoses a leak in the drywell and takes action to secure the torus venting lineup. The primary containment atmosphere control and standby gas treatment systems shall be operated in accordance with all applicable system precautions and limitations. The system procedure shall be followed without failure of critical tasks

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number:	**Date Originated:**
Pages Affected:	**Description:**
Revision Number:	**Date Originated:**
Pages Affected:	**Description:**

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
RESPOND TO LEAKS IN THE PRIMARY CONTAINMENT.	223-04-01-001	232002	A4.02 3.9/3.8

REFERENCES:

Procedure 2.2.70, Rev. 107

SIMULATOR CONDITIONS:

1. NRC Exam IC 52, @ 45%
2. Verify:
   a) Crywolf: C7L-C5, "Cooler 205C Leaking" annunciator
   b) Crywolf: C7L-C6, "Cooler 205F Leaking" annunciator
   c) Crywolf: C904LC-B-3, "C19 A/B Trouble" annunciator

GENERAL TOOLS AND EQUIPMENT:

1. N/A

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:

   a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker and/or peer checker is called for, the evaluator will perform the role of second checker/peer checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin."

2. Always state the following two paragraphs:

   a) "The title of this JPM is: **MANUALLY START SBGT AND VENT THE TORUS**"

   b) "The task conditions are as follows:

      i) The plant is at 45% power with the mode switch in "RUN".

      ii) During the plant startup the Torus was inerted with cold Nitrogen the nitrogen has subsequently heated up raising Torus pressure.

      iii) The OSS has determined that a reduction in torus airspace pressure will restore the drywell-to-torus differential pressure to within specification".

3. Solicit and answer any questions the operator may have.

INITIATING CUE:

State the following:

> "[Operator's name], Vent the torus using the Bravo train of Standby Gas Treatment in accordance with 2.2.70, Section 7.3 and 7.3.3."

PERFORMANCE:

Notes

START TIME: _____

1.	**Procedure Step:**	Review the procedure 2.2.70 NOTE and CAUTION of 2.2.70, Section 7.3.
	Standard	Reviews procedure 2.2.70 NOTE and CAUTION of 2.2.70, Section 7.3.
	Cue	None
	Notes	
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	Reviews NOTE and CAUTION NOTES 1. This section specifies methods to vent the Drywell or Torus while maintaining the Drywell to Torus differential pressure, and during the performance of PNPS 8.A.1. 2. Nitrogen expands as it warms in the Drywell. This will cause a pressure increase. **CAUTION** **IF**, while executing this section, a Primary Containment isolation signal is present on AO-5041A, AO-5041B (TORUS NORMAL EXHAUST ISOL VLVs) and AO-5043A, AO-5043B (DRYWELL NORMAL EXHAUST ISOL VLVs); **AND** fission products are present or suspected to be present in the Drywell or Torus; **THEN DO NOT** place the control switches to these valves in the "EMERGENCY OPEN" position unless directed to defeat isolation interlocks by EOP-03, *"Primary Containment Control"*.
	Standard	Reviews NOTE and Caution then proceeds to Section 7.3.3.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

3.	**Procedure Step:**	7.3.3 Torus Venting Without Nitrogen Addition To The Drywell [1] **REFER TO** Technical Specifications Section 3.7.A.8.b.
	Standard	Operator references T.S. Section 3.7.A.1.K or asks the CRS to do so.
	Cue	
	Notes	T.S. 3.7.A.1.k – The differential pressure may be reduced to less than 1.17 psid for a maximum of four (4) hours for maintenance activities on the differential pressure control system and during required operability testing of the HPCI system, the relief valves, the RCIC system and the drywell suppression chamber vacuum breakers.
	Results	SAT ☐ UNSAT ☐

4.	**Procedure Step:**	[2] **IF**, while purging, venting, or inerting the containment, an alarm is received which requires termination of the purging, venting, or inerting evolution, **THEN EXIT** this section **AND ENTER** Attachment 13 (Isolation of Containment Purge Lines Upon Indication of Reactor Coolant Pressure Boundary Leakage). Alarms are listed below **[NUREG 0737]** • **"SBGT DISCH RAD HI"** (C904LC-F4) • **"C19 A/B TROUBLE"** (C904LC-B3) • **"DRYWELL EQPT DRAIN SUMP DISCH HIGH TOTAL FLOW"** (C20C) • **"DRYWELL FLOOR DRAIN SUMP DISCH HIGH TOTAL FLOW"** (C20C) • **"DRYWELL EQPT DRAIN PUMP SUMP HIGH LEVEL"** (twice within 30 minutes (C20L) • **"DRYWELL FLOOR DRAIN SUMP HIGH LEVEL"** (twice within a 160-minute interval) (C20L) • **"COOLER 'NNN' LEAKING"** alarms, where 'NNN' is the specific cooler number (more than one unit in alarm) Panel C7L windows A5, A6, A7, B5, B6, B7, C5, and C6
	Standard	Operator reviews directions for actions in the event of Reactor Coolant Pressure Boundary Leakage.
	Cue	
	Notes	The purpose of this section is to specify the actions required when indication of a reactor coolant leak exists.
	Results	SAT ☐ UNSAT ☐

5.	Procedure Step:	[3] **OPEN** AO-5041A, TORUS NORMAL EXHAUST ISOL VLV.
	Standard	Operator rotates "AO-5041A" control switch to the "OPEN" position and observes valve change state. Red light on, green light off.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

6.	Procedure Step:	[4] **OPEN** AO-5041B, TORUS NORMAL EXHAUST ISOL VLV.
	Standard	Operator rotates "AO-5041B" control switch to the "OPEN" position and observes valve change state. Red light on, green light off.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

7.	Procedure Step:	[5] **VERIFY OPEN <u>OR</u> OPEN**: (a) AO-N-98, CONTAMINATED EXH TO SGTS INLET PLENUM (b) AO-N-101, REFUEL FLOOR EXH TO SGTS INLET PLENUM
	Standard	Operator rotates "AO-N-98" and AO-N-101 control switches to the "OPEN" position and observes valves change state. Red light on, green light off.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

8.	**Procedure Step:**	[7] **IF** using the "B" Standby Gas Treatment (SGTS) train, **VERIFY OR ESTABLISH** the lineup at Panel C7 as follows: (a) AO-N-112, TRAIN B OUTL DMPR, is OPEN. (b) VEX-210A, STANDBY GAS FAN A, is in "AUTO". (c) **OPEN** AO-N-106, TRAIN B INLET DMPR, at Panel C7. (d) **VERIFY** that VEX-210B, STANDBY GAS FAN B, starts at Panel C7. (e) **RECORD** the start time in the CRS Log.
	Standard	**Operator rotates "AO-N-112" control switch to the "OPEN" position and observes damper change state. Red light on, green light off.** **Operator verifies VEX-210A control switch in "AUTO" position. Green light on, red light off.** **Operator rotates "AO-N-106" control switch to the "OPEN" position and verifies damper change state and fan start. Flow indicated on FI-8126 and FI-8127.** **Operator reports VEX-210B start time to CRS.**
	Cue	
	Notes	**The annunciators are automatically triggered to occur within 15 and 30 seconds of the SBGT start**
	Results	SAT ☐ UNSAT ☐

9.	**Procedure Step:**	[3] **IF**, while purging, venting, or inerting the containment, an alarm is received which requires termination of the purging, venting, or inerting evolution, **THEN EXIT** this section **AND ENTER** Attachment 13 (Isolation of Containment Purge Lines Upon Indication of Reactor Coolant Pressure Boundary Leakage). Alarms are listed below. **Annunciators C7L-C5 & C6 and C904LC-B3 alarm**
	Standard	**Operator references ARP for alarms received after pressing alarm acknowledge PB on C7 and C904.** **Operator reports alarming conditions and ARP actions for C904LC-B3 and C7L-C5 & C6.** **Terminates venting** **Operator exits Section 7.3.3 and enters Attachment 13.**
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

10.	**Procedure Step:**	NOTE The following alarms may be indicative of a Reactor coolant leak inside containment: • **"C19 A/B TROUBLE"** (C904LC-B3) • **"DRYWELL EQUIPMENT/FLOOR DRAIN SUMP HIGH FLOW"** on Panel C20 • Any Drywell cooler leaking alarm on Panel C7L The purpose of this section is to specify the actions required when indication of a Reactor coolant leak exists. [1] Personnel assigned to perform this Attachment have read and understand all its sections. All personnel involved shall print their name and sign their initials below: Name (print) Initials Name (print) Initials
	Standard	Operator reviews all sections and prints their name and signs the procedure.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

11.	**Procedure Step:**	**THEN CLOSE OR VERIFY CLOSED** the following valves: **[NUREG 0737]** (a) SV-5030A, N_2 Makeup Supply Block Valve (b) AO-5035A, Drywell Purge Supply Isol Vlv (c) AO-5036A, Torus Purge Supply Isol Vlv (d) AO-5041A, Torus Normal Exhaust Isol Vlv (e) AO-5041B, Torus Normal Exhaust Isol Vlv (f) AO-5042A, Torus Purge Exhaust Isol Vlv (g) AO-5042B, Torus Purge Exhaust Isol Vlv (h) AO-5043A, Drywell Normal Exhaust Isol Vlv (i) AO-5043B, Drywell Normal Exhaust Isol Vlv (j) AO-5044A, Drywell Purge Exhaust Isol Vlv (k) AO-5044B, Drywell Purge Exhaust Isol Vlv

	Standard	**Operator verifies** • "PCV-5030A" control switch in the "CLOSE" position. Green light on, red light off. • "AO-5035A" control switch in the "CLOSE" position. Green light on, red light off. • "AO-5036A" control switch in the "CLOSE" position. Green light on, red light off. • **"AO-5041A" PLACES control switch to the "CLOSE" position, then Green light on, red light off.** • **"AO-5041B" PLACES control switch to the "CLOSE" position. Green light on, red light off.** • "AO-5042A" control switch in the "CLOSE" position. Green light on, red light off. • "AO-5042B" control switch in the "CLOSE" position. Green light on, red light off. • "AO-5043A" control switch to the "CLOSE" position. Green light on, red light off. • "AO-5043B" control switch to the "CLOSE" position. Green light on, red light off. • "AO-5044A" control switch in the "CLOSE" position. Green light on, red light off. • "AO-5044B" control switch in the "CLOSE" position. Green light on, red light off.
	Cue	AO-5041A and AO-5041B are Critical for this Step.
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

12.	**Procedure Step:**	[3] **RETURN** SGTS to "AUTO" mode as follows: (b) **IF** "B" SGTS was running, **THEN**, at Panel C7, **PLACE** control switch for AO-N-106, Train B Inlet Dmpr, to "AUTO".
	Standard	**Operator rotates "AO-N-106" control switch to the "AUTO" position. Observes damper change state, and VEX-210B shutdown. AO-N-106 green light off. VEX-210B, crew light on, amber light off, red light off.**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

13.	**Procedure Step:**	(c) **VERIFY OR PLACE** the following dampers into the "AUTO" position: (1) AO-N-99, Train A Inlet Dmpr (2) AO-N-108, Train A Outl Dmpr (3) AO-N-112, Train B Outl Dmpr
	Standard	**Verifies "AO-N-99" control switch in the "AUTO" position.** **Verifies "AO-N-108" control switch in the "AUTO" position.** **Operator rotates "AO-N-112" control switch in the "AUTO" position.**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

Cue: **This completes this JPM.**

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

- The plant is at 45% power with the mode switch in "RUN".
- During the plant startup the Torus was inerted with cold Nitrogen the nitrogen has subsequently heated up raising Torus pressure.
- The OSS has determined that a reduction in torus airspace pressure will restore the drywell-to-torus differential pressure to within specification".

INITIATING CUE:

State the following:

"[Operator's name], Vent the torus using the Bravo train of Standby Gas Treatment in accordance with 2.2.70, Section 7.3 and 7.3.3."

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(NL/RO/SRO)

TITLE: **BYPASS DIESEL GENERATOR LOAD SHED FOR PLACING CRD PUMPS IN SERVICE**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**NA**	Actual Time (min):	**NA**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: A Reactor Scram has occurred due to a loss of offsite power and a small leak in containment has led to diesel load shed. Level is lower and two CRD pump emergency makeup is required. The CRD Load shed logic needs to be defeated.

TASK STANDARD: Defeat CRD load shed logic in accordance with procedure 2.4.4. (Emergency Diesel Generator Load Shed Relay Test Switches 105A-TS-9, 105A-TS-10, 105B-TS-9 and 105B-TS-10 are pulled open; 105C-TS-1, 105C-TS-2, 105D-TS-1 and 105D-TS-2 are pulled open)

EVALUATION METHOD:

X Perform

Simulate

EVALUATION LOCATION:

Plant

X Simulator

Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number: 5	**Date Originated: 09-18-06**
Pages Affected: All	Description: New Format and changed from Control Room to Simulator JPM
Revision Number: 5	**Date Originated: 08-19-10**
Pages Affected: All	Description: Revised for 2011 LOT NRC Exam

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
Defeat CRD Diesel Load Shed	201-02-04-021	264000	K4.05 3.2/3.5

REFERENCES:

1. Procedure 2.4.4
2. Procedure 2.2.8

SIMULATOR CONDITIONS:

1. Initialize Exam IC 55, (Need to terminate switch-check with various conditions)
   - HPCI Aux oil pump PTL
   - Insert small break LOCA to raise DW pressure >2.2# and scram
   - RCIC is tripped
2. Stabilize plant conditions as required.
3. The Simulator Operator must control Reactor pressure by cycling SRVs as necessary from the Simulator Booth

GENERAL TOOLS AND EQUIPMENT:

1. Safety Glasses, Rubber Gloves and a Long Sleeve Cotton Shirt or Lab Coat should be provided or placed at the Electrical Cabinet.
2. Flashlight

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:

   a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin."

2. Always state the following two paragraphs:

   a) "The title of this JPM is: **BYPASS DIESEL GENERATOR LOAD SHED FOR PLACING CRD PUMPS IN SERVICE"**

   b) "Task conditions are as follows:

      i) The Emergency Diesel Generators are supplying buses A5 and A6 following a loss of off-site power.

      ii) A small LOCA has resulted in a high drywell pressure condition, which has actuated load shedding on A5 and A6.

      iii) HPCI is out of service

      iv) RCIC has tripped

      v) Reactor water level is approximately -120 inches and slowly lowering.

      vi) The CRS wants to verify the CRD pumps will not overload their respective Emergency Diesel Generators and then defeat the CRD pump load shed for emergency makeup.

      vii) The CRD 25 Valve is closed

3. Another operator will assume Reactor pressure control

4. Solicit and answer any questions the operator may have.

INITIATING CUE:

1. State the following:

   "[Operator's name], verify the CRD pumps will not overload their respective Emergency Diesel Generators and then defeat the load shed logic for CRD pumps A and B in accordance with Procedure 2.4.4. Electrical safety equipment is available. Inform me when you have completed the assigned task."

PERFORMANCE:

Notes This task is covered in procedure 2.4.4, Attachment 1.

All controls are located on the back of panel C6 unless noted.

All critical steps must be performed in any order written unless otherwise noted

START TIME: _____

1.	**Procedure Step:**	**OBTAIN** permission from the SM to defeat load shed signals to the applicable CRD pump(s).
	Standard	Operator request permission from the SM to defeat load shed signals.
	Cue	The Shift Manager grants permission to defeat load shed and initials the procedure
	Notes	
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	Obtains PNPS 2.2.8, review Section 4.1 [5] determines Equipment Rating of the diesels
	Standard	Operator looks at diesels ratings and determines ratings are for 2600 kW.
	Cue	
	Notes	Both Diesels will support the CRD pump start.
	Results	SAT ☐ UNSAT ☐

3.		
	Procedure Step:	**VERIFY** there is sufficient capacity available to start a CRD pump (approximately 227kW) on the associated Diesel Generator bus in accordance with PNPS 2.2.8 Step 4.1[5].
	Standard	Operator looks at both diesels for loading considerations.
	Cue	"The load on the 'A' EDG is 850 KW. The load on the 'B' EDG is 1000 KW."
	Notes	Both Diesels will support the CRD pump start.
	Results	SAT ☐ UNSAT ☐

4.		
	Procedure Step:	(b) At the back of Panel C6, **PULL OPEN** #1/2 knife switches on TS 105C (will open contacts in stop circuit for P-209A).
	Standard	**Operator at Panel C6 opens #1/2 knife blade switches on TS 105C**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

5.		
	Procedure Step:	To bypass load shed for CRD Pump "A", P-209A: (a) At the back of Panel C6, **PULL OPEN** #9/10 knife switches on TS 105C (will close contacts in start circuit for P-209A).
	Standard	**Operator at Panel C6 opens #9/10 knife blade switches on TS 105C**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

6.		
	Procedure Step:	(b) At the back of Panel C6, **PULL OPEN** #1/2 knife switches on TS 105D (will open contacts in stop circuit for P-209B).
	Standard	Operator at Panel C6 opens #1/2 knife blade switches on TS 105D. Operator informs evaluator that the load shed is defeated for CRD.
	Cue	"This JPM is completed."
	Notes	
	Results	SAT ☐ UNSAT ☐

7.		
	Procedure Step:	To bypass load shed for CRD Pump "B", P-209B: (a) At the back of Panel C6, **PULL OPEN** #9/10 knife switches on TS 105D (will close contacts in start circuit for P-209B).
	Standard	Operator at Panel C6 opens #9/10 knife blade switches on TS 105D
	Cue	The operator may continue on to start a CRD pump before notifying the evaluator of task completion. If operator proceeds to start a CRD pump, then CUE: that another operator will start the CRD Pump.
	Notes	
	Results	SAT ☐ UNSAT ☐

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- An overall evaluation of UNSAT for the JPM requires documentation in the comment section below. The JPM shall be evaluated as UNSAT if any of the following conditions are met:
  - Any critical element is graded as "UNSAT"
  - Any "critical time frame" is not met
  - Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.

COMMENTS:

INITIAL CONDITIONS

- The Emergency Diesel Generators are supplying buses A5 and A6 following a loss of off-site power.
- A small LOCA has resulted in a high drywell pressure condition, which has actuated load shedding on A5 and A6.
- HPCI is out of service
- RCIC has tripped
- Reactor water level is approximately -120 inches and slowly lowering.
- The CRS wants to defeat the load shed and restart both CRD pumps for emergency makeup. It has been determined that the CRD pumps will not overload their respective Emergency Diesel Generators."
- Another operator will assume Reactor pressure control

INITIATING CUE:

"[Operator's name], verify the CRD pumps will not overload their respective Emergency Diesel Generators and then defeat the load shed logic for CRD pumps A and B in accordance with Procedure 2.4.4. Electrical safety equipment is available. Inform me when you have completed the assigned task."

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(RO/SRO)

TITLE: **PERFORM REACTOR MANUAL SCRAM SURVIELLANCE TEST PNPS 8.M.1-23 (ALTERNATE PATH)**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for UNSAT, Needs Improvement or Follow-Up Questions)

SYNOPSIS: An operator is directed to perform Reactor Manual Scram Test, PNPS 8.M.1-23. The operator will start the test however when the channel B manual scram is inserted three control rods will drift into the core requiring the operator to manually scram the reactor.

TASK STANDARD: The operator will perform Reactor Manual Scram Test, PNPS 8.M.1-23. When the channel B manual scram is inserted three control rods will drift into the core. The operator to diagnose the failure of more than two control rods drifting more than three notches and manually scram the reactor.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number	Date	Description
0	11/04/10	Developed JPM for 2011 NRC Exam.

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
RESPOND TO A DRIFTING CONTROL ROD.	201-04-01-010	212000	A2.03, 3.3 / 3.5

REFERENCES:

PNPS 8.M.1-23, Reactor Manual Scram

SIMULATOR CONDITIONS:

1. Initialize the simulator to the NRC Exam IC 30
2. Load Lesson Plan 09 [NRC2011 LP#9 NRC S-7 RPS Testing]
3. Verify three control rods triggered to slowly drift into the core when the Channel B Manual Scram pushbuttons are pressed.

GENERAL TOOLS AND EQUIPMENT:

1. PNPS 8.M.1-23, Reactor Manual Scram, signed off through step [3] (d)

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
   a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. Always state the following two paragraphs:

"The title of this JPM is: **"PERFORM REACTOR MANUAL SCRAM SURVIELLANCE TEST PNPS 8.M.1-23"**

1. "The task conditions are as follows:
   a. The plant is operating at 100% power.
   b. PNPS 8.M.1-23, Reactor Manual Scram, Steps through [3] (d) has been completed.
   c. You are the C905 operator the examiner will act as the C915 and C917 operator.

2. Allow the operator time to review the prepared copy of PNPS 8.M.1-23, Reactor Manual Scram, prior to commencing and solicit and answer any questions the operator may have.

INITIATING CUE:
State the following:

"[State the operator's name], Perform PNPS 8.M.1-23, Reactor Manual Scram, starting at Step [3] (e) and when completed notify the CRS.

PERFORMANCE:

Notes This task is covered in procedure 8.M.1-23, Attachment 1.

All critical steps must be performed in order written unless otherwise noted

START TIME: _____

1.	**Procedure Step:**	Operator obtains and reviews PNPS 8.M.1-23, Attachment 1
	Standard	Operator reviews PNPS 8.M.1-23, Attachment 1 and determines they must start on Step [3] (e).
	Cue	
	Notes	
	Results	
		SAT ☐ UNSAT ☐

2.	**Procedure Step:**	(e) **VERIFY** Control Rod Drive Scram Solenoid Train A Group 1-4 lights are ILLUMINATED. Group Lights / Panel (1) 1-4 C915 (2) 1-4 C905
	Standard	Verifies all Train A GROUP SCRAM LOGIC lights on Panel C905 are ILLUMINATED.
	Cue	Lights are illuminated on C915
	Notes	
	Results	SAT ☐ UNSAT ☐

3.	**Procedure Step:**	(f) **VERIFY** Control Rod Drive Scram Solenoid Train B Group 1-4 lights are ILLUMINATED. Group Lights — Panel (1) 1-4 — C917 (2) 1-4 — C905
	Standard	Verifies all Train B GROUP SCRAM LOGIC lights on Panel C905 are ILLUMINATED.
	Cue	Lights are illuminated on C917
	Notes	
	Results	SAT ☐ UNSAT ☐

4.	**Procedure Step:**	(g) **VERIFY** annunciator **"AUTO SCRAM CHAN A"** (C905R-A1) is CLEAR. (h) **VERIFY** annunciator **"AUTO SCRAM CHAN B"** (C905R-A4) is CLEAR. (i) **VERIFY** annunciator **"MANUAL SCRAM CHAN A"** (C905R-B1) is CLEAR. (j) **VERIFY** annunciator **"MANUAL SCRAM CHAN B"** (C905R-B4) is CLEAR.
	Standard	Verifies all scram annunciators are clear.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

5.	**Procedure Step:**	(k) **VERIFY** the following red indicating lights are OFF: (1) REACTOR MANUAL SCRAM CH A push button (5A-S3A) at Panel C905 (2) REACTOR MANUAL SCRAM CH B push button (5A-S3B) at Panel C905
	Standard	
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

6.	**Procedure Step:**	(l) **PERFORM** Attachment 2 (RPS Reset Verification). Attachment 2 [1] **VERIFY** that the backup Scram valve relays are reset as follows: (a) **VERIFY** voltage indicator EI-302-19AA on Panel C915 reads approximately 62 volts DC. (b) **VERIFY** voltage indicator EI-302-19AB on Panel C915 reads approximately 62 volts DC. (c) **VERIFY** voltage indicator EI-302-19BB on Panel C917 reads approximately 62 volts DC. (d) **VERIFY** voltage indicator EI-302-19BA on Panel C917 reads approximately 62 volts DC.
	Standard	At RPS back panel operator verifies the following voltage indicators reads approximately 62 volts DC on their voltage indicators EL-302-19AA EI-302-19AB EI-302-19BB EI-302-19BA
	Cue	**If the candidates believe that the voltages are NOT approximately 62 VDC (they will be very close), Respond that for the purposes of the JPM, the EL-302 indicators all read approximately 62 volts DC. They can continue with the task.**
	Notes	

	Results	SAT ☐ UNSAT ☐

7.	**Procedure Step:**	(e) **IF** any of the voltages verified in Steps (a) through (d) were NOT approximately 62V DC, **THEN STOP** this Procedure **AND NOTIFY** the Shift Manager. **IF** the voltages were acceptable, **ENTER** "N/P".
	Standard	Determines voltages are satisfactory and returns to Attachment 1
	Cue	**If the candidates believe that the voltages are NOT approximately 62 VDC (they will be very close), Respond that for the purposes of the JPM, the EL-302 indicators all read approximately 62 volts DC. They can continue with the task.**
	Notes	
	Results	SAT ☐ UNSAT ☐

8.	**Procedure Step:**	[4] **ESTABLISH** communications between the Control Room Operator (Panel C905) and Control Room Operator at Panels C915 and C917.
	Standard	Confirms communication with the C915 and C917 operator
	Cue	**Acknowledges communication check**
	Notes	
	Results	SAT ☐ UNSAT ☐

9.	**Procedure Step:**	[5] At Panel C905, **REQUEST** Operations to perform the following: (a) Momentarily depress and release REACTOR MANUAL SCRAM CH A push button (5A-S3A). (b) Verify red indicating light on REACTOR MANUAL SCRAM CH A push button (5A-S3A) is ON.
	Standard	**Operator depresses and releases REACTOR MANUAL SCRAM CH A pushbutton and verifies the RED indicating light on the pushbutton is ON.**

	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

10.	**Procedure Step:**	[6] **VERIFY** the following Control Rod Drive Scram Solenoid Train A Group 1-4 lights are OFF: (a) Group Lights 1-4 Panel C915 (b) Group Lights 1-4 Panel C905
	Standard	Verifies all Train A GROUP SCRAM LOGIC lights on Panel C905 are OFF.
	Cue	Lights at C915 are OFF
	Notes	
	Results	SAT ☐ UNSAT ☐

11.	**Procedure Step:**	[7] **VERIFY** the following Control Rod Drive Scram Solenoid Train B Group 1-4 lights are ILLUMINATED: (a) Group Lights 1-4 Panel C917 (b) Group Lights 1-4 Panel C905
	Standard	Verifies all Train B GROUP SCRAM LOGIC lights on Panel C905 are ILLUMINATED.
	Cue	Lights at C917 are illuminated
	Notes	
	Results	SAT ☐ UNSAT ☐

12.	**Procedure Step:**	[8] **VERIFY** annunciator **"AUTO SCRAM CHAN A"** (C905R-A1) is CLEAR. [9] **VERIFY** annunciator **"AUTO SCRAM CHAN B"** (C905R-A4) is CLEAR. [10] **VERIFY** annunciator **"MANUAL SCRAM CHAN A"** (C905R-B1) is ON. [11] **VERIFY** annunciator **"MANUAL SCRAM CHAN B"** (C905R-B4) is CLEAR.
	Standard	Verifies the MANUAL SCRAM CHAN A annunciator is ON and all other scram annunciators are clear.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

13.	**Procedure Step:**	[12] At Panel C905, **PERFORM** the following: (a) **REQUEST** Operations to reset the half-Scram using pistol grip SCRAM RESET switch (5A-S5). (b) **VERIFY** red indicating light on REACTOR MANUAL SCRAM CH A push button (5A-S3A) is OFF.
	Standard	**The operator resets the scram using the pistol grip SCRAM RESET switch and verifies the RED indicating light on the REACTOR MANUAL SCRAM CH A push button is OFF.**
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

14.	**Procedure Step:**	[13] **VERIFY** the following Control Rod Drive Scram Solenoid Train A Group 1-4 lights are ILLUMINATED: (a) Group Lights: 1-4 Panel: C915 (b) Group Lights: 1-4 Panel: C905
	Standard	Verifies all Train A GROUP SCRAM LOGIC lights on Panel C905 are ILLUMINATED.
	Cue	Lights at C915 are illuminated
	Notes	
	Results	SAT ☐ UNSAT ☐

15.	**Procedure Step:**	[14] **VERIFY** the following Control Rod Drive Scram Solenoid Train B Group 1-4 lights are ILLUMINATED: (a) Group Lights: 1-4 Panel: C917 (b) Group Lights: 1-4 Panel: C905
	Standard	Verifies all Train B GROUP SCRAM LOGIC lights on Panel C905 are ILLUMINATED.
	Cue	Lights at C917 are illuminated
	Notes	
	Results	SAT ☐ UNSAT ☐

16.	**Procedure Step:**	[15] **VERIFY** annunciator **"AUTO SCRAM CHAN A"** (C905R-A1) is CLEAR. [16] **VERIFY** annunciator **"AUTO SCRAM CHAN B"** (C905R-A4) is CLEAR. [17] **VERIFY** annunciator **"MANUAL SCRAM CHAN A"** (C905R-B1) is CLEAR. [18] **VERIFY** annunciator **"MANUAL SCRAM CHAN B"** (C905R-B4) is CLEAR.
	Standard	Verifies all scram annunciators are clear.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

17.	**Procedure Step:**	Operator observes Annunciator 905L-A3, ROD DRIFT
	Standard	Operator recognizes Annunciator A3, Rod Drift and Checks the full core display.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

18.	**Procedure Step:**	Operator determines that multiple control rods are drifting
	Standard	Operator determines that more than two control rods are drifting three or more notches.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

19.	**Procedure Step:**	Operator takes the immediate action for PNPS 2.4.11, Control Rod Positioning Malfunctions. [3] **IF** two or more control rods are drifting (in or out) three or more notches, **THEN PERFORM** the following: (a) **MANUALLY SCRAM** the Reactor. (b) **ENTER** PNPS 2.1.6, *"Reactor Scram"*.
	Standard	Operator manually scrams the reactor
	Cue	**When the Manual Scram is initiated notify the operator that the JPM is complete.**
	Notes	
	Results	SAT ☐ UNSAT ☐

Cue: **This completes this JPM.**

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

The task conditions are as follows:

- The plant is operating at 100% power.
- PNPS 8.M.1-23, Reactor Manual Scram, Steps through [3] (d) has been completed.
- You are the C905 operator the examiner will act as the C915 and C917 operator.

INITIATING CUE:
State the following:

Perform PNPS 8.M.1-23, Reactor Manual Scram, starting at Step [3] (e) and when completed notify the CRS.

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(RO/SRO)

TITLE: **ISOLATE A CONDENSER WATERBOX DURING CHLORIDE INTRUSION**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: The plant is at 45% with indications of high conductivity in the 1-3 waterbox. The operator must isolate water box 1-3.

TASK STANDARD: The operator will isolate Water Box 1-3 due to chloride intrusion IAW PNPS 2.4.33 Att.3. The procedure shall be followed with no failure of critical elements.

EVALUATION METHOD:

X Perform
Simulate

EVALUATION LOCATION:

Plant
X Simulator
Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
RESPOND TO A CONDENSER CHLORIDE INTRUSION.	256-01-01-025	256000	A2.15 2.8/3.1

REFERENCES:

PNPS 2.4.33 ATTACHMENT 3.

SIMULATOR CONDITIONS:

1. NRC Exam IC 52 @ 45%, this will establish:
   - Core Flow is at ~42 mlbm/hr
   - 1st 3 steps of RPR have been inserted
   - "C" RFP is secured
   - Annunciator for "Conductivity Hi" is in alarm (C1L-D5, D6 and D7)
   - Conductivity is >0.3

GENERAL TOOLS AND EQUIPMENT:

1. N/A

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
   a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. Always state the following two paragraphs:
   a) "The title of this JPM is: **ISOLATE A CONDENSER WATERBOX DURING CHLORIDE INTRUSION"**
   b) "The task conditions are as follows:
      i) The plant was operating at 45% power
      ii) PNPS 2.4.33 has been entered due to chloride intrusion
      iii) Reactor power has been lowered IAW PNPS 2.1.14 Sections 7.10 and 7.11.
      iv) The location of the leak has been determined to be Waterbox 1-3
      v) You are only responsible for annunciators and actions occurring on Panel C1

3. Solicit and answer any questions the operator may have.

INITIATING CUE:

Isolate Waterbox 1-3 IAW PNPS 2.4.33 Att.3.

PERFORMANCE:

Notes Reviews precautions & limitations of PNPS 2.4.33

START TIME: _____

1.	**Procedure Step:**	PNPS 2.4.33 ATTACHMENT 3 [1] (a) To isolate the 1-3 Condenser, PERFORM the following: Goes to back panel C10, CLOSE the following vapor valves to the steam jet air ejectors: • AO-3710, Cndsr A West Side Off Gas Valve SV-3710 • AO-3704, Cndsr B East Side Off Gas Valve SV-3704
	Standard	Closes the following vapor valves to the steam jet air ejectors: • AO-3710, Cndsr A West Side Off Gas Valve SV-3710 • AO-3704, Cndsr B East Side Off Gas Valve SV-3704
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

	Note	**Steps [1](b) and [1](c) must be performed together.**
2.	**Procedure Step:**	• At C1 Panel, PARTIALLY CLOSE the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates): • MO-3870 (Water Box #3 Inlet Valve) • MO-3872 (Water Box #1 Inlet Valve) • WHEN the first white light (12 to 18% open position) comes on in Step [1](b), THEN STOP Seawater Pump B, P-105B.
	Standard	• Partially closes the following Water Box Inlet Valves (valve is 12 to 18% open when white light illuminates): • MO-3870 (Water Box #3 Inlet Valve) • MO-3872 (Water Box #1 Inlet Valve) • Stops Seawater Pump B, P-105B.
	Cue	
	Notes	Valve Requires about 90 seconds to reach 18% OPEN.
	Results	SAT ☐ UNSAT ☐

3.	**Procedure Step:**	(d) FULLY CLOSE the following Water Box Inlet Valve: • MO-3872(Water Box #1 Inlet Valve).
	Standard	**Fully closes MO-3872 (Water Box #1 Inlet Valve).**
	Cue	
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

4.	**Procedure Step:**	(e) IF 3-water box operation is desired, THEN PERFORM Steps [1](f) through [1](j) in sequence. IF 3-water box operation is NOT desired, THEN OMIT Steps [1](f) through [1](j).
	Standard	
	Cue	When asked state that 3-waterbox operation is NOT desired
	Notes	
	Results	SAT ☐ UNSAT ☐

5.	**Procedure Step:**	(k) **IF** 3-water box operation is NOT desired, **THEN PERFORM** Steps [1](l) through [1](n). (l) **OPEN** the following Scavenger System valve: • AO-3842 (1-3 Condenser Vent Valve)
	Standard	**Contacts operator and directs opening AO-3842 (1-3 Condenser Vent Valve).**
	Cue	**When contacted as an operator, acknowledge the request to open AO-3842 (1-3 Condenser Vent Valve), wait 30 seconds and reply that AO-3842 has been opened.**
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

6.	**Procedure Step:**	(m) **AFTER** the Condenser quadrant has drained (approximately 5 minutes), **CLOSE** MO-3870, WATER BOX #3 INLET VLV (Seawater Inlet from 1-3 Condenser).
		AFTER the Condenser quadrant has drained, CLOSE MO-3870, WATERBOX #3 INLET VLV (Seawater Inlet from 1-3 Condenser).
	Standard	**Closes MO-3870, WATERBOX #3 INLET VLV (Seawater Inlet from 1-3 Condenser).**
	Cue	**After 30 seconds report to the candidate those 5 minutes has elapsed.**
	Notes	
	Results	**SAT** ☐ **UNSAT** ☐

7.	**Procedure Step:**	(n) **CLOSE** the following valve: • AO-3842 (1-3 Condenser Vent Valve)
		Contacts operator and directs closing AO-3842 (1-3 Condenser Vent Valve).
	Standard	When contacted as an operator, acknowledge the request to close AO-3842 (1-3 Condenser Vent Valve), wait 30 seconds and reply that AO-3842 has been closed.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

This JPM is complete.

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

- The plant was operating at 45% power
- PNPS 2.4.33 has been entered due to chloride intrusion
- Reactor power has been lowered IAW PNPS 2.1.14 Sections 7.10 and 7.11.
- The location of the leak has been determined to be Waterbox 1-3
- You are only responsible for annunciators and actions occurring on Panel C1

INITIATING CUE:

Isolate Waterbox 1-3 IAW PNPS 2.4.33 Att.3.

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE (RO/SRO)

TITLE: **DEPRESSURIZE SCRAM VOLUME PRESSURE HEADER (ALTERNATE PATH)**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**NA**	Actual Time (min):	**NA**
PERFORMANCE TIME:	Average Time (min):	12	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: With the reactor having received a reactor SCRAM all rods did not insert due to an electrical malfunction in the RPS circuit. The control room has given the order to depressurize the SPVAH in the field per 5.3.23. (preferred method will not work due to stuck valve.)

TASK STANDARD: The SPVAH shall be depressurized in IAW 5.3.23. The procedure should be followed with no failure of critical elements.

EVALUATION METHOD:

	Perform
X	Simulate

EVALUATION LOCATION:

X	Plant
	Simulator
	Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number: 0	**Date Originated: 8/30/06**
Pages Affected: All	Description: New JPM
Revision Number: 1	**Date Originated: 8/29/07**
Pages Affected: 7	Description: Clarify what was required to complete critical step number 6

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
Depressurize SPVAH in accordance with 5.3.23.	200-05-01-020	295037	4.6/4.6 EA1.01

REFERENCES:

PNPS 5.3.23

SIMULATOR CONDITIONS:

N/A

GENERAL TOOLS AND EQUIPMENT:

1. Wrench to remove pipe cap and plug.

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
   a) "All actions associated with this job performance measure are to be simulated. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. Always state the following two paragraphs:
   a) "The title of this JPM is: **DEPRESSURIZE SCRAM VOLUME PRESSURE HEADER"**
   b) "The task conditions are as follows:
      i) The plant has experienced a Reactor SCRAM.
      ii) An electrical failure of the RPS has prevented control rods from inserting.
      iii) Control Room actions have not been successful in inserting rods.
3. Solicit and answer any questions the operator may have.

INITIATING CUE:
State the following:

"[Operator's name], IAW with 5.3.23, vent the Scram air header and inform the control room when you have completed the task.

PERFORMANCE:

Notes This task is covered in 5.3.23, Section 3.2

All components are located on 23' east side the reactor building and on the CRD mezzanine.

All critical steps must be performed in order written unless otherwise noted

START TIME: _____

1.	**Procedure Step:**	**VENT** the Scram air header as follows (in order of preference): (a) At pressure reduction manifold (Reactor Bldg 23' elev.): (1) **VERIFY OPEN OR OPEN** 301-256C, Backup Regulator Outlet Valve; **AND**
	Standard	Operator verifies or simulates opening 301-256C by turning valve counterclockwise
	Cue	The valve's position is as you see it.
	Notes	This valve is normally open.
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	**CLOSE** 301-264A, Pressure Reducing Manifold Inlet Valve; **AND**
	Standard	**Operator simulates closing the 301-264 by turning it clockwise.**
	Cue	**Indicate that the valve turns in the clockwise direction and stops**
	Notes	**NOT Critical if 301-70A and 301-70B are closed in following steps 4 & 5**
	Results	**SAT ☐ UNSAT ☐**

3.	**Procedure Step:**	**UNCAP AND OPEN** 301-258C, Backup Regulator Outlet Test Connection Valve.
	Standard	Operator simulates removing the cap and then attempts to open the 301-258C
	Cue	"The pipe cap is removed" **When the operator simulates opening valve 301-258C, CUE: "The valve does not move" Continue to provide this CUE as required if operator repeats attempts to open valve.**
	Notes	Valve 301-258C is frozen closed and cannot be opened. The operator should realize that the procedure provides alternate methods for depressurizing the header.
	Results	SAT ☐ UNSAT ☐

4.	**Procedure Step:**	At the Scram air header filter inlet valves (CRD Quad Mezzanine): (1) **CLOSE OR VERIFY CLOSED** 301-70A, A SCRAM INSTR AIR FILTER INLET.
	Standard	Operator simulates closing the 301-70A by turning it clockwise
	Cue	Valve turns in clockwise direction and stops
	Notes	NOT critical if 301-264A was closed earlier in step 2
	Results	SAT ☐ UNSAT ☐

5.	**Procedure Step:**	**CLOSE OR VERIFY CLOSED** 301-70B, B SCRAM INSTR AIR FILTER INLET.
	Standard	Operator simulates closing the 301-70B by turning it clockwise.
	Cue	Valve turns in clockwise direction and stops
	Notes	NOT critical if 301-264A was closed earlier in step 2
	Results	SAT ☐ UNSAT ☐

6.	**Procedure Step:**	**VENT** the Scram pilot air header using one or more of the following methods: a. **REMOVE** plug **AND OPEN** 301-31, PI 302-80 TEST CONN (preferred method). **OR** b. **OPEN** the Scram Instrument Air Filter Blowdown Valves.
	Standard	If option "a" is used: • Operator removes the plug • Opens valve 301-31by turning the valve in the counterclockwise and/or opens the Scram instrument air filter blowdown valves 302-15A/B by turning them in the counterclockwise direction..
	Cue	If option "a" is used: • " the pipe cap is removed." • "Valve stop's turning in the counterclockwise direction and air is heard rushing out of the piping".
	Standard	If option "b" is used: • Operator opens 302-15A, Air Filter Blowdown Valve • Operator opens 302-15B, Air Filter Blowdown Valve
	Cue	If option "b" is used: For each valve Blowdown Valve operated CUE: "Valve stop's turning in the counterclockwise direction and air is heard rushing out of the piping".
	Notes	If option "b" is used, operator must open at least one of the two blowdown valves to satisfy this critical step.
	Results	SAT ☐ UNSAT ☐

7.	**Procedure Step:**	**WHEN** control rod insertion is completed **OR** control rods are not moving inward, **THEN RESTORE** Scram air header in accordance with Attachment 5 Section 2.0.
	Standard	Operator notifies control room that the SPVAH header is depressurized.
	Cue	"That's the end of the JPM"
	Notes	
	Results	SAT ☐ UNSAT ☐

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

- The plant has experienced a Reactor SCRAM.
- An electrical failure of the RPS has prevented control rods from inserting.
- Control Room actions have not been successful in inserting rods.

INITIATING CUE:

"[Operator's name], IAW with 5.3.23, vent the Scram air header and inform the control room when you have completed the task.

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(NL/RO/SRO)

TITLE: **INSTALL BACKUP N_2 FOR EXTENDED SRV OPERATION**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	
PERFORMANCE TIME:	Average Time (min):	**20**	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: Following a seismic event with a subsequent loss of N_2/air supply to the drywell, the Emergency Director requires backup N_2 supplied to 'B' and 'C' SRVs for continued reactor pressure control.

TASK STANDARD: The drywell instrument air header is depressurized. Install backup nitrogen bottles and repressurize RV-203-3B and RV-203-3C accumulators for continued reactor pressure control IAW PNPS 2.2.70, Section 7.12. The procedure shall be followed without failure of critical elements.

EVALUATION METHOD:

	Perform
X	Simulate

EVALUATION LOCATION:

X	Plant
	Simulator
	Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number: 2	**Date Originated: 5/31/05**
Pages Affected: All	Description: Reformatted JPM.
Revision Number: 3	**Date Originated: 5/31/05**
Pages Affected: 3, 5, 6, 7	Description: Remove procedure revision number added steps 4 and 5 and changed steps 1, 7 and 10 to reflect current procedure revision.
Revision Number: 4	**Date Originated: 9/13/07**
Pages Affected: 7	Description: Correction to cue to simulate Nitrogen flow.

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
Install Backup N_2 for Extended SRV Operation	200-05-04-030	218000	3.4/3.6 A2.03

REFERENCES:

PNPS 2.2.70
EN-IS-109

SIMULATOR CONDITIONS:

1. None

GENERAL TOOLS AND EQUIPMENT:

1. Key to compressed gas bottle storage facility
2. Adjustable wrench
3. PNPS 2.2.70, Section 7.12
4. PNPS 1.4.36
5. EN-IS-109

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
   a) "All actions associated with this job performance measure are to be simulated. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. Always state the following two paragraphs:
   a) "The title of this JPM is: **INSTALL BACKUP N_2 FOR EXTENDED SRV OPERATION**"
   b) The task conditions are as follows:
      i) A seismic event has occurred with a subsequent loss of air/nitrogen to drywell instrumentation.
      ii) The Emergency Director has determined that continued use of relief valves for reactor pressure control is necessary.
      iii) Previous attempts to re-pressurize the drywell instrument air header have failed.
3. Solicit and answer any questions the operator may have.

INITIATING CUE:
State the following:

"[Operator's name], install backup nitrogen bottles to repressurize 'B' and 'C' relief valve accumulators IAW PNPS 2.2.70. Inform me when you have completed this task."

PERFORMANCE:

Notes Operator reviews applicable precautions and limitations.

All critical steps must be performed in order written unless otherwise noted.

This task is covered in PNPS 2.2.70, Section 7.12.

Operator recognizes requirements in EN-IS-109 and knows where to obtain key for gas bottle storage facility.

START TIME: _____

NOTE

1. SRV accumulators should only be charged externally during an emergency when directed by EOPs to continue cooldown beyond the accumulators capacity.
2. Nitrogen cylinder may be prestaged in the bottle station, but not hooked up. If bottles are prestaged, proceed to Step [3].

1.	**Procedure Step:**	**OBTAIN** two nitrogen cylinders from the Bottle Storage Yard in accordance with EN-IS-109, "Compressed Gas Cylinder Handling and Storage"
	Standard	Operator knows where to obtain key and nitrogen cylinders in accordance with EN-IS-109.
	Cue	Inform operator that he has the nitrogen cylinders and to proceed with task.
	Notes	This step is only critical if the nitrogen cylinders are not prestaged.
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	**INSTALL** cylinders in bottle station on 23' Reactor Building north wall outside 'B' RHR Valve Room.
	Standard	Operator locates correct area.
	Cue	
	Notes	
	Results	SAT ☐ UNSAT ☐

3.		
	Procedure Step:	**CONNECT** the Nitrogen cylinders to the tubing at bottle station by removing the protective cap and installing the tubing.
	Standard	Operator locates tubing and simulates connecting to nitrogen cylinders.
	Cue	"The tubing is connected to the cylinders."
	Notes	If operator did not bring (or simulate bringing) tools, ask where he would get them.
	Results	SAT ☐ UNSAT ☐

4.		
	Procedure Step:	To prevent overpressurizing the containment nitrogen header, rotate the handwheel to PCV-203-11, counterclockwise.
	Standard	Operator locatesPCV-203-11 and simulates backing off pressure setting by turning it counterclockwise.
	Cue	"The pressure regulator is backed off."
	Notes	
	Results	SAT ☐ UNSAT ☐

5.		
	Procedure Step:	**OPEN** the N2 cylinder isolation valves.
	Standard	He simulates opening the N_2 isolation valves.
	Cue	"The cylinder isolation valves are open."
	Notes	**NOTE:** the candidate may open the isolation valve in step 6 before performing step 5 this is acceptable.
	Results	SAT ☐ UNSAT ☐

6.		
	Procedure Step:	**OPEN/VERIFY** open 9-HO-380 **OR** 9-HO-382, Backup SRV N_2 Cylinder to PCV 203-11 Isolation Valves.
	Standard	Operator locates and simulates turning 9-HO-380(382) counterclockwise.
	Cue	"The valve moves freely and is now stopped."
	Notes	
	Results	SAT ☐ UNSAT ☐

7.	**Procedure Step:**	**ADJUST** PCV 203-11, Backup SRV N_2 Supply Pressure Control Valve, to a discharge pressure of 115 psig.
	Standard	Operator locates PCV 203-11 and observes it is set to 115 psig.
	Cue	"PCV 203-11 is set to 115 psig."
	Notes	
	Results	SAT ☐ UNSAT ☐

CAUTION

An operator must remain at the bottle station while the SRV accumulators are being charged, and valves 9-HO-378 and 9-HO-379 are OPEN (SE-3291).

8.	**Procedure Step:**	**OPEN** 9-HO-378, Backup SRV N_2 Supply Containment Isolation Valve #2.
	Standard	Operator locates and simulates turning 9-HO-378 counterclockwise.
	Cue	"The valve turns freely and is now open."
	Notes	
	Results	SAT ☐ UNSAT ☐

9.	**Procedure Step:**	**OPEN** 9-HO-379, Backup SRV N_2 Supply Containment Isolation Valve #1.
	Standard	Operator locates and simulates turning 9-HO-379 counterclockwise.
	Cue	"The valve turns freely, and as the valve is opened, you hear a temporary sound of gas flow through the tubing. The valve is now open."
	Notes	
	Results	SAT ☐ UNSAT ☐

10.	**Procedure Step:**	**VERIFY** PCV 203-11 is maintaining pressure less than 125 psig.
	Standard	Operator verifies PCV 302-11 pressure at 115 psig.
	Cue	"PCV 203-11 remains at 115 psig, and that the sound of gas flow has stopped."
	Notes	
	Results	SAT ☐ UNSAT ☐

11.	**Procedure Step:**	**WHEN** RV-203-3B and RV-203-3C accumulators are sufficiently charged, **THEN CLOSE/VERIFY CLOSED** the following valves: • 9-HO-378 • 9-HO-379 • Nitrogen cylinder isolation valves
	Standard	Operator locates and simulates turning 9-HO-378, 379 and N_2 cylinder valves clockwise.
	Cue	This completes the JPM."
	Notes	
	Results	SAT ☐ UNSAT ☐

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable.
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

JPM COMMENT SHEET

REQUIREMENTS:

- Any operator deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented.
- Any follow-up questions asked and the operator's response must be documented.
- Any operator deficiencies which, in themselves, would not result in an UNSAT evaluation of this JPM but may, when coupled with performance on other JPMs, result in an OVERALL FAILING evaluation for the JPM exam should also be documented below.
- Any other comments, positive or negative, that the evaluator determines is worth noting.

COMMENTS:

INITIAL CONDITIONS:

- A seismic event has occurred with a subsequent loss of air/nitrogen to drywell instrumentation.
- The Emergency Director has determined that continued use of relief valves for reactor pressure control is necessary.
- Previous attempts to re-pressurize the drywell instrument air header have failed.

INITIATING CUE:

"[Operator's name], install backup nitrogen bottles to repressurize 'B' and 'C' relief valve accumulators IAW PNPS 2.2.70. Inform me when you have completed this task."

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(NLO/RO/SRO)

TITLE: **ALTERNATE POWER TO RHR VALVES**

OPERATOR: _____ **DATE:** _____

EVALUATOR: _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	**N/A**	Actual Time (min):	**N/A**
PERFORMANCE TIME:	Average Time (min):	13	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading Instructions at end of JPM

COMMENT SHEET ATTACHED: Yes / No (circle one) (Required for Unsat, Needs Improvement or Follow-Up Questions)

SYNOPSIS: During a refueling outage with shutdown cooling in service a loss of 480 Volt bus B20 has occurred, resulting in a loss of power to selected RHR valves. The operator will align alternate power to those RHR valves fed from B20 and which have failed as is.

TASK STANDARD: Power is restored to the RHR shutdown cooling valves. The procedure shall be followed without failure of any critical elements.

EVALUATION METHOD:

	Perform
X	Simulate

EVALUATION LOCATION:

X	Plant
	Simulator
	Control Room

Prepared: _____ **Date:** _____

Reviewed: _____ **Date:** _____

Approved: _____ **Date:** _____
Superintendent, Operations Training (or Designee)

REVISION LOG

Revision Number: 5	**Date Originated: 8/22/05**
Pages Affected: All	Description: Revised JPM to reflect new procedure 2.4.B20 and 2.4.B.6.
Revision Number: 6	**Date Originated: 10/27/05**
Pages Affected: 1	Updated accurate time for JPM performance, updated task title for 262-04-01-018
Revision Number: 7	**Date Originated: 9/05/06**
Pages Affected: All	Updated procedure rev.

TASK Title:	Task Number	K&A SYSTEM:	K&A RATING:
Respond to a Loss of B6	262-04-01-018		
Respond to a loss of SDC.	205-04-01-001		

REFERENCES:

PNPS 2.4.B.20
PNPS 2.4.B.6

SIMULATOR CONDITIONS:

1. N/A

GENERAL TOOLS AND EQUIPMENT:

1. Key (CR-J Shlage BH3) to padlocks for breakers 52-2036, 52-2071 and 52-2093 on MCC B20 and breakers 52-17116 on MCC B17. (This key is a "Switchgear" or "S" key.)

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
   a) "All actions associated with this job performance measure are to be simulated. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. Always state the following two paragraphs:
   a) "The title of this JPM is: **ALTERNATE POWER TO RHR VALVES**"
   b) "The task conditions are as follows:
      i) The plant is in a refueling outage with shutdown cooling in service;
      ii) B20 has de-energized due to a fault.
      iii) The Control Room has determined that the RHR shutdown cooling valves need to be supplied power from their alternate power source, ."
3. Solicit and answer any questions the operator may have.

INITIATING CUE:
State the following:

"[Operator's name], restore power to the RHR shutdown cooling valves using PNPS 2.4.B.20, Attachment 3."

PERFORMANCE:

Notes All critical steps must be performed in order written unless otherwise noted.

Component locations are the 23' Reactor Building.

At this time, it may be convenient to get the keys for the padlocks on B20 and B17. These keys are listed as CR-J Shlage BH3, or otherwise known as Switchgear or "S" keys. These keys can also be found in locker for 2.4.143.

START TIME: _____

1.	**Procedure Step:**	ALTERNATE POWER TO RHR VALVES **CAUTIONS** 1. An engineering analysis for B17 would be needed if power were restored to MO-1001-28A (B) or MO-1001-50 during normal operating or outage conditions. 2. If required, enter LCOs for LPCI and/or Primary Containment in accordance with Technical Specifications Sections 3.5.A/3.7.A.2. [1] **PROVIDE** alternate power to MO-1001-28A (B) and/or MO-1001-50. The following steps describe how to provide alternate 480V AC power to three RHR valves necessary for cooldown: • MO-1001-28A (RHR A Otbd Inj) • MO-1001-28B (RHR B Otbd Inj) • MO-1001-50 (SDC Inbd Suct)
	Standard	Operator reviews cautions related to Attachment 3, 2.4.B20.
	Cue	If questioned, CUE that concurrence from engineering has been obtained. If questioned, CUE that the appropriate LCO's have been entered.
	Notes	
	Results	SAT ☐ UNSAT ☐

2.	**Procedure Step:**	(a) On MCC B20 (El. 23' RB), **UNLOCK** the padlocks on the following breakers (key required is an Operator's "S" key): Breaker — Position — Checkoff 52-2036 (MO-1001-50) — Unlocked — _____
	Standard	Operator locates and simulates unlocking breaker 52-2036 on bus B20.
	Cue	"The key is inserted, the padlock unlocked and removed."
	Notes	Location is at the bottom of 3rd set of breakers from the left.
	Results	SAT ☐ UNSAT ☐

3.	**Procedure Step:**	**LOCATE AND UNLOCK** breaker 52-2071 on bus B20 (MO-1001-28A).
	Standard	Operator locates and simulates unlocking breaker 52-2071 on bus B20.
	Cue	"The key is inserted, the padlock unlocked and removed."
	Notes	Location is at the top of 7th set of breakers from the left.
	Results	SAT ☐ UNSAT ☐

4.	**Procedure Step:**	**LOCATE AND UNLOCK** breaker 52-2093A on bus B20 (MO-1001-28B).
	Standard	Operator locates and simulates unlocking breaker 52-2093A on bus B20.
	Cue	"The key is inserted, the padlock unlocked and removed."
	Notes	Location is at the top of 9th set of breakers from the left.
	Results	SAT ☐ UNSAT ☐

5.	**Procedure Step:**	(b) On MCC B20, **OPEN AND LOCK OPEN** the following breakers (**USE** padlocks from Step [1](a) above): Breaker — Position — Checkoff 52-2031 (MO-1001-28A) — Locked OFF — _____
	Standard	Operator simulates opening and locking open breaker 52-2031 on bus B20.
	Cue	"The switch is being pushed down, a click is heard and the switch is on the bottom. The padlock is placed on the switch in the locked position."
	Notes	
	Results	SAT ☐ UNSAT ☐

6.	**Procedure Step:**	**LOCATE AND LOCK OPEN** breaker 52-2034 on bus B20 (MO-1001-28B).
	Standard	Operator simulates opening and locking open breaker 52-2034 on bus B20.
	Cue	"The switch is being pushed down, a click is heard and the switch is on the bottom. The padlock is placed on the switch in the locked position."
	Notes	
	Results	SAT ☐ UNSAT ☐

7.	**Procedure Step:**	**LOCATE AND LOCK OPEN** breaker 52-2046 on bus B20 (MO-1001-50).
	Standard	Operator simulates locking open breaker 52-2046 on bus B20.
	Cue	"The padlock is placed on the switch in the locked position."
	Notes	Breaker is Normally Open
	Results	SAT ☐ UNSAT ☐

8.	**Procedure Step:**	(c) On MCC B17 (El. 23' RB), **UNLOCK AND CLOSE** the following breaker (shunt trip to 52-17116 has been defeated): Breaker — Position — Checkoff 52-17116 (Loss of CSR Feed to X Comp) — ON — _____
	Standard	Operator locates, simulates unlocking and closing breaker 52-17116 on bus B17.
	Cue	"The key is inserted, the padlock unlocked and removed. The switch is being pushed up, a click is heard, and the switch indicator is ON."
	Notes	Breaker location is at the lower right hand corner of B17.
	Results	SAT ☐ UNSAT ☐

9.	**Procedure Step:**	(d) On MCC B20, **CLOSE** the following breakers: Breaker: 52-2036 (MO-1001-50) Position: ON Checkoff: _____
	Standard	Operator simulates closing breaker 52-2036.
	Cue	"The breaker switch is being pushed up, a click is heard and the switch is at the top."
	Notes	
	Results	SAT ☐ UNSAT ☐

10.	**Procedure Step:**	CLOSE breaker 52-2071 (MO-1001-28A).
	Standard	Operator simulates closing breaker 52-2071.
	Cue	"The breaker switch is being pushed up, a click is heard and the switch is at the top."
	Notes	
	Results	SAT ☐ UNSAT ☐

11.	**Procedure Step:**	CLOSE breaker 52-2093A (MO-1001-28B).
	Standard	Operator simulates closing breaker 52-2093A.
	Cue	"The breaker switch is being pushed up, a click is heard and the switch is at the top."
	Notes	
	Results	SAT ☐ UNSAT ☐

Cue: **This completes this JPM.**

STOP TIME: _____

JPM GRADING INSTRUCTIONS

CRITERIA FOR SATISFACTORY EVALUATION

1. 100% of critical elements/steps identified in the JPM successfully completed.
2. Critical Time Frame is met if applicable
3. No actual safety violation (radiological or industrial) requiring evaluator intervention.

CRITERIA FOR UNSAT EVALUATION

1. Any critical element/step is graded as "UNSAT"
2. Critical Time Frame is not met if applicable. *
3. Actual safety violation (radiological or industrial) requiring evaluator intervention.
4. Operator's actions would have damaged plant equipment, created a personnel safety hazard, or otherwise reduced the level of safety of the plant

CRITERIA FOR NEEDS IMPROVEMENT EVALUATION

1. One or more non-critical elements/ steps evaluated as UNSAT which indicate the need for remediation.
2. Any relevant Management Expectation/Standard missed a majority of the opportunities.

ADMINISTRATIVE REQUIREMENTS

Any performance deficiencies resulting in an UNSAT or NEEDS IMPROVEMENT evaluation shall be documented on the JPM comment sheet.

Documentation for Satisfactory evaluations need only consist of the cover sheet and any applicable comment sheet(s) provided that a Master Copy of the JPM is on file or captured.

Documentation for UNSAT evaluations shall consist of the entire, as administered JPM, with associated comment sheets.

Documentation for NEEDS IMPROVEMENT evaluations need only consist of the cover sheet and the associated comment sheet(s) describing the operator deficiencies noted, provided that a Master Copy of the JPM is on file or captured and the deficiencies are involving only management expectations. Otherwise, the entire JPM shall be retained.

INITIAL CONDITIONS:

- The plant is in a refueling outage with shutdown cooling in service;
- B20 has de-energized due to a fault.
- The Control Room has determined that the RHR shutdown cooling valves need to be supplied power from their alternate power source.

INITIATING CUE:
State the following:

"[Operator's name], restore power to the RHR shutdown cooling valves using PNPS 2.4.B.20, Attachment 3. Inform me when you have completed this task."

Op Test No.: 2011	Scenario # 2	Event # 1	Page 1 of 15
Event Description:	Secure Torus Cooling and place in Standby Lineup per 2.2.19		

Time	Position	Applicant's Actions or Behavior
		IOS Operator: 1. Initialize Simulator to IC 14 2. Reduce power to 90% using core flow and stabilize 3. Place "A" Loop of RHR in Torus Cooling IAW PNPS 2.2.19, 4. Verify "F" RBCCW pump in service a. Start Lesson Plan NRC Scenario 2 and trigger Step 1, Initial Conditions. This step b. Insert an INOP trip on "APRM A and a trip on "D" RBCCW pump c. Insert trips on both SBLC pumps d. Delete the SBLC pump trip on the pump that is not initially started. 5. Bypass APRM A, reset RPS and hang tags on bypass switch and RBCCW Pump "D" 6. Verify AGAFs are in spec
	SRO	1) Brief crew on plant status 2) Direct BOP to secure Torus Cooling and place RHR in a Standby Lineup per 2.2.19
	BOP	3) Secure Torus Cooling IAW 2.2.19, section 7.1.2, Step [11]: a) OPEN MO-1001-18A, RHR Minimum Flow Vlv. **PROCEDURE NOTE: In order to prevent the possibility of introducing air into the system, the RHR Pump should be secured when the flow rate is reduced to 2000 GPM or less.** b) CLOSE MO-1001-36A, Torus Cooling Vlv, AND MONITOR flow rate (C903) during valve closure. c) WHEN RHR loop flow reduces to less than approximately 2000 GPM on available flow indicator (C903), THEN SECURE RHR Pump A d) OPEN MO-1001-16A (B). e) CLOSE MO-1001-34A (B). f) SECURE RBCCW Flow to RHR HX by closing MO-4060A AND MO-4060B RBCCW Loop A Inlet Valve to RHR HX E-207A g) IF running, SECURE the second RBCCW Pump; P-202A B, or C; in the applicable loop. h) RESTORE/VERIFY the setpoint of TIC-383, RBCCW Loop A Temp Controller, to 70°F. i) IF no longer required for RBCCW/TBCCW cooling, SECURE additional SSW Pump(s); P-208A, B, C, D, or E. j) VERIFY that the RHR System is in a normal standby lineup in accordance with Step 7.1[1]

Op Test No.: 2011	Scenario # 2	Event # 1	Page 2 of 15
Event Description:	Secure Torus Cooling and place in Standby Lineup per 2.2.19		

Time	Position	Applicant's Actions or Behavior
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 2	Event # 2	Page 3 of 15
Event Description:	Accumulator Trouble that will not clear – TS 3.3.D.A.1		

Time	Position	Applicant's Actions or Behavior
IOS Operator: 1. Trigger Step 2 of the Lesson Plan, Accumulator Trouble Alarm. Step inserts RD08, Accumulator Trouble on rod 46-15. 2. Report that the alarm is due to low gas pressure when asked. 3. After being requested to recharge the accumulator, report that you can only recharge the accumulator to 800 psig. 4. If asked, the affected control rod scram time is within the limits of TS Table 3.3.C-1. 5. If asked, report that there are no other slow rods in the core.		
	RO	4) Report and respond to alarm C905R-F6, Accumulator Trouble a) Determine the affected control rod (rod 46-15) b) Verify charging header pressure is > 940 psig c) Direct field operator to determine cause and then to recharge the accumulator
	SRO	5) When notified that the accumulator cannot be charged past 800 psig, declare the accumulator inoperable. *(Examiner Note: IAW PNPS 2.2.87, CRD System, an accumulator is to be declared INOP if pressure is less than 940 psig)* a) Determine that the associated control rod is to be declared "slow" or inoperable within 8 hours IAW TS 3.3.D.A.1. *(Examiner Notes: The SRO may solicit input as to the rods scram time, as the rod can only be declared slow if its scram time is within limits.* *TS 3.3.D.A.1 also allows declaring the rod INOP within 8 hours. This would necessitate fully inserting the rod within 3 hours and disarming within the following 4 hours IAW TS 3.3.B.1.C)*
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 2	Event # 3	Page 4 of 15
Event Description:	RBCCW Pump Trip – Tech Spec 3.5.B.3		

Time	Position	Applicant's Actions or Behavior
IOS Operator: 1. Trigger Step 3 of Lesson Plan, "F" RBCCW Pump Trip. Step trips "F" pump and disables auto start of "E" RBCCW pump. 2. If asked to investigate report that the thermal overload for the breaker is tripped.		
	BOP	6) Announce and respond to annunciator "RBCCW LOOP B HDR DISCH PRESS LO" (C1R-A5). 7) Report that "F" RBCCW pump has tripped 8) Start "E" RBCCW pump (*Examiner Note: If "E" is started within 90 seconds of the low pressure alarm, the crew may not realize that the auto start circuit has failed.)*
Examiner Note: RECIRC PUMP "A" and "B" SEAL COOLING LOW FLOW Alarms will also annunciate when RBCCW flow is lost.		
	SRO	9) Refer to PNPS 2.4.42, Loss of RBCCW and determine that no additional procedural actions are required. 10) Refer to Tech Spec 3.5.B.3 and declare a 7 day LCO due to the "B" RBCCW Loop now being inoperable. *(Examiner Note: AN RBCCW subsystem is operable when at least two of the three pumps are operable)*
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 2	Event # 4, 5	Page 5 of 15
Event Description:	Recirc Pump Seal Failure – Trip And Isolate the Recirc Pump per PNPS 2.4.22, RECIRC PUMP SEAL FAILURE and PNPS 2.4.17, RECIRC PUMP TRIP. Insert the RPR Array to exit the Unanalyzed and Exclusion regions of the power to flow map.		

Time	Position	Applicant's Actions or Behavior
IOS Operator: 1. Trigger Step 4 of the Lesson Plan, "B" Recirc Pump Seal Failures. Step: a. Inserts RR13, #1 Seal Failure, ramped to 100% over 1 minute b. Inserts RR14, #2 Seal Failure, ramped to 100% over 1 minute, with a 3 minute time delay.		
	BOP	11) Announce and respond per ARP C904R-D5, "Pump B Seal Staging Flow Hi". a) Check seal temperatures on TR -262-19. b) Recognize PI-262-18B and 17B are equalized c) Determine that #1 seal has been lost
	SRO	12) Refer to 2.4.22, Recirc pump Seal Failure and direct monitoring of drywell parameters.
Second Seal Fails		
	BOP	13) Announce and respond per ARP, "Pump B Seal Leakage Hi". 14) Determine that the #2 seal is failing 15) Report slowly rising drywell temperature and pressure
Applicable Subsequent Actions of PNPS 2.4.22 *(Examiner Note: The immediate action was to determine the type of failure)*		
	SRO	16) Determine that a catastrophic seal failure has occurred 17) Direct that the Recirc Pump be tripped and isolated per section 4.0 of PNPS 2.4.22, Step [1] 18) Enter and execute 2.4.17, Recirc Pump trip.
	BOP	19) Trip and isolate Recirc Pump B a) TRIP the affected pump. b) PLACE C/S for AO-5150B, Seal Wtr Block Vlv, to "CLOSE". c) PLACE C/S for MO-202-4B, Pump Suct. Vlv, to "CLOSE". d) WHEN MO-202-4B indicates CLOSED, THEN PLACE C/S for MO-202-5B, Pump Disch Vlv, to "CLOSE". e) Direct NLO to CLOSE F-008B Recirc Pump Purge Block Valve.
	ANY	20) Report lowering of drywell temperature and pressure
Applicable Immediate Actions of PNPS 2.4.17		
		Procedure CAUTIONS

Op Test No.:	2011	Scenario #	2	Event #	4, 5	Page 6 of 15
Event Description:	Recirc Pump Seal Failure – Trip And Isolate the Recirc Pump per PNPS 2.4.22, RECIRC PUMP SEAL FAILURE and PNPS 2.4.17, RECIRC PUMP TRIP. Insert the RPR Array to exit the Unanalyzed and Exclusion regions of the power to flow map.					

Time	Position	Applicant's Actions or Behavior
		If the Exclusion Region on the Pilgrim Single Loop Power/Flow Map is entered as a result of this transient, then Operators are required to take immediate actions in accordance with PNPS 2.1.14 Section 7.10 to exit the Exclusion Region. **Increasing core flow by starting a tripped Recirculation Pump is an unacceptable method of exiting the Exclusion Region.** 21) IF at any time during single recirculation loop power operation it is determined that the power/flow relationship is outside of the analyzed limits on the Pilgrim Single Loop Power/Flow Map, THEN action shall be initiated within 15 minutes to restore operation to within the prescribed limits and be within the prescribed limits within 2 hours. *(Examiner Note: Core flow will be determined via a subsequent step. Once determined, the immediate action will then apply.)*
		Applicable Subsequent Actions of PNPS 2.4.17
	BOP/RO	22) CLOSE MO-202-5B, PUMP DISCH VLV. (already closed via 2.4.22 actions) 23) ESTIMATE total core flow (TCF) by performing the following: a) OBTAIN AND RECORD total core flow from EPIC points SLCORFLO and REC052 (EPIC Group Point Display #22). b) USE current Reactor power AND PLOT both of the calculated flow values on the Pilgrim Single Loop Power/Flow Map c) COMPARE plotted values to determine forward/reverse flow. 24) Determine and report that reverse flow exists and that the reactor is operating in the Unanalyzed Region of the Power to flow Map.
	SRO	25) Direct entry into 2.4.165 REACTOR CORE INSTABILITY upon notification that the reactor is operating in the Unanalyzed Region
		Applicable Immediate Actions of 2.4.165,
	RO	26) MONITORS LPRM alarms on C905. 27) IF either core-wide OR regional instability is verified by the existence of any of the following conditions: a) Multiple, periodic high or low LPRM alarms (typical < 3 sec) b) Multiple, periodic LPRM oscillations > 20% peak-to-peak (typical < 3 sec) c) Multiple, periodic APRM oscillations > 10% peak-to-peak (typical < 3 sec)

Op Test No.:	2011	Scenario #	2	Event #	4, 5	Page 7 of 15

Event Description: Recirc Pump Seal Failure – Trip And Isolate the Recirc Pump per PNPS 2.4.22, RECIRC PUMP SEAL FAILURE and PNPS 2.4.17, RECIRC PUMP TRIP. Insert the RPR Array to exit the Unanalyzed and Exclusion regions of the power to flow map.

Time	Position	Applicant's Actions or Behavior
		28) THEN MANUALLY SCRAM the Reactor AND PERFORM PNPS 2.1.6, "Reactor Scram".
	SRO	29) ENSURE an Operator is assigned the responsibility for monitoring for core thermal-hydraulic instability. 30) Direct exiting of the Unanalyzed and Exclusion Regions by Inserting control rods in accordance with Section 7.9 of PNPS 2.1.14
		Reactivity Manipulation -- RPR Array Insertion
	RO	31) Exit the Unanalyzed and Exclusion Regions as follows: a) VERIFY/REDUCE the total calculated core flow is less than 43 Mlb/hr. b) INSERT control rods using the RPR array to exit the Exclusion Region AND be within the SLO analyzed area on the Pilgrim Single Loop Power/Flow Map. **Note: the following steps are contained in PNPS 9.13, Attachment 8** **PROCEDURE CAUTIONS** • **DO NOT exit from any step in RPR array without inserting all rods in that step unless specific guidance is provided by Reactor Engineering.** • **DO NOT deviate from the step sequence specified in the RPR array.** • **AVOID reducing core thermal power below 25% of rated.** **PROCEDURE NOTE** **CRD drive pressure may be increased 50 psid above the normal drive pressure (250 psid) without entering PNPS 2.4.11.1 to expedite control rod insertion.** i) FULLY INSERT control rods listed in Step 1 of RPR Array Sheet in any order using Emergency In continuous rod insertion for each rod. ii) The C905 Reactor Operator shall verify that control rods in Step 1 of the RPR Array Sheet are fully inserted AND initial in the indicated location. iii) DETERMINE whether a further Reactor power reduction is required. IF following PNPS 5.3.23, INSERT all steps of the RPR array. (*Examiner Note: 5.3.23 is an ATWS*

Op Test No.:	2011	Scenario #	2	Event #	4, 5	Page 8 of 15

Event Description: Recirc Pump Seal Failure – Trip And Isolate the Recirc Pump per PNPS 2.4.22, RECIRC PUMP SEAL FAILURE and PNPS 2.4.17, RECIRC PUMP TRIP. Insert the RPR Array to exit the Unanalyzed and Exclusion regions of the power to flow map.

Time	Position	Applicant's Actions or Behavior
		response procedure and is not applicable) iv) REPEAT Steps above for subsequent steps in RPR array until the desired power reduction has been obtained or until directed otherwise by the Shift Manager. *(Examiner Note: A least two steps will be required)*
Recirc Pump Trip Follow - Up Actions – PNPS 2.4.17		
	SRO	32) Direct that core flow be verified or adjusted to within the required band of 27.6 to 35.9 Mlbm/hr
	RO	33) WHEN at least 5 minutes have elapsed since the closure of the Recirculation Pump Discharge Valve (MO-202-5A) THEN OPEN the discharge valve to maintain the idle loop suction temperature > 400°F. (*Examiner Note: A procedure caution directs the operator to skip this step if the valve was closed to isolate a seal leak and this step should therefore NOT be performed)*
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.:	2011	Scenario #	2	Event #	6, 7	Page 9 of 15
Event Description:	Second Recirc Pump Trip and manual scram – PNPS 2.4.17 ATWS – EOP02, Failure to Scram					

Time	Position	Applicant's Actions or Behavior
		IOS Operator: Trigger Step 5 of Lesson Plan, "A" Recirc Pump Trip. Steps 6 and 7 will automatically trigger. These steps: 1. Insert RR07, Recirc Pump "A" Drive Motor Breaker Trip 2. Insert RR27, Core Wide Oscillations, ramped to 100% over 1 minute 3. Delete RR27, Core Wide Oscillations, when RPV level is < -25 inches. 4. Insert RD29, Scram Discharge Volume level at 98% for both East and West SDIVs. 5. Insert TC09, All turbine bypass valves fail closed, with a time delay of 2 minutes.
	ANY	34) Recognize and announce "A" Recirc Pump Trip
	RO	35) Insert a manual scram *(Examiner Note: Immediate Action of PNPS 2.4.17)* 36) Report that APRMs are not downscale and that many rods did not insert. 37) Report power oscillations
	SRO	38) Enter EOP01 initially, then exit and Enter EOP-02
	RO	39) Place mode switch to shutdown 40) Initiate ARI 41) Verify both Recirc pumps are tripped 42) Enter 5.3.23 for control rod insertion.
	SRO	43) Direct pressure be controlled 900 – 1050 psig 44) Direct RPV level be controlled -20 to + 10 inches *(Examiner Note: The control bands above are specified in procedure 5.3.35.2)* 45) Direct that Standby Liquid Control be injected 46) Direct verification of Isolations, ECCS initiations EDG initiation 47) Direct ADS be inhibited 48) Direct bypassing MSIV low water level isolation
	RO	49) Set FWLC Master Controller to +5 to control water level in specified band.
	BOP	50) Verify status of isolations, initiations and EDGs. (Group 2, 6 isolations, RBIS and Standby Gas Treatment Start) 51) Inhibit ADS 52) Place PCIS Bypass Switches (4) on panels C915 and C917 in "BYPASS" Position a) Verify Alarm "REACTOR WATER LEVEL LO LO BYPASS" (C905L-F1) is ON.

Op Test No.: 2011	Scenario # 2	Event # 6, 7	Page 10 of 15
Event Description:	Second Recirc Pump Trip and manual scram – PNPS 2.4.17 ATWS – EOP02, Failure to Scram		

Time	Position	Applicant's Actions or Behavior
Critical Task #1: During failure to scram conditions terminate and prevent injection from all sources (except CRD, RCIC, and SBLC) and lower level to < -25 inches. Critical Task will be satisfied if there is no unintended injection prior to level lowering to -25 inches.		
	SRO	53) Direct all injections to the RPV be stopped and prevented except boron, RCIC and CRD: 54) Direct that level be lowered to less than –25"
	RO/BOP	55) Terminate Feedwater as follows: a) CLOSE the Feedwater Regulating Valves AND CLOSE the Startup Feedwater Regulating Valve. (It IS NOT necessary to secure feed and condensate pumps at this time.) i) FV-642A, Feedwater Regulating Valve "A" ii) FV-642B, Feedwater Regulating Valve "B" iii) HIC-640-20, Startup Reg Flow Control iv) 1st Point Heater Outlet Block Valve MO-3479 v) 1st Point Heater Outlet Block Valve MO-3480 56) Report when level is less than –25"
	BOP	57) Terminate ECCS as follows: a) IF HPCI IS NOT running, THEN PLACE the Aux Oil Pump (P-229) in the PULL-TO-LOCK position. b) PLACE RHR Pumps and Core Spray pumps in the PULL-TO-LOCK position. (*Examiner Note: Procedure 5.3.35.1 allows leaving RHR pumps in containment control modes provided that they are secured before RPV pressure lowers to the injection pressure – 300 psig)*
	SRO	58) Direct injection be re-established to maintain level < -25 inches using outside the shroud injection systems

Op Test No.: 2011	Scenario # 2	Event # 8, 9	Page 11 of 15
Event Description:	Standby Liquid Pump Trip All Turbine Bypass Valves fail closed		

Time	Position	Applicant's Actions or Behavior
Critical Task #2: Inject SBLC before torus water temperature exceeds the BIIT or in response to core oscillations		
	RO	59) Inject SBLC as follows: a) START one SLC System by placing the SLC ACTUATE switch to "SYS A" OR "SYS B" position at Panel C905. b) VERIFY the following: i) Alarm "SQUIB VLV CONTINUITY FAILURE" (C905R-A9) is ON. ii) SQUIB VALVE CONTINUITY light for the selected system is OFF. iii) Red STANDBY LIQUID CONTROL PUMP A or PUMP B motor running light for the selected system is ON. 60) Determine that the selected pump did not start and place SLC ACTUATE switch to alternate position and verify that pump starts i) Verify Reactor Cleanup System isolation, ii) Verify pump discharge pressure on PI-1140-I, INJ HDR PRESS, (Panel C905) is slightly greater than Reactor pressure and reactor power decreasing. iii) Verify decreasing level on Storage Tank Level indicator [LI-1140-2 (STOR TK LVL) on Panel C905]. **Examiner Note: That SBLC pump that does start will trip after 1 minute of operation.**
	BOP	61) Report Bypass Valves have failed closed 62) Establish pressure control by taking manual control of SRVs and stabilizing pressure within prescribed band.

Op Test No.: 2011	Scenario # 2	Event #	Page 12 of 15
Event Description:	ATWAS Follow –up Actions – Control rod insertion and transition to EOP01		

Time	Position	Applicant's Actions or Behavior
Critical Task #3: During failure to scram conditions, insert control rods using one or more methods contained within 5.3.23 and / or EOP-02 to achieve Rx. Shutdown under all conditions. Critical Task will be satisfied if all control rods are inserted prior to the termination of the scenario.		
	RO	63) Notify Reactor Engineering of the event. 64) Insert control rods per PNPS 5.3.23 as follows: a) VERIFY RUNNING OR START one CRD Pump. b) CLOSE 301-25, CRD Charging Water Supply Valve (CRD Mezzanine). c) BYPASS the Rod Worth Minimizer. (Panel C904, spare key CR-10) **Procedure CAUTION** **The combination of Reactor pressure and Drive Water Differential Pressure should not be allowed to exceed 1750 psig.** d) INCREASE Drive Water Differential Pressure to 400 psid by throttling closed MO-302-8, DRIVE WTR PCV (Panel C905). e) Drive Water Differential Pressure may be increased in 50 psi increments up to a maximum of 600 psid as needed to facilitate rod insertion. f) RAPIDLY INSERT all steps of the RPR Array using the EMERG. IN switch i) LIMIT the duration of the insert signal for each rod to ≤ 2 minutes. g) WHEN all control rods of the RPR Array have been inserted/attempted inserted, THEN INSERT the remaining control rods.
IOS Operator: 1. When directed to defeat RPS and ARI, wait 10 minutes then trigger Step 8 of lesson plan, Defeat RPS and ARI. 2. When directed to close the CRD 25 valve, wait 2 minutes and then trigger step 9 of the Lesson Plan, Close the CRD 25 Valve.		
	RO	65) PERFORM repeated manual Scrams as follows: a) DEFEAT/VERIFY DEFEATED RPS and ARI logic trips in accordance with Attachments 1 and 2. b) IF Reactor pressure is less than 800 psig, THEN:VERIFY RUNNING OR START one CRD Pump. AND c) OPEN 301-25, CRD Charging Water Supply Valve (CRD Mezzanine).

Op Test No.: 2011	Scenario # 2	Event #	Page 13 of 15
Event Description:	ATWAS Follow –up Actions – Control rod insertion and transition to EOP01		

Time	Position	Applicant's Actions or Behavior
		d) RESET Scram (Panel C905). e) VERIFY the Scram is reset: f) PLACE the AIR DUMP SYSTEM TEST SWITCH to "ISOLATE" (Panel C905). g) VERIFY alarm "SPVAH PRESSURE LO" (C905R-F1) clears. h) PLACE the AIR DUMP SYSTEM TEST SWITCH to "NORM" (Panel C905). *(Examiner Note: It will take ~ 1 minute for this alarm to clear)* i) VERIFY that one of the following conditions exists: i) "SDIV LEVEL HI" (C905R-D3) is CLEAR. OR ii) "SDIV EAST NOT DRAINED" (C905R-G4) AND "SDIV WEST NOT DRAINED" (C905R-G1) are CLEAR. *(Examiner Note: This will be the condition satisfied)* OR iii) Five minutes have elapsed since the SDIV vent and drain valves were opened. j) INITIATE a manual Scram. k) IF control rods move inward, THEN REPEAT Steps until all rods are fully inserted control rods do not move inward. *(Examiner Note: It will take 2 to 3 scrams for all the rods to insert)* l) Report when all rods have been inserted
		Additional EOP-02 Actions
	SRO	66) When notified that the MSIV low level isolation has been defeated, widen the water level control band to -150 inches to -100 inches 67) Direct that SBLC be secured when report received that all rods have been inserted. 68) Exit EOP-02 and enters EOP-01
	SRO	69) Direct that scram procedure 2.1.6 be entered. 70) Re-verify isolations and initiations 71) Direct that level be restored to normal range 72) Direct that a plant cooldown be commenced
	BOP	73) Commence plant cooldown using SRVs or HPCI
		EOP-03 Actions
	ANY	74) Report if/when torus water temperature has exceeded the entry condition (80 degrees)
	SRO	75) Enter EOP-03

Op Test No.: 2011	Scenario # 2	Event #	Page 14 of 15
Event Description:	ATWAS Follow –up Actions – Control rod insertion and transition to EOP01		

Time	Position	Applicant's Actions or Behavior
		76) Direct that torus cooling be placed in serviced
	BOP	77) Place torus cooling in service
The scenario may be terminated at the discretion of the Lead Examiner OR when RPV level has been restored to between +12 and +45 and a cooldown has been initiated.		
Emergency Classification: Site Area Emergency EAL: 2.3.1.3, Reactor power > 3% and boron injection into the RPV intentionally initiated		

NRC Scenario 2 Turnover Sheet

Plant Status:

- Reactor Power: 90%
- Reactor power was reduced to 90% last shift for rod pattern adjustments.
- Core flow is 49 Mlbm/hr
- Current Rod Position: Sequence A1, Step 87, rod 18-43
- RHR Loop "A" was placed in torus cooling mode to support a HPCI surveillance last shift.

Equipment Out Of Service:

- "A" APRM has a faulty power supply and is OOS and bypassed. Tracking LCO initiated. All other APRMs are operable.
- "D" RBCCW pump is OOS. All other RBCCW pumps are operable. Tracking LCO initiated.

Directions to the Shift:

- Secure torus cooling and restore power to 100% IAW PNPS 2.1.14, Station Power Changes.

Op Test No.: 2011	Scenario # 3	Event # 1	Page 1 of 17
Event Description:	Reduce Reactor Power IAW PNPS 2.1.5 and 2.1.14 and lowers power to 75%		

Time	Position	Applicant's Actions or Behavior

IOS Instructions:

1. Initialize Simulator to IC 14 AND INSERT steps 86 and 85 of the pull sheets. Power should stabilize ~ 81%)
2. Verify AGAFs are in spec.
3. Start Lesson Plan NRC Scenario 3 and trigger Step 1, Initial Conditions AND Step 11.
4. Step 1 will:
   a. Insert an INOP trip on "APRM A and a trip on "D" RBCCW pump
   b. Opens the breaker for MO-1001-23A
   c. Inserts ED-13, Bus A-1 Fails to Transfer
   d. Overrides the Reactor Mode Switch to the Run Position.
5. Step 11 will fail RHR Pumps "B" and "D" to auto start.
6. Bypass APRM A, reset RPS and hang tags on bypass switch, RBCCW Pump "D" and MO-1001-23A.
7. Verify "A" RWCU pumps in service

	SRO	1) Brief plant status and direct power be reduced by lowering Recirc pump speed to 43 Mlbm/hr IAW PNPS 2.1.5 and 2.1.14.
	RO	2) Lower core flow as follows: a) To lower Reactor power, PERFORM the following on the selected Recirc Speed Controller SIC-262-025A OR SIC-262-025B: i) ENSURE the selected Recirc Speed Controller is in MANUAL by observing that an "M" is illuminated to the right of the bar graphs. ii) ENSURE the RIGHT BAR (Speed Demand) is selected by observing that the dot above the RIGHT BAR is illuminated. iii) MOMENTARILY DEPRESS the down (▼) push button on the left side of the control pad. iv) OBSERVE the RIGHT BAR (Speed Demand) indication lowers. b) CONTINUE TO REPERFORM Steps above until the desired Reactor power or core flow is obtained. 3) Insert control rods as required to achieve ~ 75% power 4) Report when reactor power is at 75%

Op Test No.: 2011	Scenario # 3	Event # 2	Page 2 of 17
Event Description:	Reactor Shutdown Actions at 75% power IAW PNPS 2.1.5, Section F		

Time	Position	Applicant's Actions or Behavior
	SRO	5) Direct BOP to lower Speed Load Changer ISW Step PNPS 2.1.5, step [3] (c).
	BOP	6) When reactor power has been lowered to between 50 and 75% lower the Speed Load Changer output to 82%
	SRO	7) At approximately 75% Reactor power, direct the BOP to CYCLE the RFP recirculation valves AND SECURE one RFP.
	BOP	8) CYCLE the RFP recirculation valves AND SECURE one RFP as follows: a) For each of the three RFP Recirc valves: i) PLACE control switch for the selected RFP A RECIRC VLV into the "OPEN" position AND VERIFY the valve indicates OPEN ii) PLACE control switch for the selected RFP A RECIRC VLV into the "AUTO" position AND VERIFY the valve indicates CLOSED. b) IF any RFP recirculation valve fails to open, INITIATE a WR and a CR. *(Examiner Note: All Recirc valves will open)*
	BOP	9) PLACES RFP TRIP SEQUENCE, ENABLE selector switch to "OFF" at Panel C2.
	BOP	10) REMOVES one Reactor Feed Pump (RFP) from service in accordance with PNPS 2.2.96, Attachment 16. a) RECORD the RFP to be secured: b) PLACE/VERIFY the RFP TRIP SEQUENCE ENABLE switch is in the "OFF" position. c) WHEN total feedwater flow is ≤ 75%, THEN STOP the selected RFP by placing the control switch on Panel C1 to the "STOP" position: *d)* VERIFY motor heater breaker is CLOSED for secured pump *(Examiner Note: The operator should contact a field operator to verify this step)* e) VERIFY Reactor water level is stable 11) VERIFY on the remaining operating Reactor Feed Pumps Motor Current Indicators amps are normal (< 650 amps) 12) VERIFY Auxiliary L.O. Pump for the selected RFP auto-starts: 13) Direct the NLO to perform the following: a) secure hydrogen injection to the RFP b) AFTER RFP coast down is complete for the selected RFP, THROTTLE the TBCCW outlet valves from the lube oil coolers to maintain temperatures of 90°F to 110°F
	SRO/BOP	14) Direct Radwaste to REMOVE Condensate Demineralizers from service at the discretion of the SM to maintain a differential

Op Test No.: 2011	Scenario # 3	Event # 2	Page 3 of 17
Event Description:	Reactor Shutdown Actions at 75% power IAW PNPS 2.1.5, Section F		

Time	Position	Applicant's Actions or Behavior
		pressure of approximately 30 to 60.
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 3	Event # 3	Page 4 of 17
Event Description:	Loss of EDG "A" Control Power –TS 3.5.F.1		

Time	Position	Applicant's Actions or Behavior
IOS Operator: 1. Trigger step 2 of the Lesson Plan, Loss of EDG "A" Control Power. This step inserts a Crywolf on alarm C3L-B1 and turns off breaker indicating lights on panel C3. 2. When asked to investigate, wait an appropriate amount of time and then Role Play as Electrical maintenance that you've found a blown fuse in the breaker's control power circuit.		
	BOP	15) Report and respond to alarm C3L-B1, "GENERATOR BKR TRIP/INOP" 16) Check breaker indicating lights and determine that the breaker appears to have lost control power.
	SRO	17) Refer to Tech Specs 3.9.A, 3.9.B and 3.5.F. 18) Declare the "A" EDG Inop 19) Determine that the "A" EDG being INOP in conjunction with the "A" Containment Spray Loop results in a 24 hr cold shutdown LCO. 20) Directs Field Operator to investigate locally
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 3	Event # 4	Page 5 of 17
Event Description:	RWCU Pump Trip – PNPS 2.4.27, REACTOR WATER CLEANUP SYSTEM MALFUNCTIONS		

Time	Position	Applicant's Actions or Behavior
IOS Operator: 1. Trigger Step 3 of the lesson Plan, RWCU Pump Trip. Step inserts CU02, RWCU Pump Trip and a Crywolf on alarm C904RC-A2, RWCU Pumps RBCCW Temp High. 2. If asked to investigate report that the temperature switch, TIS-1291-48A, for the "A" pump seems to have failed, resulting in the pump trip.		
	BOP	21) Report and respond to alarm PUMP RBCCW TEMP HI, C904RC-A2. a) Verify Automatic Actions i) RWCU Pumps trip (P-204A, P-204B)
	SRO	22) Enter and direct PNPS 2.4.27, RWCU Malfunctions.
Applicable Subsequent Actions of PNPS 2.4.27 *(Examiner Note: There are no applicable immediate actions)*		
	BOP	23) IF the loss of RWCU is due to a pump trip, THEN PERFORM the following: a) CLOSE MO-1201-80. b) CLOSE MO-1201-5. c) CLOSE MO-1201-2.
	SRO	24) WHEN conditions permit, PLACE the RWCU System back into service in accordance with PNPS 2.2.83. 25) NOTIFY Chemistry of the isolation 26) Make preparations to restart the system using standby pump IAW PNPS 2.2.83, Section 7.2
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 3	Event # 5	Page 6 of 17
Event Description:	Recirc Speed Controller Fails Upscale requires a manual scoop tube lock - PNPS 2.4.20, REACTOR RECIRCULATION SYSTEM SPEED OR FLOW CONTROL SYSTEM MALFUNCTION.		

Time	Position	Applicant's Actions or Behavior
IOS Operator: 1. Trigger step 5 of the Lesson Plan, Recirc "A" Speed Controller fails Upscale". Step 6 is linked to step 5 and will automatically initiate. These steps. a. Take local control of Recirc MG set and ramp scoop tube to increase speed and insert RR20, Recirc Pump "A" Controller Fails Upscale. b. When Scoop tube lock is depressed on C904, local control is deleted and speed stabilizes. 2. If directed, take local control of scoop tube and vary MG set speed as directed using remote functions.		
	RO	27) Report and respond to alarm C904RC-C7, "MG A SPEED DEVIATION HI" a) Observe controller indications and determine that "A" Recirc controller output has failed upscale. b) Actuate MANUAL scoop tube lockup push button at Panel C904 *(Examiner Note: This ARP directed action is also an immediate action of PNPS 2.4.20)* c) Refer to PNPS 2.4.20 *(Examiner Note: PNPS Procedure 2.4.13, UNEXPLAINED RAPID INCREASE IN REACTOR POWER may also be referenced. However there are no additional applicable actions in that procedure that are not also included in PNPS 2.4.20)*
Applicable Immediate Actions of PNPS 2.4.20		
	RO	28) IF it is determined that a malfunction in one of the individual pump controllers has occurred, THEN INITIATE a scoop tube lockup by depressing the Manual Scoop Tube Positioner Lockup push button (located on Panel C904) AND REFER TO PNPS 2.4.19, "Recirculation Pump MG Set Scoop Tube Lockup". 29) IF the malfunction is severe and could lead to a Reactor Scram, THEN TRIP the malfunctioning Reactor Recirculation Pump AND REFER TO PNPS 2.4.17, "Recirculation Pump(s) Trip".
Applicable Immediate Actions of PNPS 2.4.20		
	SRO / RO	30) ASSESS operating conditions by plotting power versus core flow on the Pilgrim Power/Flow Map. 31) IF Reactor power is above MELLLA line, THEN REDUCE power in accordance with PNPS 2.1.14 Section 7.9 until below the MELLLA line.
	SRO	32) CHECK PRMs on Panel C910 AND PRM recorders on Panel C902 to ensure fuel integrity. 33) IF it is desirable to remove the Control Room signal from the

Op Test No.: 2011	Scenario # 3	Event # 5	Page 7 of 17
Event Description:	Recirc Speed Controller Fails Upscale requires a manual scoop tube lock - PNPS 2.4.20, REACTOR RECIRCULATION SYSTEM SPEED OR FLOW CONTROL SYSTEM MALFUNCTION.		

Time	Position	Applicant's Actions or Behavior
		scoop tube drive, THEN TURN OFF the power to the scoop tube. (ON/OFF switch located in amplifier control box U117/U118.) 34) ATTEMPT TO RESTORE the pump speeds within the specified limit. 35) IF Reactor power is > 80%, THEN Recirculation Pump speeds shall be within 8%. *36)* IF Reactor power is ≤ 80%, THEN Recirculation Pump speeds shall be within 13%. *(Examiner Note: The 8% and 13% limits are admin limits. The Tech Spec limits of LCO 3.6.F.1 below are 10 and 15%)* 37) Technical Specifications Section 3.6.F.3 requires compliance within 24 hours. 38) IF compliance with Recirculation Pump speed limits is NOT restored, THEN the Reactor shall be in Hot Shutdown within 12 hours. 39) Evaluates Tech Spec compliance based on current pump speed mismatch.
Applicable Actions from 2.4.19, RECIRCULATION PUMP MG SET SCOOP TUBE LOCKUP *(Examiner Note: At any point the Lead Examiner may move on to the next event)*		
	SRO/BOP	40) ENSURE loop flows are balanced in accordance with PNPS 2.1.15 Attachment 1 Daily Log Test #17 (#17A, #17B, #17C, and #17D). 41) IF required, ADJUST the speed of the unaffected Recirc Pump. 42) IF required, MANUALLY ADJUST the speed of the locked up Recirc Pump in accordance with PNPS 2.2.84 Section 7.9. *(Examiner Note: The expected response is to manually lower the speed of Recirc MG set "A")*
Manual Operation of "A" Recirc MG Set Scoop Tube (PNPS 2.2.84 Section 7.9)		
	BOP	43) To adjust Reactor power, PERFORM the following: a) ESTABLISH AND MAINTAIN communications with the a licensed operator at the MG set b) Direct the Licensed Operator to adjust the motor generator speed by slowly rotating the hand crank as follows: i) Clockwise to lower speed ii) Counterclockwise to raise speed c) CONTINUE Recirculation Pump speed changes until the desired flow conditions are established.
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.:	2011	Scenario #	3	Event #	6, 7	Page 8 of 17
Event Description:	SRV 3B leaks then fails open – Manual scram. PNPS 2.4.29, SOSRV 4KV bus A-1 fails to fast transfer					

Time	Position	Applicant's Actions or Behavior
IOS Operator: 1. Trigger step 7 of the Lesson Plan, SRV Leaks then Fails Open. Step 8, SRV Tail Pipe Failure, is linked and will automatically initiate. These steps: a. Insert MS13, SRV 3B Leak b. Insert MS14, SRV 3B Fails Open after a 2 minute time delay c. Deletes SRV Fail Open when RPV pressure lowers to 800 psig and inserts SRV leak at max severity to simulate partial re-closure as pressure lowers. d. Inserts PC22, SRV Tail Pipe Break when RPV pressure is < 900 psig		
	BOP	44) Report and respond to alarm C903L-A2, RELIEF/SFTY VALVE LEAKING a) Check tail pipe temperatures and determine that SRV3B is leaking 45) Report and respond to alarm C903L-B2, RELIEF/SFTY VALVE OPEN a) Determine that SRV 3B has now failed open by observing Acoustic Monitor indication.
	SRO	46) Enter and execute PNPS 2.4.29, Stuck Open SRV.
Applicable Immediate Actions of PNPS 2.4.29		
	SRO	47) IF ANY of the following conditions occur, THEN MANUALLY SCRAM the Reactor AND CONCURRENTLY PERFORM PNPS 2.1.6, "Reactor Scram". a) Torus bulk temperature reaches 110°F. OR b) The safety relief valve remains open for longer than 5 minutes. OR c) It has been determined that the safety relief valve cannot be closed.
Applicable Subsequent Actions of PNPS 2.4.29		
	SRO/RO	48) REDUCE Reactor power in accordance with PNPS 2.1.14 Section 7.11. *(Examiner Note: Due to status of "A" Recirc MG set, limited options are available to reduce power other then inserting the RPR array)* 49) Reduce power as directed. **Examiner Note: Recirc may need to be reduced to 43 mlb/hr prior to rod insertion**
IOS Operator: 1. When / if directed to attempt to close the SRV from the ASP, wait an appropriate amount of		

Op Test No.:	2011	Scenario #	3	Event #	6, 7	Page 9 of 17

Event Description: SRV 3B leaks then fails open – Manual scram. PNPS 2.4.29, SOSRV 4KV bus A-1 fails to fast transfer

Time	Position	Applicant's Actions or Behavior
		time and then trigger step 9 of the lesson plan, Attempt to close SRV 3B from ASP. Step places ASP control switch to Close. 2. If asked to return ASP to normal, trigger Step 10 of the lesson plan. Step places ASP switch back to Remote.
	BOP	**Procedure Note** **Steps below may be performed as necessary and in any order based on the type of malfunction that has occurred.** 50) Malfunction of SRV: a) ATTEMPT TO CLOSE the affected SRV(s) from its Alternate Shutdown Panel (ASP) by directing NLO to place the ASP control switch in the CLOSE position. b) Determine that the valve did not close. c) Direct the NLO to return the ASP control switch to the REMOTE position. d) CHECK "Drywell Equipment Supply Pressure" indication on Panel C7 and determine pressure is normal e) Report EOP03 entry condition when Torus Temperature exceeds 80 degrees.
Critical Task #1: Scram the reactor before torus water temperature exceeds 110 degrees following SOSRV.		
	SRO	51) When the SRV cannot be closed direct the reactor be manually scrammed.
	RO	52) Enter procedure 2.1.6, Reactor Scram and perform immediate actions **Procedure NOTE** **While it is the intent of the Procedure to outline the many steps required following a Scram, the sequence suggested for steps may be altered to suit existing plant conditions.** 53) At Panel C905, DEPRESS both manual Reactor Scram push buttons. 54) PLACE Reactor Mode switch in "SHUTDOWN". 55) VERIFY AND ANNOUNCE the status of APRM downscales. 56) VERIFY all control rods are fully inserted. (*Evaluator Note: The simulator randomly selects a few control rods to go "beyond full-in" resulting in a loss of position indication. Plant Process computer may take up to 3 minutes before an "ALL RODS In" indication is received.)* 57) IF any control rod is NOT fully inserted, THEN INSERT control rods using methods detailed in PNPS 5.3.23, "Alternate Rod

Op Test No.:	2011	Scenario #	3	Event #	6, 7	Page 10 of 17
Event Description:	SRV 3B leaks then fails open – Manual scram. PNPS 2.4.29, SOSRV 4KV bus A-1 fails to fast transfer					

Time	Position	Applicant's Actions or Behavior
		Insertion". 58) IF any control rod position cannot be determined AND the Reactor is shutdown, THEN EVALUATE "CALLRODS" EPIC indications AND DISPATCH an Operator to close 301-25, CRD Charging Water Supply Valve. 59) IF any control rod position cannot be determined AND the Reactor is shutdown, THEN SELECT each control rod not at position "00" AND ATTEMPT TO NOTCH INSERT the control rod to determine whether the control rod will settle at position "00". 60) In order to maintain availability of the Main Condenser, HPCI, and RCIC, PERFORM the following: a) CLOSE the Feedwater Regulating Valves and the Feedwater HP Block Valves (Panel C905): b) FC-642A, FLOW CONTROL VLV A c) FC-642B, FLOW CONTROL VLV B d) MO-3479, 1ST PT HTR OUTLET BLOCK VALVE e) MO-3480, 1ST PT HTR OUTLET BLOCK VALVE f) IF Reactor water level rises rapidly, THEN SECURE Reactor Feed Pumps as required. 61) Report when EOP-01, RPV Control low RPV Level entry condition (< +12 inches) is exceeded.
Applicable Subsequent Actions of PNPS 2.1.6, Reactor Scram		
	RO	62) RESTORE AND MAINTAIN RPV water level between +12 inches and +45 inches using Condensate/feedwater 63) WHEN conditions allow, THEN REDUCE the number of operating Reactor Feed Pumps and Condensate Pumps to one each. 64) IF water level is increasing rapidly, THEN SECURE the remaining feed pump. 65) With Reactor power < 10%, OPEN the Minimum Flow Recirc Valve for the operating RFP. 66) IF required to control RPV level, THEN REOPEN the following valves: a) FC-642A, FLOW CONTROL VLV A b) FC-642B, FLOW CONTROL VLV B c) MO-3479, 1ST PT HTR OUTLET BLOCK VALVE d) MO-3480, 1ST PT HTR OUTLET BLOCK VALVE 67) RESTORE AND MAINTAIN RPV water level in the normal range using HIC-640-20, STARTUP REG FLOW CONTROL (Panel C905). 68) IF required for RPV level control, THEN CLOSE the CRD System

Op Test No.:	2011	Scenario #	3	Event #	6, 7	Page 11 of 17
Event Description:	SRV 3B leaks then fails open – Manual scram. PNPS 2.4.29, SOSRV 4KV bus A-1 fails to fast transfer					

Time	Position	Applicant's Actions or Behavior
		301-25 valve, Charging Water Supply Valve.
	RO/BOP	69) VERIFY OR MANUALLY TRIP the Turbine. 70) VERIFY OR MANUALLY PLACE Reactor Recirc Pumps at minimum speed. a) Determine that the "A" recirc pump is locked and that speed is above the required minimum speed and trip the MG set
Actions for 4KV Bus A-1 Failing to Fast Transfer		
	BOP	71) Evaluate whether all house loads transferred to the Startup Transformer. 72) Determine that A-1 is de-energized. 73) Observe alarms and indications and determine that the bus failed to fast transfer. 74) Manually transfer A-1 to the Startup Transformer as follows: a) PLACE the Startup Transformer synchronizing switch for Bus A-1 to "ON". b) CLOSE IN Startup Transformer Breaker A104. c) OBSERVE Startup Transformer Breaker A104 is closed-in and feeding Bus A-1. d) PLACE the Startup Transformer synchronizing switch for Bus A-1 to "OFF".
EOP-01, RPV Control Actions		
	SRO	75) Enter EOP-01, RPV Control and a) Direct entry into scram procedure. b) Direct pressure be controlled using available pressure control systems between 900 and 1050 psig c) Direct that isolations and initiations be verified. d) Direct level be controlled using available systems between +12 and +45 inches.
	ANY	76) Report when MSIVs go closed
	SRO	77) Direct Pressure control via alternate pressure control systems
	SRO	78) Determine that an aggressive cool down is required IAW PNPS 5.3.25.2, OPERATIONS EMERGENCY AND TRANSIENT RESPONSE STRATEGIES, Attachment 2 79) Direct a new reactor pressure band of 500 to 1050 psig 80) Expand the water level control band to -20 to +45" band.
	BOP	81) Open one relief valve to augment pressure reduction 82) Stabilize pressure between 450 to 550 psig

Op Test No.:	2011	Scenario #	3	Event #	6, 7	Page 12 of 17
Event Description:	SRV 3B leaks then fails open – Manual scram. PNPS 2.4.29, SOSRV 4KV bus A-1 fails to fast transfer					

Time	Position	Applicant's Actions or Behavior

Op Test No.: 2011	Scenario # 3	Event # 8, 9	Page 13 of 17
Event Description:	SRV Tail Pipe Leak -Torus Bottom Pressure exceeds the Pressure Suppression Pressure. Emergency Depressurize RHR Pumps "B" and "D" fail to auto start.		

Time	Position	Applicant's Actions or Behavior
(Examiner Note: The tail pipe failure will automatically initiate when RPV pressure lowers to < 900 psig)		
	ANY	83) Report rising drywell pressure and temperature 84) Report when entry EOP entry conditions are exceeded (drywell pressure > 2.2. psig, drywell temperature > 150 degrees)
	SRO	85) Enter EOP-03, Primary Containment Control 86) Re-enter EOP-01, RPV Control 87) Direct isolations and initiations and EDG status be verified
	BOP	88) Verify ECCS and EDG status a) Determine that RHR pumps "B" and "D" failed to auto start and manually starts both pumps b) Report that both EDGs, Core Spray and RHR LOOP "A" Pumps started and that a manual start of Loop "B" pumps was performed. 89) Report HPCI is injecting
	SRO	90) Direct that HPCI injection be secured.
		EOP-03, PC Control Actions
	SRO	91) Direct that drywell cooling be maximized 92) Update crew that EOP Caution 1 regarding RPV Level Instrumentation is applicable. 93) Before torus bottom pressure exceeds 16 psig, direct that torus sprays be initiated. 94) When operators become available direct that H2/O2 analyzers be placed in service.
	BOP	95) Initiate Torus Spray as follows: **PROCEDURE NOTES** • **Torus Spray may be initiated before closing MO-1001-16A (B), RHR HX A (B) Bypass Valve.** • **5000 GPM on FI-1040-11A (B) and/or FI-1040-12A (B) is the maximum RHR loop flow in Torus Spray mode to allow for sufficient spray header pressure and flow.** • **Torus Spray is established with only one loop of RHR.** a) IF only the LPCI initiation signal is present, THEN PLACE the LPCI OVERRIDE switch to "MANUAL OVERRIDE". b) OPEN MO-1001-34A (B), Torus Cooling/Spray Block Valve,

Op Test No.: 2011	Scenario # 3	Event # 8, 9	Page 14 of 17
Event Description:	SRV Tail Pipe Leak -Torus Bottom Pressure exceeds the Pressure Suppression Pressure. Emergency Depressurize RHR Pumps "B" and "D" fail to auto start.		

Time	Position	Applicant's Actions or Behavior
		in the RHR loop selected for operation. c) START/VERIFY STARTED one RHR Pump. d) IF no pump discharge flow path exists, THEN OPEN MO-1001-18A (B), RHR Pumps Loop A (B) Minimum Flow Valve, for the selected loop. e) OPEN MO-1001-37A (B), Torus Spray Valve, in the RHR loop with the operating pump. f) SLOWLY OPEN MO-1001-36A (B), Torus Cooling Valve, AND INCREASE flow to 4800 to 5000 GPM on FI-1040-11A (B) and/or FI-1040-12A (B). g) CLOSE MO-1001-18A (B), Pump Min Flow Valve. 96) WHEN time permits, VERIFY/ALIGN the RHR System in the Maximize Torus Cooling mode
	BOP/RO	97) Maximize drywell cooling as follows: **PROCEDURE NOTE** **The following three steps may be performed in any order.** a) START/VERIFY STARTED all available Drywell cooling fans on Panel C61. *(Examiner Note: This is a local panel)* b) FULLY OPEN all Drywell cooler RBCCW valves by rotating all pots on Panel C7 to the full clockwise position. c) MAXIMIZE RBCCW cooling in accordance with Attachment 1 of 5.3.35, TRANSIENT RESPONSE HARDCARDS FOR OPERATING CREWS, Attachment 12
	SRO	98) Monitor rising Torus bottom pressure and Drywell Temperature
	ANY	99) Report when torus bottom pressure exceeds 16 psig.
Critical Task #2: Initiate drywell sprays when torus bottom pressure exceeds 16 psig or before drywell temperature reaches 280 degrees.		
	SRO	100) Verify that Torus Level is < 180 inches 101) Verify that drywell temperature and pressure are within the Drywell Spray Initiation Limit 102) Verify / Direct that Recirc pumps be tripped 103) Direct that Drywell Sprays be initiated
	BOP	104) Spray the drywell as follows: **PROCEDURE NOTES**

Op Test No.:	2011	Scenario #	3	Event #	8, 9	Page 15 of 17

Event Description: SRV Tail Pipe Leak -Torus Bottom Pressure exceeds the Pressure Suppression Pressure. Emergency Depressurize
RHR Pumps "B" and "D" fail to auto start.

Time	Position	Applicant's Actions or Behavior
		• **Drywell Spray may be initiated before closing MO-1001-16A (B), RHR HX A (B) Bypass Valve.** • **5000 GPM on FI-1040-11A (B) and FI-1040-12A (B) is the maximum RHR loop flow in Drywell Spray mode to allow for sufficient spray header pressure and flow.** • **If available, the Drywell is to be sprayed with both loops of RHR.**
	BOP	a) IF running, THEN TRIP the Reactor Recirc Pump(s) by opening the associated pump drive motor breaker control switch(es) at Panel C904. b) IF it is necessary to override LPCI initiation signals, THEN PERFORM the following: c) IF only the LPCI initiation signal is present, THEN PLACE the LPCI OVERRIDE switch to "MANUAL OVERRIDE".
	BOP	d) OPEN/VERIFY OPEN MO-1001-34B, Torus Cooling/Spray Block Vlv. *e)* START/VERIFY STARTED one RHR Pump in each loop. *(Examiner Note: Due to initial conditions of scenario, Loop "B" is the only loop available)* f) IF no pump discharge flow path exists, THEN OPEN MO-1001-18B, RHR Pumps Loop B Minimum Flow Valve. g) FULLY OPEN both Drywell Spray valves in RHR loop B: i) MO-1001-23B, RHR Loop B Upper Drywell Spray Valve #1 AND ii) MO-1001-26B, RHR Loop B Upper Drywell Spray Valve #2
		h) IF Torus Cooling has NOT been previously established, THEN ESTABLISH a loop flow of 4800 to 5000 GPM on FI-1040-11B and/or FI-1040-12B by slowly opening MO-1001-36B, Torus Cooling Valve. i) CLOSE MO-1001-18B, Pump Min Flow Valve. 105) WHEN time permits, VERIFY/ALIGN the RHR System in the Maximize Torus Cooling Mode
Emergency Depressurization – EOP-17		
	Any	106) Report torus bottom pressure continuing to rise.
Critical Task #3: Emergency Depressurize the RPV when torus bottom pressure cannot be maintained below the Pressure Suppression Pressure.		
	SRO	107) Determine that Torus Bottom Pressure cannot be maintained below the Pressure Suppression Pressure and that

Op Test No.: 2011	Scenario # 3	Event # 8, 9	Page 16 of 17
Event Description:	SRV Tail Pipe Leak -Torus Bottom Pressure exceeds the Pressure Suppression Pressure. Emergency Depressurize RHR Pumps "B" and "D" fail to auto start.		

Time	Position	Applicant's Actions or Behavior
		Emergency RPV Depressurization is required. 108) Enter EOP-17 **Procedure Caution** **RPV pressure below 300 psig with a high drywell pressure ECCS initiation may cause rapid injection from Core Spray and RHR pumps** 109) Verify that torus level is > 50 inches 110) Direct that all SRVs be opened
	BOP	111) Open all SRVs 112) Report all four SRVs are open
		Follow-up Actions
	RO	113) Maintain RPV level by increasing injection flow as required
	SRO/BOP	114) If containment spray secured to prevent uncontrolled injection from RHR, re-establish containment spray.
The scenario may be terminated at the discretion of the Lead Examiner OR when the RPV has been depressurized, RPV level stabilized and Torus Bottom Pressure is lowering.		
Emergency Classification: Site Area Emergency EAL 3.4.1.3: Torus bottom pressure cannot be maintained below the "Pressure Suppression Pressure" (PSP) EOP Figure 6.		

NRC Scenario 3 Turnover Sheet

Plant Status:

- Reactor Power: 90%
- Tech Spec required shutdown is in progress following a catastrophic failure of MO-1001-23A, RHR Loop A, Upper Drywell Spray Valve #1, which cannot be repaired within the specified LCO time due unavailability of replacement parts.
- Currently on step [3] (b) of PNPS 2.1.5 Section F, Controlled Shutdown Without Manual Scram
- Core flow: 57 Mlbm/hr
- Current rod position: Step 85, rod 18-43

Equipment Out Of Service:

- "A" APRM has a faulty power supply and is OOS and bypassed. Tracking LCO initiated. All other APRMs are operable.
- "D" RBCCW pump is OOS. All other RBCCW pumps are operable. Tracking LCO initiated.
- "A" Containment Spray Loop Inoperable. Day 6 of 7 day LCO 3.5.B.2

Directions to the Shift:

- Continue the plant shutdown IAW PNPS 2.1.5, Section F. Step [3] is in progress.

Op Test No.: 2011	Scenario # 5	Event # 1	Page 1 of 19
Event Description:	HPCI placed in Standby Lineup.		

Time	Position	Applicant's Actions or Behavior

IOS Instructions:

1. Initialize Simulator to IC 14
2. Insert Rod Sequence steps 86 and 85 to lower power to ~ 89%
3. Verify AGAFs
4. Start Lesson Plan NRC Scenario 5 and trigger Step 1, Initial Conditions. Step 2 is linked to step 1 and will automatically initiate. These steps will:
   a. Insert a trip of RBCCW pump D and fail APRM "A".
   b. Insert RH04, LPCI Injection Valve fails to open
   c. Generate a momentarily HPCI Isolation.
   d. Prevent the HPCI Steam Admission Valve – MO2301-3 from automatically opening.
5. After the Initial Condition Step has been triggered, Override the "HPCI Turbine Area Elev -17 Ft Temp Hi" indicating light on panel C921 to FALSE.
6. Bypass APRM, "A", reset ½ scram, place "D" RBCCW pump in PTL, and hang tags.
7. Verify that HPCI steam line pressure has decayed to zero before commencing scenario.
8. Verify that "B" CRD and "B" TBCCW pumps are in service.
9. "B" side cooling fans in service

	SRO	1) Brief plant status and direct HPCI be placed in a Standby Lineup.
	BOP	2) Refer to 2.2.125.1 RESET OF PRIMARY AND SECONDARY CONTAINMENT ISOLATIONS, Attachment 4
	BOP	**Procedure Note** **It is desirable to reset Channel A prior to resetting Channel B for verifying both channels tripped on the isolation signal.** 3) WHEN the cause of the isolation has been corrected, THEN: a) DEPRESS the PCIS GRP IV ISOL CHANNEL A reset push button on Panel C903 AND WATCH the white light go off. b) DEPRESS the PCIS GRP IV ISOL CHANNEL B reset push button on Panel C903 AND WATCH the white light go off. 4) The isolation is now reset. REFER TO PNPS 2.2.21 for restoring HPCI System to service. 5) WHENEVER HPCI System has been isolated from closure of the steam isolation valves, MO-2301-4 and/or MO-2301-5, FOLLOW this procedure for reopening the steam valves to avoid water hammer. a) VERIFY both MO-2301-4 and MO-2301-5 are CLOSED. b) OPEN MO-2301-5, Outboard Steam Isolation Valve. **Procedure CAUTION** **During the execution of the following step, excessive opening of MO-2301-4 without adequate steam line pressurization may result in a HPCI high steam supply flow**

Op Test No.: 2011	Scenario # 5	Event # 1	Page 2 of 19
Event Description:	HPCI placed in Standby Lineup.		

Time	Position	Applicant's Actions or Behavior
		condition that could initiate a PCIS Group IV Isolation (ESF actuation). Prior to repeating jog opening attempts, ensure sufficient time is provided to adequately monitor for a pressure response. Additionally, experience has shown that this evolution becomes increasingly sensitive at lower Reactor pressures. (PR99.9539) c) CRACK OPEN MO-2301-4, Inboard Steam Isolation Valve. d) OBSERVE HPCI steam line pressure at PI-2340-4 on Panel C903. e) ALLOW steam line pressure to slowly increase to Reactor pressure. f) FULLY OPEN MO-2301-4.
IOS Operator: When directed by Lead Examiner, proceed to next event.		

Op Test No.: 2011	Scenario # 5	Event # 2	Page 3 of 19
Event Description:	ATWS / RPT Level Transmitter Failure. Tech Spec Table 3.2.G		

Time	Position	Applicant's Actions or Behavior
IOS Instructions: 1. Trigger Step 3 of Lesson Plan, LT-263-120D Fails Upscale. Step inserts RX18, LT-120D fails upscale. 2. When asked to investigate report that the meter for LIS-263-121D is full upscale and its gross failure light is lit.		
	RO	*6)* Announce and respond to alarm Division Two Panel Trouble, C905L-B5 (*Examiner Note: Both of the below actions are done locally)* a) Check Division 2 trip units (Panel C2278) for gross failure or trip units out of file b) Check the Division 2 power supplies
	SRO	7) Refer to Tech Spec 3.2.G and associated Table 3.2.G and determine that ATWS Division Two is inoperable and that a 14 day Hot Shutdown LCO is required.
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.:	2011	Scenario #	5	Event #	3, 4	Page 4 of 19
Event Description:	Single MSIV Closure – PNPS 2.4.30 and 2.2.92 Power reduction to < 75%					

Time	Position	Applicant's Actions or Behavior
IOS Instructions: 1. Trigger step 4 of the Lesson Plan, MSIV Closure. This step overrides the MSIV Test pushbutton and then overrides the "B" MSIV Outboard control switch to the closed position.		
	RO	8) Announce and respond to alarm "MSIV NOT FULL OPEN" C905R-D2 9) Confirm that "B" Outboard MSIV is going closed by observing lowering steam flow in B main steam line.
	SRO	10) Enters PNPS 2.4.30, MSIV Closure
Applicable Subsequent Actions of PNPS 2.4.30 *(Examiner Note: There are no applicable immediate actions)*		
	SRO	11) IF MSIV closure results in THREE Main Steam Lines still in operation; AND A Reactor Scram has not occurred; AND Reactor power is above 75%; THEN REDUCE Reactor power to ≤ 75% power in accordance with PNPS 2.1.14 Sections 7.9, 7.10, and 7.11 as required.
	RO	12) Lower power to 75% by reducing Recirc Pump Speed to 43 Mlbm/hr. 13) If 75% cannot be obtained before reaching 43Mlm/hr insert steps of RPR as required to achieve 75% or as directed by SRO
	BOP	14) CHECK Process Radiation Monitors on Panels C910 and C902 for indications of fuel failure caused by power/pressure spiking. 15) CHECK power and pressure indications for peak values during the transient. 16) DETERMINE which MSIV(s) have closed. a) PLACE the MSIV control switches to "CLOSE" for those MSIVs which indicate closed. b) DETERMINE cause of the closure. 17) IF operation of the Main Turbine for longer than 15 minutes with one or more closed MSIVs is expected, THEN REFER TO PNPS 2.2.92, "Main Steam Line Isolation and Turbine Bypass Valves," Section 7.2 (Operation With One Or More MSIVs Closed and Main Steam To The Main Turbine).
Actions for Continued Operation with 3 Main Steam Lines		
	BOP	18) CLOSE/VERIFY CLOSED the following Main Steam Line Drain Valves:

Op Test No.: 2011	Scenario # 5	Event # 3, 4	Page 5 of 19
Event Description:	Single MSIV Closure – PNPS 2.4.30 and 2.2.92 Power reduction to < 75%		

Time	Position	Applicant's Actions or Behavior
		a) MO-220-1, MSIV DRNS INBD ISOL VLV b) MO-220-2, MSIV DRNS OUTBD ISOL VLV c) MO-220-4, MAIN STEAM LINE DRN TO CONDR 19) OPEN/VERIFY OPEN MO-220-3, MAIN STEAM LINE DRN VLV. **Procedure NOTE** **Main Steam Line low point drain temperature (TE-3604) is monitored on the Kaye temperature computer (TISU-8125) (Secondary Plant Performance Menu).** **Procedure CAUTION** **Fully opening the Main Steam Drain to the Condenser may affect Condenser vacuum. Closely monitor Condenser vacuum when opening MO-220-4 (MAIN STEAM LINE DRN TO CONDR).** 20) VERY SLOWLY POSITION the MO-220-4 (MAIN STEAM LINE DRN TO CONDR) valve to establish and maintain a Main Steam Line low point drain temperature (TE-3604) as close to BUT NOT GREATER THAN 520°F. [Calc M953] 21) CONTINUE TO OPERATE with MO-220-3 (MAIN STEAM LINE DRN VLV) OPEN AND MO-220-4 (MAIN STEAM LINE DRN TO CONDR) THROTTLED until the closed MSIV can be returned to service.
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 5	Event # 5	Page 6 of 19
Event Description:	CRD Flow Control Valve Fails Open – PNPS 2.4.11.1		

Time	Position	Applicant's Actions or Behavior
IOS Instructions: 1. Trigger step 5 of the Lesson Plan, CRD Flow Control Valve Fails Open. Step inserts RD01 to fail the CRD flow control valve full open. 2. When directed to shift flow control valves, trigger step 10 of the Lesson Plan, Shift CRD Flow Control Valves.		
	RO	22) Report and respond to alarm C905L-F5, Drive Filter Dp High a) Evaluate CRD system parameters and indications and determine that the CRD Flow Control Valve has failed open
	SRO	23) Enters PNPS 2.4.11.1 CRD System Malfunctions
Applicable Subsequent Actions of PNPS 2.4.11.1 *(Examiner Note: There are no applicable immediate actions)*		
	RO	24) Failure of in-service flow control valve (A or B) or E/P positioned: a) PLACE the CRD FLOW CONTROL controller on Panel C905 to "MANUAL" b) AND, using the potentiometer, POSITION the controller to full "CLOSED". 25) Direct operator at local flow control station to shift flow control valves
		26) Place standby flow control valve in service after receiving report that local actions have been completed. a) At Panel C905, SLOWLY RAISE CRD flow controller to a setpoint of 50 GPM; VERIFY the flow increase. b) At Panel C905, CHECK DRIVE WTR and COOLING WTR DIFF PRESS Indicators, dPI-340-4 and dPI-340-5, AND, IF needed, ADJUST pressures. c) RETURN flow controller (FIC-340-1) on Panel C905 to "AUTO". d) IF valve jams causing excessive flow, THEN ENSURE that cooling water does not cause rods to drift in AND THROTTLE the flow locally at the valve station. e) At Panel C905, CHECK DRIVE WTR and COOLING WTR DIFF PRESS Indicators,dPI-340-4 and dPI-340-5, AND ADJUST pressures by adjusting MO-302-8, DRIVE WTR PCV.
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.:	2011	Scenario #	5	Event #	6	Page 7 of 19
Event Description:	Loss of 4KV Bus A-5 – PNPS 2.4.A5, LOSS OF ELECTRICAL BUS A5					

Time	Position	Applicant's Actions or Behavior
IOS Instructions: 1. Trigger step 6 of Lesson Plan, Loss of A-5. Step inserts ED07, A5 bus failure. 2. When directed to cross tie RBCCW, wait an appropriate amount of time and then trigger step 7 of Lesson Plan, Cross Tie RBCCW. 3. If directed to investigate report that A5 is faulted and that the bus lockout has tripped.		
	BOP	27) Report and respond to alarm "A-5 LOCKOUT" C3LC-A1 a) Confirm that A5 is de-energized
	SRO	28) Enter and execute PNPS 2.4.A5
Applicable Immediate Actions of PNPS 2.4.A5		
	BOP	29) VERIFY STARTED OR START "B" TBCCW Pump. a) THROTTLE MO-3805 as necessary to provide cooling water to TBCCW E-122B heat exchanger. 30) CROSS CONNECT RBCCW loops in accordance with PNPS 2.4.42, "Loss of RBCCW".
Actions for Cross Connecting RBCCW (PNPS 2.4.42, Attachment 6)		
	BOP	31) PLACE/VERIFY sufficient RBCCW Pumps in service in the active loop. 32) SECURE any running RBCCW Pump(s) in the idle loop from Panel C1. 33) PLACE all three control switches for RBCCW Pumps in the idle loop to "PULL-TO-LOCK" at Panel C1. 34) Direct reactor building operator to cross connect RBCCW, "B" Loop supplying. (entails closing idle loop Surge Tank Outlet Valve, and opening suction and discharge cross connect valves) 35) For the idle RBCCW loop, PERFORM the following: a) OPEN/VERIFY OPEN MO-4083, HX B RBCCW BYP VLV. b) PLACE TIC-3836, LOOP A TEMP CONT, to "MANUAL" at Panel C1. c) FULLY OPEN the HEAT EXCH. OUTLET TEMP CONTROL valve for the idle loop. 36) MONITOR equipment temperatures to ensure they remain within operational limits. 37) MAINTAIN the RBCCW heat exchanger outlet temperature less than or equal to 80°F.
	SRO	38) ENTER appropriate LCO for RBCCW System inoperable (Tech Spec 3.5.B.3 – 24 Hr Cold S/D LCO due to cross-connect valves being open).
Applicable Subsequent Actions of PNPS 2.4.A5		

Op Test No.:	2011	Scenario #	5	Event #	6	Page 8 of 19
Event Description:	Loss of 4KV Bus A-5 – PNPS 2.4.A5, LOSS OF ELECTRICAL BUS A5					

Time	Position	Applicant's Actions or Behavior
	SRO	IF Drywell pressure approaches the Scram setpoint, THEN MANUALLY SCRAM the Reactor AND CONCURRENTLY EXECUTE PNPS 2.1.6, "Reactor Scram".
		Actions to Start the Standby CRD Pump IAW PNPS 2.4.4 39) Transfer CRD Flow Controller (FIC-340-1) to Manual and close the Flow Control Valve by rotating the manual potentiometer counterclockwise. 40) Verify the in service Flow Control valve is closed by observing the Green C905 valve position light for FLOW CONTROL VLV A 41) Start the standby CRD pump 42) When the CRD pump discharge pressure and pump amps stabilize, THEN balance the deviation meter on the CRD Flow Controller by slowly rotating the manual potentiometer clockwise while observing flow 43) When the deviation is in the "Green Band" on the CRD flow controller, THEN transferthe CRD flow controller to "AUTO"
Recirc Pump trip Actions IAW PNPS 2.4.17		
	RO	44) RESPOND to the "A" Recirc Pump trip in accordance with PNPS 2.4.17. **Procedure CAUTIONS** **If the Exclusion Region on the Pilgrim Single Loop Power/Flow Map is entered as a result of this transient, then Operators are required to take immediate actions in accordance with PNPS 2.1.14 Section 7.10 to exit the Exclusion Region.** **Increasing core flow by starting a tripped Recirculation Pump is an unacceptable method of exiting the Exclusion Region.** a) CLOSES MO-202-5A, PUMP DISCH VLV. b) Determine core flow i) Determine that reverse flow exists and that the reactor is operating in the Exclusion Region of the Single Loop Power to Flow Map c) Enter PNPS 2.4.165, Reactor Core Instability, AND PERFORM CONCURRENTLY. d) IF required to exit the Exclusion Region or be within the SLO analyzed limits on the Pilgrim Single Loop Power/Flow Map, THEN PERFORM the following: i) VERIFY/REDUCE the total calculated core flow is less

Op Test No.:	2011	Scenario #	5	Event #	6	Page 9 of 19
Event Description:	Loss of 4KV Bus A-5 – PNPS 2.4.A5, LOSS OF ELECTRICAL BUS A5					

Time	Position	Applicant's Actions or Behavior
		than 43 Mlb/hr. ii) INSERT control rods using the RPR array in accordance with the requirements of PNPS 2.1.14 Section 7.9 to exit the Exclusion Region AND be within the SLO analyzed area on the Pilgrim Single Loop Power/Flow Map. e) Continue on with remaining actions of Recirc Pump Trip procedure. i) Re-open MO-202-5A, PUMP DISCH VLV after five minutes.
	BOP	45) VERIFY Y1 is powered from B10 AND ENTER PNPS 5.3.7 for a momentary (or sustained) loss of Y1.
	SRO	46) RESPOND to the loss of Feedwater Heating in accordance with PNPS 2.4.150. a) When a feedwater temperature reduction of ≥ 5°F is observed, THEN REDUCE Reactor power in accordance with PNPS 2.1.14 Sections 7.10 and 7.11 until any of the following conditions exists: [NRC GL 94-02 (BWROG-94078)] b) Reactor power is 25% of rated thermal power below its pre-transient level. *(Examiner Note: 25% power reduction will be achieved via the Recirc Pump trip and the actions taken in response.)*
	BOP	**Procedure NOTE** **Steps below may be performed in any order at the discretion of the SM/CRS.** 47) FULLY OPEN RBCCW flow to all Drywell coolers at Panel C7. 48) START/VERIFY STARTED all "B" side Drywell coolers at Reactor Building HVAC Panel C61. 49) To ensure the availability of the Salt Service Water System: a) OPEN/VERIFY OPEN MO-3813, SSW XOVER Isolation Valve. b) CLOSE/VERIFY CLOSED MO-3808, SSW XOVER Isolation Valve. 50) INITIATE a full RBIS isolation by placing the Panel C7 RBIS TEST LOGIC/TRIP keylock switches for Channels A and B to "ISOLATE". a) AFTER the isolation, RETURN the switches to "STANDBY".
	SRO	51) MAXIMIZE portable ventilation to the Main Steam Tunnel. *(Examiner Note: This action should be directed to an equipment operator as the actions are done locally)* a) IF Main Steam Tunnel temperature approaches 160 degrees

Op Test No.: 2011	Scenario # 5	Event # 6	Page 10 of 19
Event Description:	Loss of 4KV Bus A-5 – PNPS 2.4.A5, LOSS OF ELECTRICAL BUS A5		

Time	Position	Applicant's Actions or Behavior
		F, THEN MANUALLY SCRAM the Reactor AND CONCURRENTLY EXECUTE PNPS 2.1.6, "Reactor Scram".
	BOP	52) SECURE all Reactor Building Supply and Exhaust fans at Reactor Building HVAC Panel C61 (Local Action) 53) VERIFY Bus B6 has transferred to B2.
	SRO	54) ENTER PNPS 5.3.18, "Loss of 120V AC Safeguard Buses Y3 and Y31", AND CONCURRENTLY EXECUTE with this Procedure. 55) ENTER PNPS 2.4.27, "Reactor Water Cleanup System Malfunctions", AND CONCURRENTLY EXECUTE with this Procedure.
		56) TRANSFER "A" 125V DC bus to backup charger in accordance with PNPS 2.2.14, "125V DC Battery Systems" (Local Action) 57) NOTIFY Maintenance of the existing status of 4160V AC Bus A5. 58) Initiate action to RESTORE feedwater heaters to service using Attachment 3 of PNPS 2.4.150.
	SRO	59) Once the plant is stabilized, review Technical Specifications and determine that multiple 24 hour cold shutdown LCOs exit. *(Examiner Note: The last page of this document lists the TS related equipment impacted by the loss of A5 and the associated LCOs. Multiple 24 hr LCOs exist due to the combination of equipment lost)*
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 5	Event # 7, 8	Page 11 of 19
Event Description:	Feed Line Break Inside the Drywell – EOP-01 and EOP-03 HPCI Steam Admission Valve MO-2301-3 Fails to Open – Manual Action required		

Time	Position	Applicant's Actions or Behavior
IOS Instructions: 1. Trigger step 8 of the Lesson Plan, Feed Line Break. This step inserts FW34, Feed line break ramped to a severity of 40% over an 18 minute period. PC01, Rx Coolant Leak, is also ramped to 2000 gpm over a 10 minute period.		
	Any	60) Report Rising Drywell Pressure and Temperature
	SRO	61) Direct that a manual scram be inserted when drywell pressure approaches 2.2 psig.
Applicable Immediate Actions of PNPS 2.1.6, Reactor Scram		
	RO	**Procedure NOTE** **While it is the intent of the Procedure to outline the many steps required following a Scram, the sequence suggested for steps may be altered to suit existing plant conditions.** 62) At Panel C905, DEPRESS both manual Reactor Scram push buttons. 63) PLACE Reactor Mode switch in "SHUTDOWN". 64) VERIFY AND ANNOUNCE the status of APRM downscales. 65) VERIFY all control rods are fully inserted. (*Evaluator Note: The simulator randomly selects a few control rods to go "beyond full-in" resulting in a loss of position indication. Plant Process computer may take up to 3 minutes before an "ALL RODS In" indication is received.)* 66) IF any control rod is NOT fully inserted, THEN INSERT control rods using methods detailed in PNPS 5.3.23, "Alternate Rod Insertion". 67) IF any control rod position cannot be determined AND the Reactor is shutdown, THEN EVALUATE "CALLRODS" EPIC indications AND DISPATCH an Operator to close 301-25, CRD Charging Water Supply Valve. 68) IF any control rod position cannot be determined AND the Reactor is shutdown, THEN SELECT each control rod not at position "00" AND ATTEMPT TO NOTCH INSERT the control rod to determine whether the control rod will settle at position "00". 69) In order to maintain availability of the Main Condenser, HPCI, and RCIC, PERFORM the following: a) CLOSE the Feedwater Regulating Valves and the Feedwater HP Block Valves (Panel C905): • FC-642A, FLOW CONTROL VLV A

Op Test No.: 2011	Scenario # 5	Event # 7, 8	Page 12 of 19
Event Description:	Feed Line Break Inside the Drywell – EOP-01 and EOP-03 HPCI Steam Admission Valve MO-2301-3 Fails to Open – Manual Action required		

Time	Position	Applicant's Actions or Behavior
		• FC-642B, FLOW CONTROL VLV B • MO-3479, 1ST PT HTR OUTLET BLOCK VALVE • MO-3480, 1ST PT HTR OUTLET BLOCK VALVE b) IF Reactor water level rises rapidly, THEN SECURE Reactor Feed Pumps as required. 70) Report when EOP-01, RPV Control low RPV Level entry condition (< +12 inches) is exceeded. (*Examiner Note: Initially the feed system will be able to maintain level)*
	SRO	71) Enter EOP-01, RPV Control and a) Direct entry into scram procedure. b) Direct pressure be controlled using available pressure control systems between 900 and 1050 psig (Use of the Main Condenser is expected) c) Direct that isolations and initiations be verified.
		HPCI Steam Admission Valve Fails to Open
	BOP	72) Verify isolations and initiations 73) Determine that all LP ECCS started and that the EDGs are running 74) Determine that HPCI is not injecting 75) Diagnose that the HPCI Steam Admission Valve MO-2301-3 did not open a) Manually OPEN MO-2301-3 b) Verify HPCI injection 76) Report status to SRO
	SRO	77) Direct level be controlled using available systems between +12 and +45 inches. (Use of the feed system is initially expected until the symptoms of the Feedline break become evident.)
	ANY	78) Report when drywell temperature exceeds 150 degrees and drywell pressure exceeds 2.2 psig
	SRO	79) Re-enter EOP-01 and enter EOP-03
		Initial EOP-03 Actions
	SRO	80) Direct that drywell cooling be maximized 81) Update crew the Caution 1 regarding RPV Level Instrumentation is applicable. 82) Before torus bottom pressure exceeds 16 psig, direct that torus sprays be initiated. 83) When operators become available direct that H2/O2 analyzers be

Op Test No.: 2011	Scenario # 5	Event # 7, 8	Page 13 of 19
Event Description:	Feed Line Break Inside the Drywell – EOP-01 and EOP-03 HPCI Steam Admission Valve MO-2301-3 Fails to Open – Manual Action required		

Time	Position	Applicant's Actions or Behavior
		placed in service.
	BOP	84) Initiate Torus Spray as follows: (*Examiner Note: Due to the loss of A5 only loop "B" is available for torus and drywell sprays. Also, initially only the LPCI initiation signal interlock will be required to open the containment cooling valves.)* **PROCEDURE NOTES** • **Torus Spray may be initiated before closing MO-1001-16A (B), RHR HX A (B) Bypass Valve.** • **5000 GPM on FI-1040-11A (B) and/or FI-1040-12A (B) is the maximum RHR loop flow in Torus Spray mode to allow for sufficient spray header pressure and flow.** • **Torus Spray is established with only one loop of RHR.** a) IF only the LPCI initiation signal is present, THEN PLACE the LPCI OVERRIDE switch to "MANUAL OVERRIDE". b) OPEN MO-1001-34BTorus Cooling/Spray Block Valve, c) START/VERIFY STARTED one RHR Pump. d) IF no pump discharge flow path exists, THEN OPEN MO-1001-18B, RHR Pumps Loop B Minimum Flow Valve, for the selected loop. e) OPEN MO-1001-37B Torus Spray Valve, in the RHR loop with the operating pump. f) SLOWLY OPEN MO-1001-36B Torus Cooling Valve, AND INCREASE flow to 4800 to 5000 GPM on FI-1040-11B and/or FI-1040-12B g) CLOSE MO-1001-18B Pump Min Flow Valve. 85) WHEN time permits, VERIFY/ALIGN the RHR System in the Maximize Torus Cooling mode
	BOP	86) Maximize drywell cooling as follows: **PROCEDURE NOTE** **The following three steps may be performed in any order**. a) START/VERIFY STARTED all available Drywell cooling fans on Panel C61. *(Examiner Note: This is a local panel)* b) FULLY OPEN all Drywell cooler RBCCW valves by rotating all pots on Panel C7 to the full clockwise position. c) MAXIMIZE RBCCW cooling in accordance with Attachment 1 of 5.3.35, TRANSIENT RESPONSE HARDCARDS FOR

Op Test No.:	2011	Scenario #	5	Event #	7, 8	Page 14 of 19

Event Description: Feed Line Break Inside the Drywell – EOP-01 and EOP-03
HPCI Steam Admission Valve MO-2301-3 Fails to Open – Manual Action required

Time	Position	Applicant's Actions or Behavior
		OPERATING CREWS, Attachment 12
	SRO	87) Monitor rising Torus bottom pressure and Drywell Temperature
Initial RPV Level Control Actions		
	RO	88) Report when level cannot be maintained above +12" using the feed system. a) Determine that a leak exists on the "A" Feedline (*Examiner Note: Indications of the feed line leak is rising flow on the "A" Feed Flow indicator as the flow control valves are opened without a corresponding increase in either RPV level or "B" Feed Flow. Additionally, Feedline pressure will indicate lower than RPV pressure on Feedwater Header Pressure Recorder PR-3495 on panel C-1)*
	SRO	89) Direct that level control be shifted to HPCI
	BOP	90) Inject with HPCI and maintain level in prescribed band *(Examiner Note: This scenario guide is written assuming that the BOP will recognize the Aux Oil pump failure upon initial entry into EOP-01. If not recognized then it should be diagnosed at this point)*
	SRO	91) Determine that an aggressive cool down should be performed IAW PNPS 5.3.25.2, OPERATIONS EMERGENCY AND TRANSIENT RESPONSE STRATEGIES, Attachment 2 92) Direct a new reactor pressure band of 500 to 1050 psig 93) Expand the water level control band to -20 to +45" band.
	BOP	94) Open one relief valve or bypass valve to augment pressure reduction 95) Stabilize pressure between 450 to 550 psig
	BOP	96) Secures feedwater injection when it becomes evident that the feed system is not injecting.
Critical Task #1: Initiate drywell sprays when torus bottom pressure exceeds 16psig		
	ANY	97) Report when torus bottom pressure exceeds 16 psig.
	SRO	98) Verify that Torus Level is < 180 inches 99) Verify that drywell temperature and pressure are within the Drywell Spray Initiation Limit 100) Direct that Recirc pumps be tripped 101) Direct that Drywell Sprays be initiated
	BOP	102) Sprays the drywell as follows: **PROCEDURE NOTES**

Op Test No.: 2011	Scenario # 5	Event # 7, 8	Page 15 of 19
Event Description:	Feed Line Break Inside the Drywell – EOP-01 and EOP-03 HPCI Steam Admission Valve MO-2301-3 Fails to Open – Manual Action required		

Time	Position	Applicant's Actions or Behavior
		• **Drywell Spray may be initiated before closing MO-1001-16A (B), RHR HX A (B) Bypass Valve.** • **5000 GPM on FI-1040-11A (B) and FI-1040-12A (B) is the maximum RHR loop flow in Drywell Spray mode to allow for sufficient spray header pressure and flow.** • **If available, the Drywell is to be sprayed with both loops of RHR.**
	BOP	a) IF running, THEN TRIP the Reactor Recirc Pump(s) by opening the associated pump drive motor breaker control switch(es) at Panel C904. b) IF it is necessary to override LPCI initiation signals, THEN PERFORM the following: c) IF only the LPCI initiation signal is present, THEN PLACE the LPCI OVERRIDE switch to "MANUAL OVERRIDE".
	BOP	d) OPEN/VERIFY OPEN MO-1001-34B, Torus Cooling/Spray Block Vlv. e) START/VERIFY STARTED one RHR Pump in each loop. f) IF no pump discharge flow path exists, THEN OPEN MO-1001-18B, RHR Pumps Loop B Minimum Flow Valve. g) FULLY OPEN both Drywell Spray valves in RHR loop B: i) MO-1001-23B, RHR Loop B Upper Drywell Spray Valve #1 AND ii) MO-1001-26B, RHR Loop B Upper Drywell Spray Valve #2
	BOP	h) IF Torus Cooling has NOT been previously established, THEN ESTABLISH a loop flow of 4800 to 5000 GPM on FI-1040-11B and/or FI-1040-12B by slowly opening MO-1001-36B, Torus Cooling Valve. i) CLOSE MO-1001-18B, Pump Min Flow Valve. 103) WHEN time permits, VERIFY/ALIGN the RHR System in the Maximize Torus Cooling Mode
IOS Operator: When directed by Lead Examiner, proceed to next event		

Op Test No.: 2011	Scenario # 5	Event # 9, 10	Page 16 of 19
Event Description:	HPCI Turbine Trip –Level lowers to below the Top of The Active (TAF) Fuel – EOP-17, Emergency RPV Depressurization. LPCI Injection Valve Fails to Open – Manual Operator Action Required.		

Time	Position	Applicant's Actions or Behavior
IOS Instructions: 1. Trigger step 9 of the Lesson Plan, HPCI Trip. Step inserts HP02, HPCI Turbine trip and increase PC01, Reactor Coolant Leak to 2500 gpm. 2. If requested to investigate, report that there is a large HPCI oil leak. 3. Role Play as Equipment Operator as required to align CRD for emergency makeup.		
	BOP/RO	104) Report and respond to alarm C903-A2, HPCI Turbine Trip a) Dispatch operator to investigate alarm C903C-E1, HPCI Turbine Brg Oil Press Low.
	Any	105) Report lowering level
	SRO	106) Establish successively lower level bands of control as level continues to fall 107) Before RPV level lowers to -45 inches, direct ADS be inhibited
	BOP	108) Inhibit ADS 109) Report when MSIVs close at -46 inches
	SRO	110) Shift pressure control to SRVs *111)* Shift level control to the fuel zone level instruments (*Examiner Note: The PNPS Fuel Zone Instruments are calibrated for accident conditions and read significantly lower than actual level with the RPV at pressure. Conversion charts are used to correlate indicated level to actual level)* 112) Direct that "B" CRD be aligned for emergency makeup 113) Direct "B" SBLC pump be started
	RO	114) Inject with SBLC 115) Aligns CRD for emergency makeup IAW PNPS 2.2.87, CRD System
	SRO	116) As level continues to lower direct that available low pressure ECCS be aligned for injection.
	BOP	117) Aligns available low pressure ECCS for injection
Critical Task #2: Emergency Depressurize the RPV when RPV cannot be restored and maintained above -150 inches. *(Examiner Note: At a pressure band of 450 to 550 psig, TAF will be reached when the Fuel Zone Level Indicators indicate -155 inches. Minimum Steam Cooling Water Level will be reached when indicators read -176 inches.)*		
	Any	118) Report when level drops below TAF.
	SRO	119) When level cannot be restored and maintained >-150 inches (actual) enter EOP-17, Emergency RPV Depressurization

Op Test No.: 2011	Scenario # 5	Event # 9, 10	Page 17 of 19

Event Description: HPCI Turbine Trip –Level lowers to below the Top of The Active (TAF) Fuel – EOP-17, Emergency RPV Depressurization.
LPCI Injection Valve Fails to Open – Manual Operator Action Required.

Time	Position	Applicant's Actions or Behavior
		Procedure Caution **RPV pressure below 300 psig with a high drywell pressure ECCS initiation may cause rapid injection from Core Spray and RHR pumps**
	SRO	120) Verify torus level is > 50 inches 121) Direct that all SRVs be opened
	BOP	122) Open all SRVs 123) Report that all SRVs have opened 124) Monitor for low pressure injection *(Examiner Note: Low pressure ECCS injection valves start to open at 400 psig. However the shutoff head of the pumps is ~ 300 psig)* 125) Diagnose that LPCI Injection Valve MO-29 failed to open when pressure dropped below 400 psig. 126) Manually open LPCI injection Valve.
		Follow-up Actions
	SRO	127) Direct that level be restored to the normal range 128) Direct that H2O2 analyzers be placed in service as operators become available 129) Direct that Containment cooling (Torus spray, drywell spray) be re-established *(Examiner Note The containment cooling valves closed when level dropped below the 2/3rds core coverage interlock unless the interlock was previously over ridden)*
	BOP/RO	130) Restore level to the normal range 131) Re-establish containment cooling 132) Place H2O2 analyzers in service as time permits
The scenario may be terminated at the discretion of the Lead Examiner OR when the RPV has been depressurized, RPV level stabilized and Containment Parameters are lowering		
Emergency Classification: Alert EAL 3.4.1.2: Primary containment pressure cannot be maintained < 2.2 psig		

Inoperable Equipment Following Loss of 4KV Bus A5

REQUIRED TECHNICAL SPECIFICATIONS (TS) ENTRIES

1. Facility Operating License - Single Loop Operation.
2. TS 3.2.F - C171 is de-energized.
3. TS 3.4.B - SLC subsystem A inop - A SLC Pump is de-energized.
4. TS 3.5.A.2.a - Core Spray A inop – A CS Pump and MOVs de-energized.
5. TS 3.5.A.4 - LPCI inop – A and C RHR pumps de-energized..
6. TS 3.5.B.1.A - RHR Torus Cooling - containment cooling valves de-energized.
7. TS 3.5.B.2.A - RHR Containment Spray - containment cooling valves de-energized.
8. TS 3.5.B.3.C - RBCCW inop - RBCCW cross-tied.
9. TS 3.5.B.4.A - A SSW loop inop - A and B SSW Pumps have no power.
10. • TS 3.5.C.2 - HPCI inop - MO-2301-4 and MO-2301-33 have no power.
11. • TS 3.5.D.2 - RCIC inop - Quad coolers are de-energized.
12. • TS 3.5.F - A EDG inop - Aux Panel (C103A) and ventilation sup/exh fans de-energized.
13. • TS 3.6.C.2.b.1 - Drywell sump monitoring system, cannot open AO-7011A and AO-7017A.
14. • TS 3.6.C.2.b.2 - Gaseous/Particualte monitoring, both C19's inop (no sample path)

Procedure NOTE from 2.4.B.1

When implementing the Primary Containment LCO in accordance with Technical Specifications Section 3.7.A.2.a.4 for the HPCI MO-2301-4 valve, DO NOT isolate MO-2301-5; refer to Technical Specifications Section 3.7.A.5 and enter the 24-hour LCO for Primary Containment inoperability.

15. • TS 3.7.A.2.a.4 - PCIS - MO-2301-4 and MO-2301-33 have no power.
16. • TS 3.7.B.1.c - A SGTS inop - A SGTS exhaust fan is de-energized.
17. • TS 3.7.B.2.c - A CRHEAFS inop - A CHREAFS supply fan is de-energized.
18. • TS 4.7.A.5 - C41 inop.

NRC Scenario 5 Turnover Sheet

Plant Status:

- Reactor Power: 90% Plant Status: Reactor power at 90% following control rod exercising
- HPCI is isolated due to I&C error during surveillance last shift and is currently INOP
- Core flow is 57 Mlbm/hr
- Current rod position: Sequence A-1, Step 85, Rod 18-43

Equipment Out Of Service:

- "A" APRM has a faulty power supply and is OOS and bypassed. Tracking LCO initiated. All other APRMs are operable.
- "D" RBCCW pump is OOS. All other RBCCW pumps are operable. Tracking LCO initiated.
- HPCI

Directions to the Shift:

- Un-isolate HPCI IAW 2.2.125.1, RESET OF PRIMARY AND SECONDARY CONTAINMENT ISOLATIONS
- Restore power to 100%.