Facility: CPNPP Units 1 & 2		Date of Examination:	03/29/10
Examination Level	RO ☐	Operating Test Number:	NRC

Administrative Topic (see Note)	Type Code*	Describe Activity to be Performed
Conduct of Operations	M, R	2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9) JPM: Perform a Manual Quadrant Power Tilt Ratio Calculation (RO1803A).
Conduct of Operations	M, R	2.1.43 Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc. (4.1) JPM: Perform a Power Change Worksheet Calculation (RO1302).
Equipment Control	M, R	2.2.6 Knowledge of the process for making changes to procedures. (3.0) JPM: Initiate a Procedure Change (RO5004).
Radiation Control	D, S	2.3.13 Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (3.4) JPM: Perform Actions for an Accident Involving Spent Fuel (RO4504).
Emergency Plan		

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

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

RA1 The candidate will perform a manual Quadrant Power Tilt Ratio calculation per OPT-302, Calculating Power Tilt Ratio, and determine whether Acceptance Criteria are met. The critical steps include recording data, accurately performing calculations and applying Acceptance Criteria. This is a modified bank JPM.

RA2 The candidate will perform a Power Change Calculation Worksheet per IPO-003A, Power Operations, Attachment 3, Power Change Worksheet, for a Unit downpower. The critical steps include making reactivity determinations based on plant conditions. This is a modified bank JPM.

RA3 The candidate will initiate a Procedure Change Notice per STA-202, Procedure Change Notice for a mislabeled step in ABN-501, Station Service Water System Malfunction. The critical steps include proper identification of the required level of review, proper form completion and correctly performing the mark-up of the affected page. This is a modified bank JPM.

RA4 The candidate will implement radiological emergency actions per ABN-908, Fuel Handling Accident, for an accident involving spent fuel in the Fuel Handling Building. The critical steps include initiating local evacuation, Site notification, and ensuring proper ventilation alignment. This is a bank JPM.

Facility: CPNPP Units 1 and 2		Date of Examination:	03/29/10
Examination Level	SRO ☐	Operating Test Number:	NRC

Administrative Topic (see Note)	Type Code*	Describe Activity to be Performed
Conduct of Operations	M, R	2.1.1 Knowledge of conduct of operations requirements. (4.2) JPM: Determine Technical Specification and Event Reportability (SO1005).
Conduct of Operations	D, R	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. (4.4) JPM: Manually Perform Critical Safety Function Status Checks (SO1135).
Equipment Control	N, R	2.2.14 Knowledge of the process for controlling equipment configuration or status. (4.3) JPM: Determine Fire Compensatory Measures for an Emergent Condition (New).
Radiation Control	M, R	2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions. (3.7) JPM: Select Personnel for Emergency Exposure (SO1142).
Emergency Plan	M, R	2.4.44 Knowledge of emergency plan protective action recommendations. (4.4) JPM: Determine Protective Action Requirements (SO1136).

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

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

SA1 The applicant will identify impacted Technical Specification Limiting Conditions for Operations and determine Event Reportability per STA-501, Non-Routine Reporting and CPNPP Technical Specifications. The critical steps include identifying the Technical Specification and determining the oral and written Reporting Requirements. This is a modified bank JPM.

SA2 The applicant will manually determine Critical Safety Function Status during a LOCA scenario. The critical tasks include accurately determining the status for each Critical Safety Function. This is a bank JPM.

SA3 The applicant will evaluate a Fire Protection Impairment per STA-738, Fire Protection Systems/Equipment Impairments. The critical steps are to determine Fire Watch implementation and other Compensatory Measures. This is a new JPM.

SA4 The applicant will be required to choose a volunteer for an Emergency Exposure per EPP-305, Emergency Exposure Guidelines and Personnel Dosimetry. The critical steps require the applicant to choose the appropriate volunteer for a lifesaving activity. This is a modified bank JPM.

SA5 The applicant will determine Protective Actions per EPP-304, Protective Action Recommendations. The critical steps include determining the proper Protective Actions, Pasquill Stability Class, and Zones to be evacuated or sheltered. This is a modified bank JPM.

Facility: CPNPP JPM # RO NRC RA1 Task #RO1803B K/A#2.1.43 4.1 / 4.3

Title: Perform a Manual Quadrant Power Tilt Ratio Calculation

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is operating at a steady-state condition of 70% power for 6 days following a failure of Power Range Channel NI-41.
- Rod Control is in MANUAL with Control Bank D at 200 steps and all other rods at the FOP of 228 steps.
- The Reactor Makeup System is aligned for AUTO operation with VCT level stable at 56%.
- NIS Power Range Meters and Power Range Detector Current Meters currently read:

Channel	Meter	Upper Detector (μA)	Lower Detector (μA)
NI-41	N/A	N/A	N/A
NI-42	69.6%	134.8	126.8
NI-43	70.8%	159.3	142.3
NI-44	68.9%	144.6	139.5

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- CALCULATE a Quadrant Power Tilt Ratio per OPT-302, Calculating Power Tilt Ratio through Step 8.13.
- RECORD data on OPT-302-1, Quadrant Power Tilt Ratio Data Sheet.
- DOCUMENT Acceptance Criteria status for each Upper and Lower Power Range Instrument.
- If required, DOCUMENT any notifications in the Comments Section.

Task Standard: Perform a Manual Quadrant Power Tilt Ratio Calculation for OPERABLE Nuclear Instruments and identify Acceptance Criteria per OPT-302 and OPT-302-1.

Required Materials: OPT-302, Calculating Power Tilt Ratio, Rev. 10.
OPT-302-1, Quadrant Power Tilt Ratio Data Sheet, Rev 7.
NUC-203-8, Normalized Power Range Excore Detector Currents.

Validation Time: 25 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **OPT-302, Calculating Power Tilt Ratio.**
- **OPT-302-1, Quadrant Power Tilt Ratio Data Sheet.**
- **NUC-203-8, Normalized Power Range Excore Detector Currents.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Perform Step: 1	Verify Prerequisites in 6.0 are satisfied.
Standard:	DETERMINE Prerequisites in 6.0 are satisfied.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2	WHEN operating with an inoperable Power Range channel AND Reactor Power ≤ 75% RTP, THEN the three operable channels shall be used for calculations to determine the QPTR. • Exclusion of the inoperable channel from data collection and calculations shall be indicated by writing "INOP" in all spaces which require data or calculation, for the inoperable channel. • The inoperable channel should also be noted in the DISCREPANCIES / COMMENTS Section.
Standard:	DETERMINE PR NI-41 is INOPERABLE and RECORD the following: • ENTER INOP in all spaces for NI-41 requiring data or calculation. • ENTER NI-41 INOP in DISCREPANCIES / COMMENTS Section.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	Record the following information onto Form OPT-302-1: • Unit, Cycle, Date, and Time,
Standard:	DETERMINE Unit, Cycle, Date, and Time already recorded.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4	Record the following information onto Form OPT-302-1: • Power Range NIS power level for each channel (on NIS Panel).
Standard:	RECORD indication for NI-41, NI-42, NI-43, and NI-44 onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5	Record the following information onto Form OPT-302-1: • Control rod bank positions from the step counters.
Standard:	RECORD Control rod bank positions from the Step Counters onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6	Record the following information onto Form OPT-302-1: • DETERMINE the average of the Power Range NIS Power levels recorded in Step 8.3.2.
Standard:	CALCULATE average of operable NIS channels as 69.8 ±0.1% and RECORD onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7	Read detector currents from DETECTOR A&B DETECTOR CURRENT for each of the power range channels N-41 through N-44.
Standard:	RECORD upper and lower detector currents for NI-41, NI-42, NI-43, and NI-44 onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**NUC-203-8, Normalized Power Range Excore Detector Currents is included in the handout.**
Perform Step: 8	Record 120% Power Normalized Excore Upper (Top) and Lower (Bottom) Detector Currents from NUC-203-8, NORMALIZED POWER RANGE EXCORE DETECTOR CURRENTS located in "NUC FORMS" section of the Nuclear Design Report (NDR) for the current cycle.
Standard:	RECORD 120% Power Normalized Excore Upper (Top) and Lower (Bottom) Detector Currents from NUC-203-8 for Cycle 14 onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9√	Calculate the upper and lower calibrated outputs for each channel by dividing each reading by its associated 120% power normalized current and record those values.
Standard:	CALCULATE and RECORD upper and lower calibrated outputs for NI-41, NI-42, NI-43 and NI-44 onto Form OPT-302-1: • NI-41 Upper INOP • NI-41 Lower INOP • NI-42 Upper 134.8 / 237.51 = 0.568 • NI-42 Lower 126.8 / 216.79 = 0.585 • NI-43 Upper 159.3 / 199.63 = 0.798 • NI-43 Lower 142.3 / 193.55 = 0.735 • NI-44 Upper 144.6 / 213.09 = 0.679 • NI-44 Lower 139.5 / 206.44 = 0.676
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10	Calculate the sum of all the upper detector calibrated outputs.
Standard:	CALCULATE and RECORD the sum of upper detector calibrated outputs onto Form OPT-302-1: • 0.568 + 0.798 + 0.679 = 2.045 ± 0.02.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11	Determine the average upper detector calibrated output from the sum calculated in Step 8.7 above.
Standard:	CALCULATE and RECORD average upper detector output onto Form OPT-302-1: • 2.045 ± 0.015 / 3 = 0.682 ± 0.005.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Step is failed if calculated NI-43 upper detector Actual Power Tilt Ratio is ≤ 1.02 or if N-42 or N-44 are > 1.02.**
Perform Step: 12√	Determine the Actual Power Tilt Ratios by dividing each upper detector calibrated output by the average of the upper detector calibrated outputs. Record each detector's Actual Power Tilt Ratio.
Standard:	CALCULATE and RECORD actual upper tilt ratio onto Form OPT-302-1: • NI-41 INOP • NI-42 0.568 / 0.682 = 0.833 • NI-43 0.798 / 0.682 = 1.170 • NI-44 0.679 / 0.682 = 0.996
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13	Calculate the sum of all the lower detector calibrated outputs.
Standard:	CALCULATE and RECORD the sum of lower detector calibrated outputs onto Form OPT-302-1: • 0.585 + 0.735 + 0.676 = 1.996 ± 0.015.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14	Determine the average lower detector calibrated output from the sum calculated in 8.10 above.
Standard:	CALCULATE and RECORD average upper detector output onto Form OPT-302-1: • 1.996 ± 0.015 / 3 = 0.665 ± 0.005.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Step is failed if calculated NI-43 lower detector Actual Power Tilt Ratio is less than or equal to 1.02.**
Perform Step: 15√	Determine the Actual Power Tilt Ratios by dividing each lower detector calibrated output by the average of the lower detector calibrated outputs. Record each detector's Actual Power Tilt Ratio.
Standard:	CALCULATE and RECORD actual lower tilt ratio onto Form OPT-302-1: • NI-41 INOP • NI-42 0.585 / 0.665 = 0.879 • NI-43 0.735 / 0.665 = 1.105 • NI-44 0.676 / 0.665 = 1.016
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 16√	Verify the Power Tilt Ratio for each detector is LESS THAN OR EQUAL TO 1.02
Standard:	RECORD Acceptance Criteria status for each upper and lower Power Range detector: • NI-41 Upper INOP • NI-41 Lower INOP • NI-42 Upper YES • NI-42 Lower YES • NI-43 Upper NO • NI-43 Lower NO • NI-44 Upper YES • NI-44 Lower YES
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 17	IF any power tilt ratio exceeds 1.02, THEN immediately notify the Shift Manager AND reference Section 5.2.
Standard:	DOCUMENT notification of the Shift Manager in the Comments Section of OPT-302-1
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **Unit 1 is operating at a steady-state condition of 70% power for 6 days following a failure of Power Range Channel NI-41.**
- **Rod Control is in MANUAL with Control Bank D at 200 steps and all other rods at the FOP of 228 steps.**
- **The Reactor Makeup System is aligned for AUTO operation with VCT level stable at 56%.**
- **NIS Power Range Meters and Power Range Detector Current Meters currently read:**

Channel	Meter	Upper Detector (µA)	Lower Detector (µA)
NI-41	N/A	N/A	N/A
NI-42	69.6%	134.8	126.8
NI-43	70.8%	159.3	142.3
NI-44	68.9%	144.6	139.5

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **CALCULATE a Quadrant Power Tilt Ratio per OPT-302, Calculating Power Tilt Ratio through Step 8.13.**
- **RECORD data on OPT-302-1, Quadrant Power Tilt Ratio Data Sheet.**
- **DOCUMENT Acceptance Criteria status for each Upper and Lower Power Range Instrument.**
- **If required, DOCUMENT any notifications in the Comments Section.**

Facility: CPNPP JPM # RO NRC RA2 Task #RO1302A K/A#2.1.23 4.3 / 4.4

Title: Perform Power Change Worksheet Calculation

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 has been operating at 100% power for several weeks.
- A power ramp to 50% is planned over the next 5 hours.
- It is expected that power will be maintained at 50% for several days.
- Current rod height is Control Bank D at 220 steps.
- Desired rod height at 50% power is Control Bank D at 100 steps.
- Current boron concentration is 800 ppm.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- DETERMINE boron / dilution required at equilibrium 50% power using IPO-003A, Power Operations, Attachment 3, Power Change Worksheet, Step 1, Power Change Thumb Rules.
- DOCUMENT all calculations made on Attachment 3, Step 6.
- Gallons of Boric Acid / Dilution Water Required _____

Task Standard: Calculate the Power Defect, Rod Worth, Xenon Worth, Change in Boron concentration and Boration / Dilution quantity per IPO-003A, Attachment 3.

Required Materials: IPO-003A, Power Operations, Rev. 27, PCN 6.

Validation Time: 20 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **IPO-003A, Power Operations.**
  - **Attachment 3, Power Change Worksheet.**

√ - Check Mark Denotes Critical Step

START TIME:	

Perform Step: 1√	Determine reactivity change for power defect.
Standard:	CALCULATE reactivity change for power defect and RECORD on Attachment 3, Step 6 • 50% change in power x 15 pcm/% = **+ 750 pcm**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Determine reactivity change for rod position change.
Standard:	CALCULATE reactivity change for change in rod position and RECORD on Attachment 3, Step 6 • 120 step change in rod height x 5 pcm/step = **- 600 pcm**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Determine reactivity change for change in equilibrium xenon.
Standard:	CALCULATE reactivity change for change in equilibrium xenon and RECORD on Attachment 3, Step 6 • 50% change in power x 13 pcm/% = **+ 650 pcm**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4	Determine total reactivity change for power defect, change in rod position, and change in equilibrium xenon.
Standard:	CALCULATE total reactivity change • (+750 pcm) + (-600 pcm) + (+650 pcm) = **+800 pcm**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√	Determine required change in boron concentration to compensate for Power Defect, Rod Defect, Xenon changes.
Standard:	CALCULATE required change in boron concentration and RECORD on Attachment 3, Step 6 • (800 pcm / 8 pcm/ppm) = **100 ppm**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6√	Determine required boration.
Standard:	CALCULATE required boration and RECORD on JPM Cue Sheet: • 100 ppm x 10 gallons/ppm = **1000 gallons.**
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions:

Given the following conditions:

- **Unit 1 has been operating at 100% power for several weeks.**
- **A power ramp to 50% is planned over the next 5 hours.**
- **It is expected that power will be maintained at 50% for several days.**
- **Current rod height is Control Bank D at 220 steps.**
- **Desired rod height at 50% power is Control Bank D at 100 steps.**
- **Current boron concentration is 800 ppm.**

Initiating Cue:

The Unit Supervisor directs you to PERFORM the following:

- **DETERMINE boron / dilution required at equilibrium 50% power using IPO-003A, Power Operations, Attachment 3, Power Change Worksheet, Step 1, Power Change Thumb Rules.**
- **DOCUMENT all calculations made on Attachment 3, Step 6.**
- **Gallons of Boric Acid / Dilution Water Required _____**

Facility: CPNPP JPM # RO NRC RA3 Task #RO1003A K/A #2.2.1 4.5 / 4.4

Title: Perform a 1/M Plot and Predict Critical Conditions

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is performing a Reactor Startup per IPO-002A, Plant Startup from Hot Standby.
- Boron is at the Estimated Critical Boron Concentration of 1232 ppm.
- Shutdown Control Rod Banks are fully withdrawn.
- Critical Rod Height is predicted to be CBD at 86 steps.
- The +500 PCM Rod position is CBD at 206 steps.
- The Full Out Position (FOP) is 225 steps.
- CBA Rods have been withdrawn four (4) times in increments of 50 steps.
- The Unit Supervisor wants to re-perform the Inverse Count Rate Ratio Calculation and re-plot the points on a 1/M Data Sheet to re-verify Predicted Critical Rod Height.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- DETERMINE the Inverse Count Rate Ratio Calculation (ICRR) for the readings shown on IPO-002A, Plant Startup from Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation.
- LOG the ICRR on Attachment 2 and PLOT the points on the 1/M Data Sheet.
- LOG the Predicted Critical Rod Height for each 50 step Control Bank A withdrawal up to 200 steps on the 1/M Data Sheet.

Task Standard: Calculate the Inverse Count Rate, perform a 1/M Plot using provided data, and Determine Critical Rod Height per IPO-002A.

Required Materials: IPO-002A, Plant Startup from Hot Standby, Rev. 20, PCN-9.
OPT-308-1, Completed Estimated Critical Condition.
Straight edge or ruler.

Validation Time: 15 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **IPO-002A, Plant Startup from Hot Standby.**
  - **COMPLETE Attachment 2 though four (4) sets of data.**
- **COMPLETED OPT-308-1, Estimated Critical Condition.**
- **Straight edge or ruler.**

√ - Check Mark Denotes Critical Step

START TIME:	

Perform Step: 1√	Calculate Inverse Count Rate Ratio calculation for Control Bank A at 50 steps and plot on 1/M Data Sheet.
Standard:	CALCULATE Inverse Count Rate Ratio for Control Bank A at 50 steps and PLOT on 1/M Data Sheet: • **ICRR** = 1/M = 50/52 = **0.96 ± 0.01** • PLOT points for CBA @ 0 steps and CBA @ 50 steps. • DRAW a line from 1.00 to 0.96 that INTERSECTS with CBD @ > 225 steps. • LOG an Estimated Critical Condition with **CBD @ > 225 steps or FOP**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Calculate Inverse Count Rate Ratio calculation for Control Bank A at 100 steps and plot on 1/M Data Sheet.
Standard:	CALCULATE Inverse Count Rate Ratio for Control Bank A at 100 steps and PLOT on 1/M Data Sheet: • **ICRR** = 1/M = 50/55 = **0.91 ± 0.01** • PLOT points for CBA @ 50 steps and CBA @ 100 steps. • DRAW a line from 0.96 to 0.91 that INTERSECTS with CBD @ > 225 steps. • LOG an Estimated Critical Condition with **CBD @ > 225 steps or FOP**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Calculate Inverse Count Rate Ratio calculation for Control Bank A at 150 steps and plot on 1/M Data Sheet.
Standard:	CALCULATE Inverse Count Rate Ratio for Control Bank A at 150 steps and PLOT on 1/M Data Sheet: • **ICRR** = 1/M = 50/59 = **0.85 ± 0.01** • PLOT points for CBA @ 100 steps and CBA @ 150 steps. • DRAW a line from 0.91 to 0.85 that INTERSECTS with CBD @ > 225 steps. • LOG an Estimated Critical Condition with **CBD @ > 225 steps or FOP**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Calculate Inverse Count Rate Ratio calculation for Control Bank A at 200 steps and plot on 1/M Data Sheet.
Standard:	CALCULATE Inverse Count Rate Ratio for Control Bank A at 200 steps and PLOT on 1/M Data Sheet: • **ICRR** = 1/M = 50/63 = **0.79 ± 0.01** • PLOT points for CBA @ 150 steps and CBA @ 200 steps. • DRAW a line from 0.85 to 0.79 that INTERSECTS with CBD @ > 225 steps. • LOG an Estimated Critical Condition with **CBD @ > 225 steps or FOP**.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **Unit 1 is performing a Reactor Startup per IPO-002A, Plant Startup from Hot Standby.**
- **Boron is at the Estimated Critical Boron Concentration of 1232 ppm.**
- **Shutdown Control Rod Banks are fully withdrawn.**
- **Critical Rod Height is predicted to be CBD at 86 steps.**
- **The +500 PCM Rod position is CBD at 206 steps.**
- **The Full Out Position (FOP) is 225 steps.**
- **CBA Rods have been withdrawn four (4) times in increments of 50 steps.**
- **The Unit Supervisor wants to re-perform the Inverse Count Rate Ratio Calculation and re-plot the points on a 1/M Data Sheet to re-verify Predicted Critical Rod Height.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **DETERMINE the Inverse Count Rate Ratio Calculation (ICRR) for the readings shown on IPO-002A, Plant Startup from Hot Standby, Attachment 2, Inverse Count Rate Ratio Calculation.**
- **LOG the ICRR on Attachment 2 and PLOT the points on the 1/M Data Sheet.**
- **LOG the Predicted Critical Rod Height for each 50 step Control Bank A withdrawal up to 200 steps on the 1/M Data Sheet.**

Facility: CPNPP JPM # RO NRC RA4 Task #RO4504 K/A #2.3.13 3.4 / 3.8

Title: Perform Actions for an Accident Involving Spent Fuel at the Spent Fuel Pool

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Spent fuel re-racking is in progress in Spent Fuel Pool X-01.
- The following alarms were just received on PC-11, Digital Radiation Monitoring System:
  - X-RE-6274, SFP-003 LRAM SFP 1 E. WALL.
  - X-RE-5700, FBV-088 FB VENT EXH.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- IMPLEMENT the actions of ABN-908, Fuel Handling Accident.
- The Shift Manager has been NOTIFIED.

Task Standard: Locate and correctly perform Critical Steps of ABN-908.

Required Materials: ABN-908, Fuel Handling Accident, Rev. 4, PCN-4.

Validation Time: 5 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to any MODE 1 Initial Condition and then ENSURE the following:

- **INSERT malfunction RM02D3 at 1E6, Area Radiation Monitor failure X-RE-6274/SFP003 into high alarm.**
- **INSERT malfunction RM03V at 1E6, Process Radiation Monitor failure X-RE-5700/FBV088 into high alarm.**
- **ENSURE both Unit 1 Spent Fuel Pool Exhaust Fans 33 and 34 are OFF.**

PERFORM the following after each JPM:

- **VERIFY both Unit 1 Spent Fuel Pool Exhaust Fans 33 and 34 are OFF.**

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-908, Fuel Handling Accident.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**Wording of the announcement does NOT need to be verbatim.**
Perform Step: 1√	Evacuate the Fuel Building as follows: • Announce the Fuel Building evacuation over the Gai-tronics.
Standard:	ANNOUNCE the following using the GAI-TRONICS: THIS IS NOT A DRILL. ATTENTION ALL PERSONNEL IN THE FUEL BUILDING. EVACUATE THE FUEL BUILDING. PROCEED INTO THE AUXILIARY BUILDING CORRIDOR. THIS IS NOT A DRILL.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The Control Room credenza is located behind the Unit Supervisor's desk and the Communication Control Station is located adjacent to the Main Fire Panel.**
Perform Step: 2√	Evacuate the Fuel Building as follows: • Sound the Radiological Emergency Alarm.
Standard:	DEPRESS **either** of the RADIOLOGICAL EMERGENCY ALARM pushbuttons: • Yellow RADIATION ALARM pushbutton on the Control Room credenza. • Yellow RADIATION ALERT pushbutton at the Communication Control Station.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Evacuate the Fuel Building as follows: • Repeat the announcement.
Standard:	ANNOUNCE the following using the GAI-TRONICS: THIS IS NOT A DRILL. ATTENTION ALL PERSONNEL IN THE FUEL BUILDING. EVACUATE THE FUEL BUILDING. PROCEED INTO THE AUXILIARY BUILDING CORRIDOR. THIS IS NOT A DRILL.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 √	Ensure one spent fuel pool exhaust fan is running for the affected spent fuel pool.
	• SFP No. 1
	  • X-HS-5731, SFP EXH FAN 33
	  • X-HS-5733, SFP EXH FAN 34

Standard:	DETERMINE that <u>neither</u> Fan is running and PERFORM the following: • PLACE X-HS-5731, SFP EXH FAN 33 in START and OBSERVE red START light LIT**, <u>or</u>** • PLACE X-HS-5733, SFP EXH FAN 34 in START and OBSERVE red START light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5	Refer to EPP-201.
Standard:	REPORT to the Unit Supervisor that EPP-201 must be referenced.
Examiner Cue:	**The Unit Supervisor is referring to EPP-201.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6	Notify Radiation Protection of the incident AND ensure all personnel who were in Fuel Building are being surveyed for possible contamination.
Standard:	CONTACT Radiation Protection and NOTIFY them of the fuel handling accident and to survey all personnel involved for contamination.
Terminating Cue:	**Radiation Protection has been contacted. This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **Spent fuel re-racking is in progress in Spent Fuel Pool X-01.**
- **The following alarms were just received on PC-11, Digital Radiation Monitoring System:**
  - **X-RE-6274, SFP-003 LRAM SFP 1 E. WALL.**
  - **X-RE-5700, FBV-088 FB VENT EXH.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **IMPLEMENT the actions of ABN-908, Fuel Handling Accident.**
- **The Shift Manager has been NOTIFIED.**

Facility: CPNPP JPM # SRO NRC SA1 Task #SO1005 K/A #2.1.1 3.8 / 4.2

Title: Determine Technical Specification and Event Reportability

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is at 100% power with an Effective Full Power Days of 50.
- At 0700 on March 29, 2010 Maintenance Engineering reported that a total of eight (8) Main Steam Safety Valves (two per Steam Generator) were rebuilt with nonconforming parts during the last outage and are not capable of performing their design function.

Initiating Cue: The Shift Manager directs you to PERFORM the following:

- DETERMINE Technical Specification impacted including REQUIRED ACTION and COMPLETION TIME, if any.
- DETERMINE ORAL and WRITTEN Reportability Requirements, if any.

Task Standard: Determine Technical Specifications impacted and Reportability Requirements for INOPERABLE Main Steam Safety Valves per STA-501 and CPNPP Technical Specifications.

Required Materials: STA-501, Non-Routine Reporting, Rev. 14.
CPNPP Technical Specifications - Unit 1 and 2 through Amendment 144.

Validation Time: 50 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **STA-501, Non-Routine Reporting.**
- **CPNPP Technical Specifications - Unit 1 and 2.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Perform Step: 1√	Determine Technical Specification LCO and CONDITION.
Standard:	RECOGNIZE eight (8) Main Steam Safety Valves on Unit 1 (two per Steam Generator) contain nonconforming parts and DETERMINE the following: • Technical Specification LCO 3.7.1, Main Steam Safety Valves, CONDITION B, One or more steam generators with two or more MSSVs inoperable on Unit 1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Determine Technical Specification REQUIRED ACTION and COMPLETION TIME.
Standard:	DETERMINE REQUIRED ACTION and COMPLETION TIME: • 3.7.1.B.1 - Reduce Thermal Power to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 (≤ 43%) for the number of OPERABLE MSSVs within four (4) hours, AND • 3.7.1.B.2 - Reduce the Power Range Neutron Flux-High reactor trip setpoint to less than or equal to the Maximum Allowable % RTP (≤ 43%) specified in Table 3.7.1-1 for the number of OPERABLE MSSVs within 36 hours.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Determine oral notification Reporting Requirements per STA-501.
Standard:	DETERMINE Reporting Requirements is for; "Any event or condition that results in serious degradation of principal safety barriers" **or** "plant in condition unanalyzed, that significantly degraded plant safety." OR "Any event or condition at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to; (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident." OR "Events covered in paragraph (b) (3) (v) of this section may include one or more procedural errors, equipment failures, and/or discovery of design analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported pursuant to paragraph (b) (3) (v) of this section if redundant equipment in the same system was operable and available to perform the required safety function." • Oral Report within 8 hours [per 10CFR50.72 (b) (3) (ii) (A) or (B) OR 10CFR50.72 (b) (3) (v) OR 10CFR50.72 (b) (3) (vi)].
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Determine written notification Reporting Requirements per STA-501.
Standard:	DETERMINE Reporting Requirements is for; "Any event or condition that results in serious degradation of principal safety barriers" **or** "plant in condition unanalyzed, that significantly degraded plant safety." OR "Any event or condition at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to; (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident." OR "Events covered in paragraph (b) (3) (v) of this section may include one or more procedural errors, equipment failures, and/or discovery of design analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported pursuant to paragraph (b) (3) (v) of this section if redundant equipment in the same system was operable and available to perform the required safety function." • Written Report (LER) within 60 days [per 10CFR50.73 (a) (2) (ii) OR 10CFR50.73 (b) (2) (v) OR 10CFR50.73 (b) (2) (vi)].
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **Unit 1 is at 100% power with an Effective Full Power Days of 50.**
- **At 0700 on March 29, 2010 Maintenance Engineering reported that a total of eight (8) Main Steam Safety Valves (two per Steam Generator) were rebuilt with nonconforming parts during the last outage and are not capable of performing their design function.**

INITIATING CUE: **The Shift Manager directs you to PERFORM the following:**

- **DETERMINE Technical Specification impacted including REQUIRED ACTION and COMPLETION TIME, if any.**
- **DETERMINE ORAL and WRITTEN Reportability Requirements, if any.**

Facility: CPNPP JPM # SRO NRC SA2 Task # SO1135 K/A # 2.1.23 3.9 / 4.4

Title: Manually Perform Critical Safety Function Status Checks

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: The following conditions exist ten (10) minutes post-trip on Unit 1:

- All Control Rods are inserted.
- Intermediate Range 1-NI-35B = $1x10^{-8}$ amps and lowering.
- Intermediate Range 1-NI-36B = $1x10^{-8}$ amps and lowering.
- Gammetrics WR 1-NI-50A-1 = $3x10^{-3}$ Percent and lowering.
- Gammetrics WR 1-NI-50B-1 = $3x10^{-3}$ Percent and lowering.
- Gammetrics SR 1-NI-50A-2 = Off-scale high.
- Gammetrics SR 1-NI-50B-2 = Off-scale high.
- All required ESFAS actuations have occurred and are NOT reset.
- Reactor Coolant System temperatures are as follows:
  - Loop 1 Tcold 469°F; Loop 2 Tcold 413°F.
  - Loop 3 Tcold 413°F; Loop 4 Tcold 469°F.
  - CORE EXIT TEMP, 1-TI-3611-2 = 472°F.
  - CORE EXIT TEMP, 1-TI-3612-2 = 471°F.
- Reactor Coolant System subcooling is 120°F and stable.
- Pressurizer pressure is 978 psig and rising.
- Pressurizer level is 16% and rising.
- Steam Generator 1 narrow range level is 38%.
- Steam Generator 2 narrow range level is 0%; wide range is 4%.
- Steam Generator 3 narrow range level is 0%; wide range is 6%.
- Steam Generator 4 narrow range level is 36%.
- Auxiliary Feedwater flow to Steam Generator 1 is 250 gpm.
- Auxiliary Feedwater flow to Steam Generator 2 is 0.0 gpm.
- Auxiliary Feedwater flow to Steam Generator 3 is 0.0 gpm.
- Auxiliary Feedwater flow to Steam Generator 4 is 250 gpm.
- Containment Pressure is 23 psig and lowering.
- Containment temperature is 225°F and lowering.
- EOP-0.0A, Reactor Trip and Safety Injection, Attachment 2 is complete, and a transition has been made from EOP-0.0A.

Initiating Cue: The Shift Manager directs you to PERFORM a manual Critical Safety Function Status Tree Check. For each Critical Safety Function (CSF), IDENTIFY the severity of the challenge (COLOR) and DETERMINE whether or not the crew is REQUIRED TO IMPLEMENT the associated FRG.

CSF	COLOR	REQUIRED TO IMPLEMENT [YES / NO]
Subcriticality	_____	_____
Core Cooling	_____	_____
Heat Sink	_____	_____
Integrity	_____	_____
Containment	_____	_____
Inventory	_____	_____

Task Standard: Determine Critical Safety Function Status Tree conditions per guidance of ODA-407, Attachment 8.a.

Required Materials: ODA-407, Guideline On Use Of Procedures, Rev. 12, PCN-12.
FRS-0.1A, Response To Nuclear Power Generation/ATWT, Rev. 8, PCN-1.
FRC-0.1A, Response To Inadequate Core Cooling Rev. 8, PCN-3.
FRH-0.1A, Response To Loss Of Secondary Heat Sink, Rev. 8, PCN-2.
FRP-0.1A, Response To Imminent Pressurized Thermal Shock Condition, Rev. 8, PCN-2.
FRZ-0.1A, Response To High Containment Pressure, Rev. 8, PCN-1.
FRI-0.1A, Response To High Pressurizer Level, Rev. 8, PCN-2.

Validation Time: 20 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **Unit 1 Critical Safety Function Status Trees for each Safety Function.**
- **Copy of ODA-407, Guideline On Use Of Procedures.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**All evaluated parameters are contained in the Initial Conditions.**
Perform Step: 1	Evaluate SUBCRITICALITY Safety Function: • Is Containment Pressure less than 5 psig?
Standard:	DETERMINE Containment Pressure is 23 psig; CHOOSE the NO path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2	Evaluate SUBCRITICALITY Safety Function: • Is Neutron Flux WR less than 5%?
Standard:	DETERMINE power is $3x10^{-3}$ Percent; CHOOSE YES path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	Evaluate SUBCRITICALITY Safety Function: • Is Neutron Flux SR on scale?
Standard:	DETERMINE Neutron Flux SR is not on scale; CHOOSE NO path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 √	Evaluate SUBCRITICALITY Safety Function: • Is Time from Trip Less than 15 minutes?
Standard:	DETERMINE time from trip is ten (10) minutes; CHOOSE YES path - CSF is GREEN, SUBCRITICALITY Safety Function is satisfied.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5	Evaluate CORE COOLING Safety Function: • Are Core Exit Thermocouples less than 1200°F?
Standard:	DETERMINE RCS subcooling Core Exit Thermocouples are less than 1200°F; CHOOSE YES path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6 √	Evaluate CORE COOLING Safety Function: • Is RCS subcooling greater than 55°F?
Standard:	DETERMINE RCS subcooling is 70°F; CHOOSE YES path - CSF is GREEN, CORE COOLING Safety Function is satisfied.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 7	Evaluate HEAT SINK Safety Function: • Is Narrow Range level in at least one SG greater than 50%?
Standard:	DETERMINE all Steam Generator narrow range levels are less than 50%; CHOOSE NO path.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 8	Evaluate HEAT SINK Safety Function: • Is total FW flow to SGs greater than 460 gpm?
Standard:	DETERMINE total Auxiliary Feedwater flow is 500 gpm; CHOOSE YES path.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 9	Evaluate HEAT SINK Safety Function: • Are pressures in all SGs less than 1235 psig?
Standard:	DETERMINE that based on RCS Tcold temperatures the highest Steam Generator pressure would be approximately 480 psig; CHOOSE YES path.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 10	Evaluate HEAT SINK Safety Function: • Are Narrow Range levels in all SGs less than 84%?
Standard:	DETERMINE all Steam Generator narrow range levels are less than 50%; CHOOSE YES path.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 11	Evaluate HEAT SINK Safety Function: • Are pressures in all SGs less than 1185 psig?
Standard:	DETERMINE that based on RCS Tcold temperatures the highest Steam Generator pressure would be approximately 480 psig; CHOOSE YES path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12 √	Evaluate HEAT SINK Safety Function: • Are Narrow range levels in all SGs greater than 50%?
Standard:	DETERMINE all Steam Generator narrow range levels are < 50%; CHOOSE NO path - CSF is YELLOW; the associated FRG (FRH-0.5A) would not be implemented as a higher priority CSF exists.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13	Evaluate INTEGRITY Safety Function: • Is temperature decrease in all RCS Cold Legs less than 100°F in last 60 minute period?
Standard:	DETERMINE RCS Cold Leg temperatures changed by >100°F; CHOOSE NO path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14	Evaluate INTEGRITY Safety Function: • All RCS Pressure/Cold Leg temperature points to right of Limit A?
Standard:	DETERMINE the combination of pressure and temperature points for all loops falls to the right of Limit A; CHOOSE YES path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 15	Evaluate INTEGRITY Safety Function: • Are all RCS Cold Leg temperatures less than 250°F?
Standard:	DETERMINE all Cold Leg temperatures are greater than 250°F; CHOOSE YES path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 16 √	Evaluate INTEGRITY Safety Function: • Are all RCS Cold Leg temperatures less than 280°F?
Standard:	DETERMINE all Cold Leg temperatures are > 280°F; CHOOSE YES path - CSF is GREEN; INTEGRITY Safety Function is satisfied.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 17	Evaluate CONTAINMENT Safety Function: • Is Containment pressure less than 50 psig?
Standard:	DETERMINE Containment pressure is 23 psig; CHOOSE YES path.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 18 √	Evaluate CONTAINMENT Safety Function: • Is Containment pressure less than 18 psig?
Standard:	DETERMINE Containment pressure is 23 psig; CHOOSE NO path - CSF is ORANGE and the associated FRG (FRZ-0.1A) should be implemented.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 19	Evaluate INVENTORY Safety Function: • Is Pressurizer level less than 92%?
Standard:	DETERMINE Pressurizer level is 16%; CHOOSE YES path.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 20 √	Evaluate INVENTORY Safety Function: • Is Pressurizer level greater than 17%?
Standard:	DETERMINE Pressurizer level is 16%; CHOOSE NO path - CSF is YELLOW; the associated FRG (FRI-0.2A) would not be implemented as a higher priority CSF exists.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 21	Determine Implementation priority based on CSF evaluation results.
Standard:	DETERMINE Implementation priority as follows: • Containment (Z) ORANGE path; implement FRG. • Heat Sink (H) YELLOW path; do not implement FRG. • Inventory (I) YELLOW path; do not implement FRG. • Subcriticality (S) GREEN path; CSF satisfied. • Core Cooling (C) GREEN path; CSF satisfied. • Integrity (P) GREEN path; CSF satisfied.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS:

The following conditions exist ten (10) minutes post-trip on Unit 1:

- **All Control Rods are inserted.**
- **Intermediate Range 1-NI-35B = $1x10^{-8}$ amps and lowering.**
- **Intermediate Range 1-NI-36B = $1x10^{-8}$ amps and lowering.**
- **Gammetrics WR 1-NI-50A-1 = $3x10^{-3}$ Percent and lowering.**
- **Gammetrics WR 1-NI-50B-1 = $3x10^{-3}$ Percent and lowering.**
- **Gammetrics SR 1-NI-50A-2 = Off-scale high.**
- **Gammetrics SR 1-NI-50B-2 = Off-scale high.**
- **All required ESFAS actuations have occurred and are NOT reset.**
- **Reactor Coolant System temperatures are as follows:**
  - **Loop 1 Tcold 469°F; Loop 2 Tcold 413°F.**
  - **Loop 3 Tcold 413°F; Loop 4 Tcold 469°F.**
  - **CORE EXIT TEMP, 1-TI-3611-2 = 472°F.**
  - **CORE EXIT TEMP, 1-TI-3612-2 = 471°F.**
- **Reactor Coolant System subcooling is 120°F and stable.**
- **Pressurizer pressure is 978 psig and rising.**
- **Pressurizer level is 16% and rising.**
- **Steam Generator 1 narrow range level is 38%.**
- **Steam Generator 2 narrow range level is 0%; wide range is 4%.**
- **Steam Generator 3 narrow range level is 0%; wide range is 6%.**
- **Steam Generator 4 narrow range level is 36%.**
- **Auxiliary Feedwater flow to Steam Generator 1 is 250 gpm.**
- **Auxiliary Feedwater flow to Steam Generator 2 is 0.0 gpm.**
- **Auxiliary Feedwater flow to Steam Generator 3 is 0.0 gpm.**
- **Auxiliary Feedwater flow to Steam Generator 4 is 250 gpm.**
- **Containment Pressure is 23 psig and lowering.**
- **Containment temperature is 225°F and lowering.**
- **EOP-0.0A, Reactor Trip and Safety Injection, Attachment 2 is complete, and a transition has been made from EOP-0.0A.**

INITIATING CUE: **The Shift Manager directs you to PERFORM a manual Critical Safety Function Status Tree Check. For each Critical Safety Function (CSF), IDENTIFY the severity of the challenge (COLOR) and DETERMINE whether or not the crew is REQUIRED TO IMPLEMENT the associated FRG.**

CSF	COLOR	REQUIRED TO IMPLEMENT [YES / NO]
Subcriticality	_____	_____
Core Cooling	_____	_____
Heat Sink	_____	_____
Integrity	_____	_____
Containment	_____	_____
Inventory	_____	_____

Facility: CPNPP JPM # SRO NRC SA3 Task #SO1048 K/A #2.2.14 3.9 / 4.3

Title: Determine Fire Compensatory Measures for an Emergent Condition

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- A Fire Protection Impairment has been identified and submitted by the Fire Protection Group using STA-738-2, Fire Protection System/Equipment Impairment Form.

Initiating Cue: The Shift Manager directs you to PERFORM the following:

- COMPLETE the **Compensatory Measure Review / Authorization** Section of STA-738-2, Fire Protection System/Equipment Impairment Form per STA-738, Fire Protection Systems/Equipment Impairments.

Task Standard: Determine Fire Compensatory Measures for a disabled Spray/Sprinkler System in a Zone V Radiation Area per STA-738.

Required Materials: STA-738, Fire Protection Systems / Equipment Impairments, Rev. 6, PCN-3.
STA-738-2, Fire Protection System / Equipment Impairment Form, Rev. 6.

Validation Time: 25 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **STA-738, Fire Protection Systems/Equipment Impairments.**
- **Partially COMPLETED STA-738-2, Fire Protection System / Equipment Impairment Form.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Perform Step: 1	Enter information for SCHEDULED IMPAIRED DATE.
Standard:	ENTER date of 03/19/2010.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2	Enter information for SCHEDULED COMPLETION DATE.
Standard:	ENTER date of 03/21/2010.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Determine if CONTINUOUS FIRE WATCH is required.
Standard:	DETERMINE the affected area is a Zone V Radiation Area and a Continuous Fire Watch is NOT required per STA-738, Attachment 8.A, Page 3 of 6, Step 3) c).
Comment:	**SAT ☐ UNSAT ☐**

Examiners Note:	**The examinee may choose to call the 8 hour inspection a Roving Fire Watch with a route change.**
Perform Step: 4	Determine if ROVING FIRE WATCH (with operable detection) is required.
Standard:	DETERMINE the affected area is a Zone V Radiation Area and a Roving Fire Watch is NOT required per STA-738, Attachment 8.A, Page 3 of 6, Step 3) c).
Comment:	**SAT ☐ UNSAT ☐**

Examiners Note:	**The examinee may choose to call the 8 hour inspection a Roving Fire Watch with a route change.**
Perform Step: 5√	Determine if OTHER Compensatory Measures are required.
Standard:	DETERMINE that the area shall be inspected at least once per 8 hours and ENTER this information in the OTHER **or** INSTRUCTIONS / ADDITIONAL INFORMATION box per STA-738, Attachment 8.A, Page 3 of 6, Step 3) c).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6√	Determine if OTHER Compensatory Measures are required.
Standard:	DETERMINE that backup fire suppression equipment must be established within 1 hour for the inoperable system and ENTER this information in the OTHER **or** INSTRUCTIONS / ADDITIONAL INFORMATION box per STA-738, Attachment 8.A, Page 3 of 6, Step 3) c).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7	Sign and date Compensatory Measure Review/Authorization form.
Standard:	SIGN and DATE Compensatory Measure Review/Authorization form.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **A Fire Protection Impairment has been identified and submitted by the Fire Protection Group using STA-738-2, Fire Protection System/Equipment Impairment Form.**

INITIATING CUE: **The Shift Manager directs you to PERFORM the following:**

- **COMPLETE the **Compensatory Measure Review / Authorization** Section of STA-738-2, Fire Protection System/Equipment Impairment Form per STA-738, Fire Protection Systems/Equipment Impairments.**

Facility: CPNPP JPM # SRO NRC SA4 Task #SO1142A K/A #2.3.4 3.2 / 3.7

Title: Choose a Volunteer for Emergency Radiation Exposure

Examinee (Print): _____

Testing Method:

Simulated Performance:	X	Classroom:	X
Actual Performance:		Simulator:	
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- A Large Break Loss of Coolant Accident has occurred.
- Cold Leg recirculation operations have been established.
- An operator venting Residual Heat Removal Pump 1-02 was injured and needs assistance to exit the Radiological Controlled Area.
- The Emergency Coordinator has authorized ONE (1) volunteer to attempt a lifesaving activity.
- Health Physics predicts a dose between 15 and 20 REM given the general radiation levels in the area of the injured person.

Initiating Cue: The Emergency Coordinator directs you to PERFORM the following:

- EVALUATE and SELECT the preferred volunteer from the list of available candidates per EPP-305, Emergency Exposure Guidelines and Personnel Dosimetry, Steps 4.3.2 and 4.3.4.

Volunteer	Selected (Circle one)	Why or Why NOT selected
A	YES / NO	
B	YES / NO	
C	YES / NO	
D	YES / NO	
E	YES / NO	
F	YES / NO	
G	YES / NO	

Task Standard: Evaluate and select the preferred volunteer to perform lifesaving activities during an emergency per EPP-305.

Required Materials: EPP-305, Emergency Exposure Guidelines and Personnel Dosimetry, Rev. 12.
List of Available Volunteers.

Validation Time: 15 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **EPP-305, Emergency Exposure Guidelines and Personnel Dosimetry.**
- **LIST of Available Volunteers.**

Denotes a Critical Step

START TIME:	

Examiner Cue:	**Provide Examinee with List of Available Volunteers.**
Perform Step: 1	Selection of individuals authorized to receive an emergency exposure for the purpose of conducting lifesaving activities or activities required to protect large numbers of people, shall be based on the following criteria: • The individual should be a volunteer or a professional rescue person. • The individual should be familiar with the consequences of exposure to radiation. • The individual shall not be a female capable of reproduction. • If more than one volunteer is being considered, preference should be given to individuals who have reached age 45 years or older.
Standard:	REFER to EPP-305, Emergency Exposure Guidelines and Personnel Dosimetry, Step 4.3.2.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2	The individual should be a volunteer or a professional rescue person.
Standard:	DETERMINE that all individuals have volunteered for Emergency Exposure.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	The individual should be familiar with the consequences of exposure to radiation.
Standard:	DETERMINE that one individual is NOT familiar with the consequences of exposure to radiation and ELIMINATE **Volunteer A**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	The individual shall not be a female capable of reproduction.
Standard:	DETERMINE that one female volunteer has declared that she is pregnant and the other is capable of reproduction and ELIMINATE **Volunteers B & E**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√	If more than one volunteer is being considered, preference should be given to individuals who have reached age 45 years or older.
Standard:	DETERMINE that several individuals have NOT reached the age of 45 years or older and ELIMINATE **Volunteers C & F. (Volunteer F** may also be eliminated due to possible Iodine allergy.)
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6	Once selection of individuals has been completed, the following criteria shall be considered, prior to dispatching these individuals:: • Dose to the individual should not be planned to exceed the guidelines given in Attachment 1. • In accordance with the policy of minimizing total dose equivalent, respiratory protection equipment may be used to minimize internal exposure and protective clothing may be used to minimize skin contamination. • Limit exposures received under these conditions to once in a lifetime.
Standard:	REFER to EPP-305, Emergency Exposure Guidelines and Personnel Dosimetry, Step 4.3.4.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7	Dose to the individual should not be planned to exceed the guidelines given in Attachment 1.
Standard:	DETERMINE dose to the individual between 15 and 20 REM meets the guidelines given in Attachment 1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8√	Limit exposures received under these conditions to once in a lifetime.
Standard:	DETERMINE that one individual has already received an exposure for Protecting Valuable Property and ELIMINATE **Volunteer D**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9√	Select the individual.
Standard:	SELECT **Volunteer G** as the most appropriate candidate for Emergency Exposure.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

Initial Conditions: **Given the following conditions:**

- **A Large Break Loss of Coolant Accident has occurred.**
- **Cold Leg recirculation operations have been established.**
- **An operator venting Residual Heat Removal Pump 1-02 was injured and needs assistance to exit the Radiological Controlled Area.**
- **The Emergency Coordinator has authorized ONE (1) volunteer to attempt a lifesaving activity.**
- **Health Physics predicts a dose between 15 and 20 REM given the general radiation levels in the area of the injured person.**

Initiating Cue: **The Emergency Coordinator directs you to PERFORM the following:**

- **EVALUATE and SELECT the <u>preferred</u> volunteer from the list of available candidates per EPP-305, Emergency Exposure Guidelines and Personnel Dosimetry, Steps 4.3.2 and 4.3.4.**

Volunteer	Selected (Circle one)	Why or Why NOT selected
A	**YES / NO**	
B	**YES / NO**	
C	**YES / NO**	
D	**YES / NO**	
E	**YES / NO**	
F	**YES / NO**	
G	**YES / NO**	

Facility: CPNPP JPM # SRO NRC SA5 Task # SO1140 K/A # 2.4.44 2.4 / 4.4

Title: Determine Protective Action Recommendations

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	X
Actual Performance:	X	Simulator:	
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Comanche Peak Unit 2 has experienced a Large Break Loss of Coolant Accident with multiple failures of Safeguards equipment.
- The Site is in a GENERAL EMERGENCY, a radiological release is in progress and the following information is provided:
  - Core Exit Thermocouple highest reading is 1240ºF.
  - Containment pressure is 43 psig.
  - Meteorological Tower Data:
    - Wind Speed 15 mph.
    - Wind Direction from 75º.
  - Pasquill Stability Class is B.
  - Field Dose results are:
    - TEDE 885 mrem at 5 miles and 195 mrem at 10 miles.
    - CEDE Thyroid is 5225 mrem at 5 miles and 1100 mrem at 10 miles.
- The weather is clear and no issues exist that would preclude evacuations, if required.
- The duration of the release cannot be determined at this time.

Initiating Cue: The Shift Manager directs you to DETERMINE EPP-304, Protective Action Recommendations.

- HIGHLIGHT the Decision Path on Attachment 1.
- COMPLETE Attachment 2, Minimum Affected Area - Three (3) Sectors **or** Attachment 2A, Minimum Affected Area - Five (5) Sectors, as appropriate.

Task Standard: Determine Protective Action Recommendations during an accident per EPP-304.

Required Materials: EPP-304, Protective Action Recommendations, Rev. 19.

Validation Time: 20 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **EPP-304, Protective Action Recommendations.**
- **Highlight pen.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Perform Step: 1	Determine Protective actions: • Are Dose Projections available?
Standard:	ENTER Attachment 1 at General Emergency and DETERMINE that Dose Projections are available and CHOOSE "YES" path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Determine Protective actions: • Is TEDE ≥ 1 REM at 5 miles?
Standard:	DETERMINE from the Initial Conditions that TEDE is 885 mrem at 5 miles which is NOT ≥ 1 REM.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Determine Protective actions: • Is CDE Thyroid ≥ 5 REM at 5 miles?
Standard:	DETERMINE that CDE Thyroid is 5225 mrem at 5 miles which is > 5 REM and CHOOSE "YES" path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Determine Protective actions: • Is TEDE ≥ 1 REM at 10 miles?
Standard:	DETERMINE from the Initial Conditions that TEDE is 195 mrem at 10 miles which is NOT ≥ 1 REM.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√	Determine Protective actions: • Is CDE Thyroid ≥ 5 REM at 10 miles?
Standard:	DETERMINE that CDE Thyroid is 1100 mrem at 10 miles which is not ≥ 5 REM and CHOOSE "NO" path.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Reference inset table on Attachment 1.**
Perform Step: 6√	Determine Protective actions: • Has there been severe core damage and is a release in progress?
Standard:	REFER to Inset Table and DETERMINE that ≥ 1240ºF auctioneered high CET meets the severely damaged core criteria and a release is in progress from the Initial Conditions and CHOOSE the "YES" path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7	Determine Protective actions: • Can release duration be accurately determined AND will the release be of short duration?
Standard:	REFER to Inset Table and DETERMINE from the Initial Conditions that release duration is unknown and CHOOSE "NO" path.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8	Determine Protective actions: • Are there impediments to evacuation?
Standard:	DETERMINE from the Initial Conditions there are no weather issues to affect evacuation and CHOOSE "NO" path which directs EVACUATION.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9√	Determine Protective actions: • Shelter or Evacuate?
Standard:	CHOOSE Evacuation path to Box C and EVACUATE 2 mile radius and Downwind Sectors to 10 miles and ADVISE remainder of EPZ to remain indoors and LISTEN to EAS.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The first sequence of steps on either Attachment is used to determine which Attachment is appropriate.**
Perform Step: 10	Determine Affected sectors.
Standard:	REFER to Attachment 2 or 2A initially to determine affected sectors.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11	IF conditions are: • ON-SITE Pasquill Stability Class C, D, E, F, or G and ON-SITE Wind Direction is available then use Attachment 2
Standard:	DETERMINE that Stability Class B does NOT allow Attachment 2 use.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12	IF conditions are: • ON-SITE Pasquill Stability Class A or B, use Attachment 2A.
Standard:	SELECT Attachment 2A for use based on Stability Class of B.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13a	Circle Pasquill Stability Class A B C D E F G
Standard:	CIRCLE Pasquill Stability Class B.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13b	Enter Wind Direction (From): _____ degrees.
Standard:	ENTER Wind Direction from 75 degrees.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14√	Circle applicable Centerline Sector in the Table below.
Standard:	CIRCLE Centerline Sector M.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 15	Knowing Centerline Sector, GO TO applicable subsequent page to identify affected sectors and Emergency Response Zones (ERZ).
Standard:	CIRCLE or HIGHLIGHT the following: • AFFECTED SECTORS are K, L, M, N, and P. • EMERGENCY RESPONSE ZONES from 0 to 5 miles are 2A, 3A, 4D, 4C, and 3B. • EMERGENCY RESPONSE ZONES from 5 to 10 miles are 3E, 4H, 3D, 4G, 3F, and 4F.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **Comanche Peak Unit 2 has experienced a Large Break Loss of Coolant Accident with multiple failures of Safeguards equipment.**
- **The Site is in a GENERAL EMERGENCY, a radiological release is in progress and the following information is provided:**
  - **Core Exit Thermocouple highest reading is 1240ºF.**
  - **Containment pressure is 43 psig.**
  - **Meteorological Tower Data:**
    - **Wind Speed 15 mph.**
    - **Wind Direction from 75º.**
  - **Pasquill Stability Class is B.**
  - **Field Dose results are:**
    - **TEDE 885 mrem at 5 miles and 195 mrem at 10 miles.**
    - **CEDE Thyroid is 5225 mrem at 5 miles and 1100 mrem at 10 miles.**
- **The weather is clear and no issues exist that would preclude evacuations, if required.**
- **The duration of the release cannot be determined at this time.**

INITIATING CUE: **The Shift Manager directs you to DETERMINE EPP-304, Protective Action Recommendations.**

- **HIGHLIGHT the Decision Path on Attachment 1.**
- **COMPLETE Attachment 2, Minimum Affected Area - Three (3) Sectors or Attachment 2A, Minimum Affected Area - Five (5) Sectors, as appropriate.**

Facility:	CPNPP Units 1 and 2	Date of Examination:	03/29/10
Exam Level:	RO ☐ SRO(I) ☐ **SRO (U)** ☐	Operating Test No.:	NRC

Control Room Systems[@] (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
System / JPM Title		Type Code*	Safety Function
S-1	001 – Control Rod Drive System (RO1008) Perform Control Rod Exercises (RO ONLY)	D, S	1
S-2	**006 – Emergency Core Cooling System (New)** **Align Cold Leg Injection During a Loss of Inventory**	**A, EN, L, N, S**	**2**
S-3	010 – Pressurizer Pressure Control System (RO1209B) Control Pressurizer Pressure During Cooldown	D, EN, L, S	3
S-4	**003 – Reactor Coolant Pump System (RO1118)** **Respond to Reactor Coolant Pump Seal Malfunction**	**A, D, S**	**4-P**
S-5	061 – Auxiliary / Emergency Feedwater System (RO3504) Test the Turbine Driven Auxiliary Feedwater Pump	A, M, S	4-S
S-6	**022 – Containment Cooling System (New)** **Respond to Containment High Temperature Alarm**	**A, N, S**	**5**
S-7	062 – AC Electrical Distribution System (New) Transfer 480 VAC Bus from Normal to Alternate Source	N, S	6
S-8	016 – Non-Nuclear Instrumentation System (RO1829) Respond to Steam Flow Instrument Failure	A, D, S	7
In-Plant Systems[@] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
P-1	**064 – Emergency Diesel Generator System (AO6311A)** **Perform Local Restoration of EDG**	**D, E, R**	**6**
P-2	004 – Chemical & Volume Control System (AO5202) Restore Charging Flow with PD Charging Pump	D, E, R	2
P-3	**086 – Fire Protection System (New)** **Perform Actions for Fire In Containment**	**E, N, R**	**8**

@	All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.
* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

NRC JPM Examination
Summary Description

S-1 The candidate will perform Control Rod Exercises for Control Bank D rods per OPT-106A, Control Rods Exercise. This is a bank JPM under Control Rod Drive System – Reactivity Control Safety Function.

S-2 The candidate will initiate Hot Leg Injection per ABN-104, Residual Heat Removal System, Section 8.0, Complete Loss of Decay Heat Removal Capability - RCS Not Filled after a loss of inventory event while in MODE 5. The alternate path occurs when Safety Injection Pumps cannot be aligned and a flowpath is established to initiate Cold Leg Injection. This is a new, low power JPM under the Emergency Core Cooling System – Reactor Coolant System Inventory Control Safety Function.

S-3 The candidate will reduce Reactor Coolant System Pressure and Block Safety Injection per IPO-005A, Plant Cooldown from Hot Standby to Cold Shutdown, Section 5.1, Cooldown from MODE 3 to MODE 5, Step 5.1.5. This is a bank JPM under the Pressurizer Pressure Control System – Reactor Pressure Control Safety Function.

S-4 The candidate will recognize the indications and perform the actions for Reactor Coolant Pump Seal Abnormalities per ABN-101, Reactor Coolant Pump Trip / Malfunction. The alternate path occurs when it is recognized that excessive leakoff requiring a Unit and Reactor Coolant Pump Trip exists. This is a bank JPM under the Reactor Coolant Pump System – Primary System Heat Removal from Reactor Core Safety Function.

S-5 The candidate will perform Post-Maintenance Testing of the Turbine Driven Auxiliary Feedwater Pump with flow to the Steam Generators per SOP-304A, Auxiliary Feedwater System. The alternate path occurs when a high bearing temperature requires a trip of the pump. This is a modified bank JPM under Auxiliary / Emergency Feedwater System – Secondary System Heat Removal from Reactor Core Safety Function. This is a PRA significant action.

S-6 The candidate will recognize the indications and perform the actions for a high Containment temperature condition per ALM-0031A, 1-ALB-3A, Window 1.1, CTMNT TEMP HI. The alternate path occurs when less than three Containment Fan Coolers are available and the non-operating Control Rod Drive Mechanism Cooling Fan is aligned to cool Containment. This is a new JPM under the Containment Cooling System – Containment Integrity Safety Function.

S-7 The candidate will align 480 VAC Bus 1EB1 to the Alternate Power Source per SOP-604A, 480 VAC Switchgear and MCCs, Step 5.3.2, 480 V Safeguards Bus Transfer from the Normal to the Alternate Power Source. This is a new JPM under the AC Electrical Distribution System – Electrical Safety Function.

S-8 The candidate will respond to a Steam Flow Instrument failure per ALM-0081A, 1-ALB-8A, Window 1.8, SG 1 STM FLO & FW FLO MISMATCH and ABN-707, Steam Flow Instrument Malfunction. The alternate path occurs when Steam Generator level is not being adequately controlled and the operator must take manual control. This is a bank JPM under the Non-Nuclear Instrumentation System – Instrumentation Safety Function.

P-1 The candidate will perform local restoration of the Emergency Diesel Generator per ABN-601, Response to a 138/345 KV System Malfunction, Attachment 1, Restoration of a Diesel Generator following a Station Blackout. This is a bank JPM under the Emergency Diesel Generators System – Electrical Safety Function.

P-2 The candidate will perform the actions to restart the Positive Displacement Charging Pump and restore Charging flow per ABN-301, Instrument Air System Malfunction and SOP-103A, Chemical and Volume Control. This is a bank JPM under the Chemical and Volume Control System – Reactor Coolant System Inventory Control Safety Function.

P-3 The candidate will perform actions during a fire in Containment per ABN-807A/B, Response to a Fire in the Containment Building, Attachment 1, Actions to be Taken by the Nuclear Equipment Operator. This is a new, time critical JPM under the Fire Protection System – Plant Service Systems Safety Function.

Facility: CPNPP JPM # RO/SRO NRC P-1 Task #AO6311A K/A #064.A4.01 4.5 / 4.8 SF-6

Title: Perform Local Restoration of the Emergency Diesel Generator

Examinee (Print): _____

Testing Method:

Simulated Performance:	X	Classroom:	
Actual Performance:		Simulator:	
Alternate Path:		Plant:	X

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- A Unit 1 (Unit 2) Station Blackout has occurred.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- RESTORE the Unit 1 (Unit 2) Train A Emergency Diesel Generator per ABN-601, Response to a 138/345 KV System Malfunction, Attachment 1, Restoration of a Diesel Generator, following a Station Blackout.

Task Standard: Perform actions to locally start the Train A Emergency Diesel Generator per ABN-601, Attachment 1.

Required Materials: ABN-601, Response to a 138/345 KV System Malfunction, Rev. 10, PCN-16.

Validation Time: 25 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-601, Response to a 138/345 KV System Malfunction.**
  - **INITIAL and N/A any Train B Steps.**
- **Flashlight.**

EXAMINER NOTE:

This JPM can be performed on either Unit. CIRCLE the Unit on which the JPM is to be performed on the JPM Worksheet and the JPM Cue Sheet.

Pictures of the Emergency Diesel Generator overspeed trip mechanism are located at the end of this JPM.

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**Remind examinee to simulate all actions.**

CAUTION: The following steps could result in an automatic restart of the diesel generator (DG) if system control is not transferred to local.

NOTE: Generator differential current will energize the 86-1/uEG1 or 86-1/uEG2 lockout relay on the affected diesel generator. The following trips energize the 86-2/uEG1 or 86-2/uEG2 lockout relays on the affected diesel generator.

- Loss of Field
- Field Ground
- Stator Ground
- Generator Ground
- Reverse Power
- Negative Sequence
- Generator Overcurrent
- Overvoltage

Perform Step: 1	Obtain the affected DG NORM / MAINT key from the Shift Manager.
Standard:	OBTAIN DG-01 NORM / MAINT key from Shift Manager.
Examiner Cue:	**The key has been obtained.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This switch is on the Diesel Generator Local Panel.**
Perform Step: 2√	Place the affected DG Master Switch in the LOCAL position. • u-HS-3413-3B RLMS
Standard:	PLACE u-HS-3413-3B, DG Master Switch in LOCAL.
Examiner Cue:	**Master Switch is in LOCAL.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This switch is on the Diesel Generator Local Panel.**
Perform Step: 3√	Place the affected DG LOCAL EMER START / STOP switch in the STOP position using • u-HS-3413-4B LOC / EMER / MAN / START
Standard:	PLACE u-HS-3413-4B, DG LOCAL EMERG STOP / OFF / START Switch in STOP.
Examiner Cue:	**Switch is in STOP.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4	Ensure the affected DG RUN/STOP MECH TRIP PRESS SW is in the RUN (pulled out) position. • u-PS-3413-9D, DG u-01 RUN/STOP MECH TRIP PRESS SW
Standard:	ENSURE u-PS-3413-9D, DIESEL GENERATOR u-01 RUN / STOP MECHANICAL TRIP PRESS SWITCH is in RUN (pulled out).
Examiner Cue:	**Switch is in RUN (pulled out).**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**When located, PROVIDE picture at the end of this JPM and have examinee explain operation of Overspeed Trip Lever.**

NOTE: The overspeed trip is reset when the T-handle trip lever is in the horizontal position and holding the pneumatic pushbutton depressed.

Perform Step: 5	Ensure the affected DG overspeed trip is reset at the engine driven fuel oil pump. • u-SS-3413-4, DG u-01 OVERSPEED MECH TRIP DEVICE - RESET
Standard:	ENSURE u-SS-3413-4, DG u-01 Overspeed Trip is RESET at Engine Driven Fuel Oil Pump.
Examiner Cue:	**Overspeed trip is RESET.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Have examinee point out location of Woodward Governor.**
Perform Step: 6	Verify the affected DG Woodward governor oil level is visible in the sightglass. • DG u-01 Oil Level - SAT
Standard:	OBSERVE DG u-01 Woodward governor oil VISIBLE in sight glass.
Examiner Cue:	**Oil level is VISIBLE.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**These indications are on the Diesel Engine Control Panel.**

CAUTION: The DG will not accept an emergency start when air receiver pressure is less than 150 psig. Only normal starts are available between 90 and 150 psig.

Perform Step: 7	Verify at least one air receiver is pressurized above 90 psig on the affected DG. • u-PI-3421-1A, DIESEL GENERATOR u-01 LEFT BANK AIR COMPRESSOR 1-02 (2-01) AIR PRESSURE IND • u-PI-3421-1B, DIESEL GENERATOR u-01 RIGHT BANK AIR COMPRESSOR 1-01 (2-02) AIR PRESSURE IND
Standard:	VERIFY one air receiver is pressurized above 90 psig on DG u-01. • u-PI-3421-1A, DG-01 Starting Air Pressure Left Bank • u-PI-3421-1B, DG-01 Starting Air Pressure Right Bank
Examiner Cue:	**All Air Receiver pressures are greater than 150 psig.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8	Inspect the affected DG for signs of physical damage (lube oil leaks, fuel oil leaks, injector pump damage, generator bearing oil level, overheating, etc.). • DG u-01 Inspection
Standard:	INSPECT DG u-01 for signs of physical damage.
Examiner Cue:	**No apparent physical damage to Diesel is observed.**
Comment:	**SAT ☐ UNSAT ☐**

NOTE: A lockout relay actuation will be indicated by a red flag in the reset handswitch window.

Perform Step: 9	At the DIESEL GENERATOR LOCAL PANEL, determine whether a lockout condition exists on the affected DG. • 86-1/uEG1 LOCKOUT • 86-2/uEG1 LOCKOUT
Standard:	OBSERVE **both** 86-1/uEG1 DIFFERENTIAL TRIP LOCKOUT RELAY **and** 86-2/uEG1 MULTIFUNCTION TRIP LOCKOUT RELAY in the RESET position (T-handle vertical).
Examiner Cue:	**Red flag color is not visible.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This task would be performed at the Safeguards Bus.**
Perform Step: 10	Ensure the affected DG breaker is properly connected by checking the following: • Indication on the floor of the circuit breaker housing corresponds to the markings on the circuit breaker. • Racking release lever is fully in the CONNECT (extreme counter-clockwise) position. • The spring motor toggle switch is in the ON position and the springs are charged. • The control power fuses are in place and power is available (green and blue lamps on the front of the breaker are lit).
Standard:	GO to uEA1 Safeguards Bus to OBSERVE the breaker.
Examiner Cue:	**Another operator has completed Steps 10 through 18 of ABN-601, Attachment 1 for Diesel Generator u-01.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11√	At the affected DIESEL ENGINE CONTROL PANEL, momentarily place the MODE SELECT keyswitch in the NORMAL position. • u-HS-3419-1A, DG-01
Standard:	INSERT Key and TURN u-HS-3419-1A, DG-01 MODE SELECT keyswitch to NORMAL.
Examiner Cue:	**Mode Select keyswitch is in NORMAL.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12	Notify the Control Room that the following steps should be completed in preparation for energizing the bus: • Close the 6.9 KV transformer supply and 480 V bus supply breakers to the affected 6.9 KV bus. • Ensure the affected SSWP is available to supply cooling water to the DG upon power restoration.
Standard:	NOTIFY the Control Room to perform ABN-601, Attachment 1, Step 20.
Examiner Cue:	**(When GAI-TRONICS is located) Control Room has been notified.**
Comment:	**SAT ☐ UNSAT ☐**

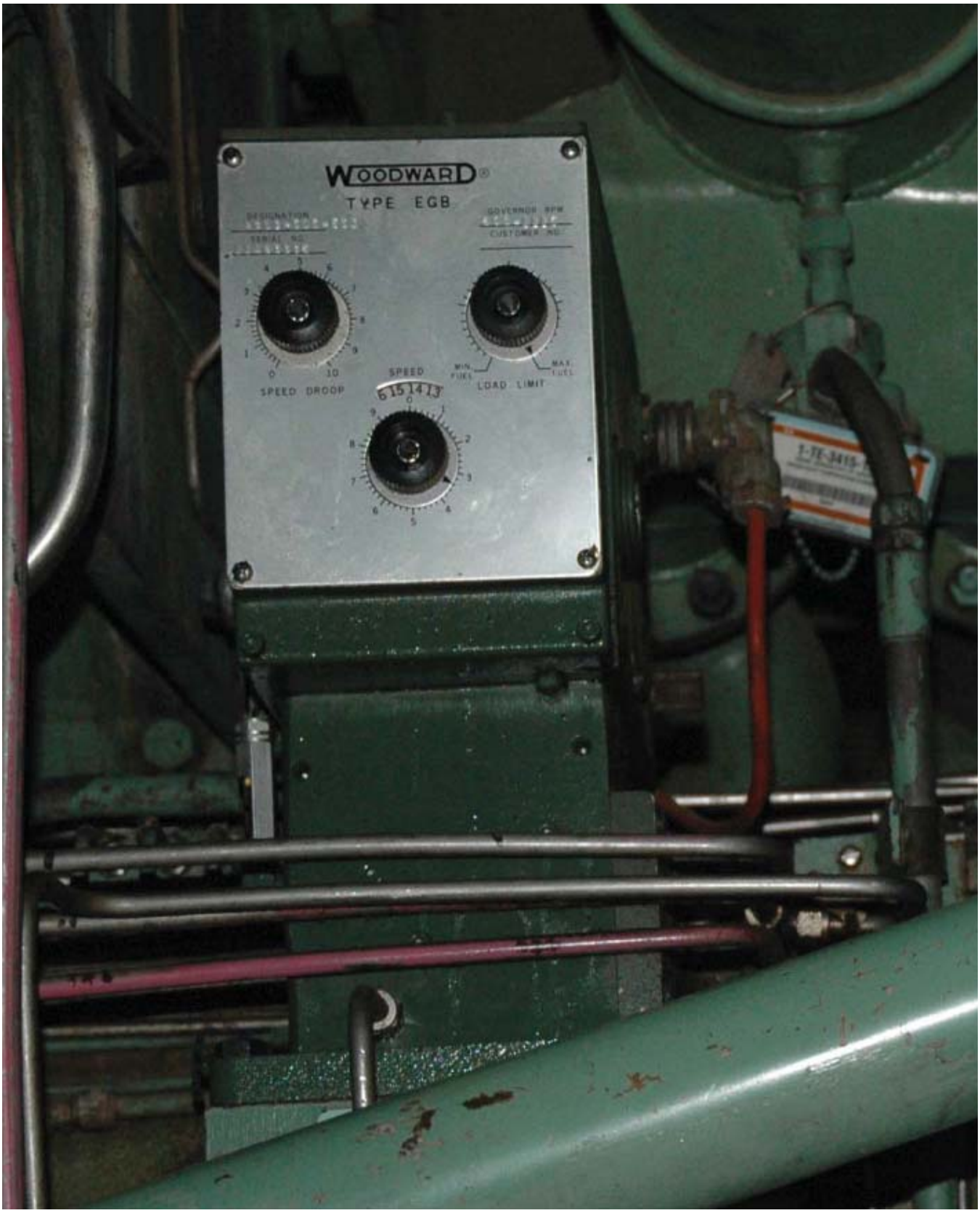
Perform Step: 13√	At the DIESEL GENERATOR LOCAL PANEL, return the affected DG LOCAL EMER START/STOP switch to the center position. • u-HS-3413-4B LOC / EMER / MAN / START
Standard:	PLACE u-HS-3413-4B, DG LOCAL EMERG STOP / OFF / START Switch in AUTO.
Examiner Note:	**This switch was placed in STOP at JPM Step 3.**
Examiner Cue:	**The switch is in AUTO.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14√	Start the affected DG by placing the LOCAL EMER START / STOP switch in the START position. • u-HS-3413-4B LOC / EMER / MAN / START
Standard:	PLACE u-HS-3413-4B, DG LOCAL EMERG STOP / OFF / START Switch in START.
Terminating Cue:	**The Diesel is running at 450 rpm. This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

CPNPP NRC 2010 JPM P-1 Photograph 1

CPNPP NRC 2010 JPM P-1 Photograph 2



INITIAL CONDITIONS: **Given the following conditions:**

- **A Unit 1 (Unit 2) Station Blackout has occurred.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **RESTORE the Unit 1 (Unit 2) Train A Emergency Diesel Generator per ABN-601, Response to a 138/345 KV System Malfunction, Attachment 1, Restoration of a Diesel Generator, following a Station Blackout.**

Facility: CPNPP JPM # RO/SRO NRC P-2 Task #AO5202 K/A #004.A4.01 4.1/ 3.9 SF-2

Title: Perform Local Actions to Restart the Positive Displacement Pump

Examinee (Print): _____

Testing Method:

Simulated Performance:	X	Classroom:	
Actual Performance:		Simulator:	
Alternate Path:		Plant:	X

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions on Unit 1 (Unit 2):

- The crew is performing ABN-301, Instrument Air System Malfunction.
- Restart of the Positive Displacement Charging Pump (PDP) is required to re-establish Charging flow.
- Boron concentration and T_{AVE} have not changed.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- RESET control air to the Unit 1 (Unit 2) PDP Fluid Drive per ABN-301, Instrument Air System Malfunction, Step 3.3.4.n.
- RESTORE the Unit 1 (Unit 2) PDP to operation per SOP-103A(B), Chemical and Volume Control System, Section 5.3.1, Positive Displacement Pump Startup, Starting at Step 5.3.1.E.

Task Standard: Reset the PDP per ABN-301 and prepare PDP for restart per SOP-103A(B).

Required Materials: ABN-301, Instrument Air System Malfunction, Rev. 11, PCN-6.
SOP-103A, Chemical and Volume Control System, Rev. 17, PCN-15.
SOP-103B, Chemical and Volume Control System, Rev. 12, PCN-11.

Validation Time: 20 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-301, Instrument Air System Malfunction.**
  - **Page containing Step 3.3.4.n.**
- **SOP-103A, Chemical and Volume Control System, Sections 2.5 and 5.3.1 for Unit 1.**
  - **INITIAL and N/A Steps as appropriate up to Step 5.3.1.E.**
- **SOP-103B, Chemical and Volume Control System, Sections 2.5 and 5.3.1 for Unit 2.**
  - **INITIAL and N/A Steps as appropriate up to Step 5.3.1.E.**
- **Flashlight needed in the Charging Pump Remote Operator Room.**

EXAMINER NOTE:

This JPM can be performed on either Unit. CIRCLE the Unit on which the JPM is to be performed on the JPM Worksheet and the JPM Cue Sheet and PROVIDE the examinee with the Unit specific procedure.

This JPM has been modified to reflect Unit 1 or Unit 2 designations (as identified in the Perform Step and Standard) by replacing them with a u where appropriate.

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**Remind examinee to simulate all actions. The following step is from ABN-301.**
Perform Step: 1√	Reset air to PDP hydraulic speed changer.
Standard:	DEPRESS the control air RESET button located atop the Positive Displacement Pump Fluid Drive in the PDP Room.
Examiner Cue:	**The Fluid Drive is RESET.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps are from SOP-103A(B).**
NOTE: If the Stuffing Box Coolant Tank is overfilled, the PDP Charging Pump Room will become contaminated.	
Perform Step: 2	IF Stuffing Box Coolant Tank is low, THEN fill per the following steps:
Standard:	OBSERVE Stuffing Box Coolant Tank sightglass level.
Examiner Cue:	**The sight glass is EMPTY. Another operator will monitor sight glass level as the tank is filled.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Fill Valve is located in the Charging Pump Remote Operator Room.**
Perform Step: 3√	IF Stuffing Box Coolant Tank is low, THEN fill per the following steps: • Slowly crack OPEN uCS-0119, PD PMP u-01 STUFFING BOX COOL TK MU ISOL VLV, until desired fill rate is achieved.
Standard:	Slowly crack OPEN uCS-0119, PD PMP u-01 STUFFING BOX COOL TK MU ISOL VLV until desired fill rate is achieved.
Examiner Cue:	**The sight glass is half-full.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	When the desired tank level has been established, CLOSE uCS-0119.
Standard:	CLOSE u-CS-0119, PD PMP u-01 STUFFING BOX COOL TK MU ISOL VLV when level is OBSERVED in the Stuffing Box Coolant Tank.
Examiner Cue:	**The valve is CLOSED.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The remote operator is located in the Charging Pump Remote Operator Room. Unit 1 covers are blue and Unit 2 covers are yellow.**
Perform Step: 5	Ensure u-8388-RO, PD CHRG PMP u -01 DISCH VLV RMT OPER, is OPEN.
Standard:	GO to the Charging Pump Remote Operator Room and PERFORM the following: • REMOVE the blue (yellow) cover for u-8388-RO, PD CHRG PMP u-01 DISCH VLV RMT OPER. • OBSERVE valve position indicator and DETERMINE valve OPEN. **or** • LOCATE a Remote Operator hand tool for u-8388-RO. • PLACE hand tool on u-8388-RO and TURN in OPEN direction.
Examiner Cue:	**The valve is OPEN.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6	OPEN the following valves: • 1/u-8202A, VENT VLV (MCB) • 1/u-8202B, VENT VLV (MCB)
Standard:	CONTACT the Control Room to ENSURE 1/u-8202A and 1/u-8202B, VENT VLVs are OPEN.
Terminating Cue:	**The vent valves are OPEN. This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions on Unit 1 (Unit 2):**

- **The crew is performing ABN-301, Instrument Air System Malfunction.**
- **Restart of the Positive Displacement Charging Pump (PDP) is required to re-establish Charging flow.**
- **Boron concentration and T_{AVE} have not changed.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **RESET control air to the Unit 1 (Unit 2) PDP Fluid Drive per ABN-301, Instrument Air System Malfunction, Step 3.3.4.n.**
- **RESTORE the Unit 1 (Unit 2) PDP to operation per SOP-103A(B), Chemical and Volume Control System, Section 5.3.1, Positive Displacement Pump Startup, Starting at Step 5.3.1.E.**

Facility: CPNPP JPM # RO/SRO NRC P-3 Task #AO4405 K/A #067 AA2.17 3.5 / 4.3 SF-8

Title: Perform Actions for a Fire In Containment

Examinee (Print): _____

Testing Method:

Simulated Performance:	X	Classroom:	
Actual Performance:		Simulator:	
Alternate Path:		Plant:	X

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions on Unit 1 (Unit 2):

- A fire in Containment is in progress.
- The crew is performing actions for ABN-807A(B), Response to Fire in the Containment Building.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- ALIGN Unit 1 (Unit 2) Plant Equipment as required by ABN-807A(B), Response to Fire in the Containment Building, Attachment 1, Actions to Be Taken by the Nuclear Equipment Operator.
- THIS IS A TIME CRITICAL JPM.

Task Standard: Deenergize PORVs, RCP Seal Leakoff Valves, RHR Pump Suction Valves and verify proper RHR Valve alignment per ABN-807A(B), Attachment 1.

Required Materials: ABN-807A, Response to Fire in the Containment Building, Rev. 7, PCN-1.
ABN-807B, Response to Fire in the Containment Building, Rev. 5, PCN-1.

Validation Time: 18 minutes Time Critical: 5 min Critical Time: _____ minutes
Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-807A, Response to Fire in the Containment Building, Attachment 1 for Unit 1.**
- **ABN-807B, Response to Fire in the Containment Building, Attachment 1 for Unit 2.**

EXAMINER NOTE:

This JPM can be performed on either Unit. CIRCLE the Unit on which the JPM is to be performed on the JPM Worksheet and the JPM Cue Sheet and PROVIDE the examinee with the Unit specific procedure.

The TIME CRITICAL portion of the JPM (Steps 1, 2, and 3) starts when the Cue Sheet has been read and understood by the examinee outside the Nuclear Equipment Operator office in the Turbine Building.

This JPM has been modified to reflect Unit 1 or Unit 2 designations (as identified in the Perform Step and Standard) by replacing them with a u where appropriate.

EXAMINER CAUTION:

Entry into the ECCS Valve Rooms (last two steps in the JPM) will result in ~0.5 to 1.0 mrem of radiation exposure. If desired, have the examinee locate the room and valve on the Valve Map in the Low Dose Waiting Area just inside the door.

√ - Check Mark Denotes Critical Step | **CRITICAL START TIME:** |

Examiner Note:	**Remind examinee to simulate all actions. Breakers are located in Electrical and Control Building 807' Room X-133 Cable Spreading Room North Wall for Unit 1 and Room X-134 South Wall for Unit 2.**
CAUTION: Timely performance of steps 1 and 2 is required to mitigate potential spurious PORV operation. (deenergize PORV within 5 minutes)	
NOTE:	**De-energizing the breakers in Step 1 will close the following valves:** • **u-PCV-0455A, PRZR u-01 PORV 0455A** • **u-LCV-459, Uu LTDN ISOL VLV 0459** • **u-8149A/B/C, Uu LTDN ORIF ISOL VLV (45/75/75 GPM)** • **u-HV-3607/3608, RV u-01 HEAD UPSTRM/ DNSTRM VNT VLV**
Perform Step: 1a√	At 125 VDC DIST PNL uED1-1 place the following breakers OFF: • 1ED1-1/14/BKR, TERMINATION RACK 1-TC-07/10 SUPPLY BREAKER (**Unit 1**) • 2ED1-1/14/BKR, CABLE TERMINATION RACK 2-TC-07/10 SUPPLY BREAKER (**Unit 2**)
Standard:	PERFORM the following at 125 VDC Distribution Panel uED1-1: • PLACE 1ED1-1/14/BKR, TERMINATION RACK 1-TC-07/10 SUPPLY BREAKER in OFF position (**Unit 1**). • PLACE 2ED1-1/14/BKR, CABLE TERMINATION RACK 2-TC-07/10 SUPPLY BREAKER in OFF position (**Unit 2**).
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 1b√	At 125 VDC DIST PNL uED1-1 place the following breakers OFF: • 1ED1-1/17/BKR, TERMINATION RACK 1-TC-13/16 SUPPLY BREAKER (**Unit 1**) • 2ED1-1/16/BKR, CABLE TERMINATION RACK 2-TC-13/16 SUPPLY BREAKER (**Unit 2**)
Standard:	PERFORM the following at 125 VDC Distribution Panel uED1-1: • PLACE 1ED1-1/17/BKR, TERMINATION RACK 1-TC-13/16 SUPPLY BREAKER in OFF position (**Unit 1**). • PLACE 2ED1-1/16/BKR, CABLE TERMINATION RACK 2-TC-13/16 SUPPLY BREAKER in OFF position (**Unit 2**).
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ☐ UNSAT ☐**

NOTE:	**De-energizing the breakers in Step 2 will close the following valves:** • **u-8153/8154, Uu XS LTDN ISOL VLV 8153/8154** • **u-HV-3609/3610, PRZR u-01 UPSTRM/ DNSTRM VNT VLV** • **u-PCV-456, PRZR u-01 PORV 0456**
Perform Step: 2√	At 125 VDC PNL 1ED2-1 place 1ED2-1/14/BKR, TERMINATION RACK 1-TC-14 SUPPLY BREAKER - OFF (**Unit 1**) At 125 VDC PNL 2ED2-1 place 2ED2-1/16/BKR, CABLE TERMINATION RACK 2-TC-23/14 SUPPLY BREAKER - OFF (**Unit 2**)
Standard:	PERFORM the following at 125 VDC Distribution Panel uED2-1: • PLACE 1ED2-1/14/BKR, TERMINATION RACK 1-TC-14 SUPPLY BREAKER in OFF position (**Unit 1**). • PLACE 2ED2-1/16/BKR, CABLE TERMINATION RACK 2-TC-23/14 SUPPLY BREAKER in OFF position (**Unit 2**).
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ☐ UNSAT ☐**

CRITICAL STOP TIME:	

Examiner Cue:	**INFORM examinee that the TIME CRITICAL portion is complete.**

Examiner Note:	**Breakers are located in Electrical and Control Building 792' Train C Inverter Room South Wall for Unit 1 and North Wall for Unit 2.**
NOTE:	**De-energizing the breaker in Step 3 removes control power to the following valves:** • **u-8141A, RC PMP u-01 SL 01 LKOFF VLV (Fail Open)** • **u-8141B, RC PMP u-02 SL 01 LKOFF VLV (Fail Open)** • **u-8141C, RC PMP u-03 SL 01 LKOFF VLV (Fail Open)** • **u-8141D, RC PMP u-04 SL 01 LKOFF VLV (Fail Open)** • **u-8142, Uu RC PMP SL 01 BYP VLV (Fail Closed)**
Perform Step: 3√	At 125 VDC DIST PNL XD2-3 place XD2-3/8/BKR, CABLE TERMINATION RACK 1-TC-03/06 SUPPLY BREAKER - OFF (**Unit 1**) At 125 VDC DIST PNL 2D2-3 place 2D2-3/6/BKR, CABLE TERMINATION RACK 2-TC-03/06 SUPPLY BREAKER - OFF (**Unit 2**)
Standard:	PERFORM the following at the respective 125 VDC Distribution Panel: • PLACE XD2-3/8/BKR, CABLE TERMINATION RACK 1-TC-03/06 SUPPLY BREAKER in OFF position at Panel XD2-3 (**Unit 1**). • PLACE 2D2-3/6/BKR, CABLE TERMINATION RACK 2-TC-03/06 SUPPLY BREAKER in OFF position at Panel 2D2-3 (**Unit 2**).
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Breakers are located in Safeguards Building 810' Train A Switchgear u-083 for Units 1 & 2 on MCC uEB3-2.**
Perform Step: 4√	Place uEB3-2/1G/BKR-1 AND BKR-2, Uu RC PUMP u-01 SEAL WATER RETURN ISOLATION VLV u-8112 MOTOR BREAKER 1 AND 2 - OFF
Standard:	PLACE both breakers uEB3-2/1G/BKR-1 and BKR-2, Uu RC PMP u-01 SEAL WATER RETURN ISOLATION VLV u-8112 MOTOR BREAKER 1 and 2 in OFF position.
Examiner Cue:	**The breakers are OFF.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Breakers are located in Safeguards Building 810' Train A Switchgear u-083 for Units 1 & 2 on MCC uEB1-1.**
NOTE:	**The following action is taken due to the possibility of fire in containment in vicinity of RHR pump hot leg suction valves causing u-HV-8804A or u -HV-8804B to spuriously open.**
Perform Step: 5a1√	Place the following breakers - OFF • uEB1-1/6F/BKR, RHR PUMP u-01 TO CCP SUCTION VALVE u-8804A MOTOR BREAKER
Standard:	PLACE uEB1-1/6F/BKR, RHR PUMP u-01 TO CCP SUCTION VALVE u-8804A MOTOR BREAKER in OFF position.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Breakers are located in Auxiliary Building 790' Room X-179 Hall to Boric Acid Transfer Pumps for Unit 1 on on MCC 1EB4-1 and Auxiliary Building 810' Room X-207 (North end / East wall by RHUT 1 Room) for Unit 2 on on MCC 2EB4-1.**
Perform Step: 5a2√	Place the following breakers - OFF • uEB4-1/2J/BKR, RHR PUMP u-02 TO SI PMP SUCTION VALVE u-8804B MOTOR BREAKER
Standard:	PLACE uEB4-1/2J/BKR, RHR PUMP u-02 TO SI SUCTION VALVE u-8804B MOTOR BREAKER in OFF position.
Examiner Cue:	**The breaker is OFF.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Valve is located in Safeguards Building 790' Room Train A ECCS Valve Room for Units 1 and 2.**
Perform Step: 5b1	Ensure the following valves - CLOSED • u-8804A, RHR PMP u-01 TO CCP SUCT VLV
Standard:	ENSURE u-8804A, RHR PMP u-01 TO CCP SUCT VLV in CLOSE position.
Examiner Cue:	**The valve is CLOSED.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Valve is located in Safeguards Building 790' Room Train B ECCS Valve Room for Units 1 and 2.**
Perform Step: 5b2	Ensure the following valves - CLOSED • u-8804B, RHR PMP u-02 TO SI PMP SUCT VLV
Standard:	ENSURE u-8804B, RHR PMP u-02 TO SI SUCT VLV in CLOSE position.
Terminating Cue:	**The valve is CLOSED. This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions on Unit 1 (Unit 2):**

- **A fire in Containment is in progress.**
- **The crew is performing actions for ABN-807A(B), Response to Fire in the Containment Building.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **ALIGN Unit 1 (Unit 2) Plant Equipment as required by ABN-807A(B), Response to Fire in the Containment Building, Attachment 1, Actions to Be Taken by the Nuclear Equipment Operator.**

THIS IS A TIME CRITICAL JPM

Facility: CPNPP JPM # RO NRC S-1 Task #RO1008 K/A #001.A4.03 4.0 / 3.7 SF-1

Title: Perform Control Rod Exercises

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is operating at 97% with all controls in AUTOMATIC.
- OPT-106A, Control Rod Exercise, is in progress.
- The fuel is fully conditioned.
- ETP-106, Monthly RCCA Repositioning, is not being performed concurrently with this activity.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- EXERCISE Control Rods in Control Bank D per OPT-106A, Control Rod Exercise.
- WITHDRAW Control Bank D Rods per Shift Manager direction.
- RESTORE Automatic Rod Control when complete.

Task Standard: Exercise Control Bank D Control Rods per OPT-106A.

Required Materials: OPT-106A, Control Rod Exercise, Rev. 10, PCN-5.
OPT-106A-2, MODE 1 or 2 Control Rod Exercise Data Sheet, Rev. 0.

Validation Time: 10 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-52 or any 97% power Initial Condition and ENSURE the following:

- **VERIFY Control Bank D rod positions between 210 and 220 steps.**
- **VERIFY all other Control Rod Groups at 228 steps.**
- **VERIFY 1/1-RBSS, Control Rod Bank Select Switch is in the CBC position.**

NOTE: After each JPM, VERIFY 1/1-RBSS, Control Rod Bank Select Switch is in the CBC position prior to performance by the next candidate.

EXAMINER:

PROVIDE the examinee with a copy of:

- **OPT-106A, Control Rod Exercise.**
- **OPT-106A-2, MODE 1 or 2 Control Rod Exercise Data Sheet completed up to Control Bank D.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Perform Step: 1√	Place 1/1-RBSS, CONTROL ROD BANK SELECT in the position corresponding to the bank to be tested.
Standard:	PLACE Switch 1/1-RBSS, CONTROL ROD BANK SELECT Switch in the CBD, Control Bank D position.
Comment:	**SAT ☐ UNSAT ☐**

CAUTION:
- The following steps will cause a change in reactor power level and Tavg.
- If control rods are inadvertently pulled above 231 steps, rod motion should be stopped and step counters reset per SOP-702A.

Perform Step: 2a√	IF the Bank being tested is less than 220 steps, THEN perform the following: • Move the Bank being tested ≥ 10 AND <13 steps as indicated on the step counter.
Standard:	DETERMINE Control Bank D Rods are < 220 steps and PLACE 1/1-FLRM, CONTROL ROD MOTION CONTROL Switch in the OUT direction.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Examinee should recognize the affects on Reactor power and temperature as Control Rods are moved.**
Perform Step: 2b√	IF the Bank being tested is less than 220 steps, THEN perform the following: • Move the Bank being tested ≥ 10 AND <13 steps as indicated on the step counter.
Standard:	WITHDRAW Control Bank D Rods from 215 steps to a Bank position of 225 to 227 steps on both counters.
Examiner Note:	**1-ALB-6D, Window 4-14 will alarm when Bank D rods reach 223 steps. If examinee identifies alarm as expected (prior to receiving alarm) then referencing the alarm response is not required.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	Record Initial step counter demand position for each rod group in the bank being tested.
Standard:	OBSERVE 1-SC-CBD1, CTRL BANK D GROUP 1 and 1-SC-CBD2, CTRL BANK D GROUP 2 Step Counter Demand Position and RECORD Initial Position of Control Bank D Rod Groups on Form OPT-106A-2.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Based on the CAUTION prior to Step 8.1 the Examinee should attempt to move the rods only the minimum of 10 steps if all position indications are OPERABLE.**
Perform Step: 4√	Move the bank being tested ≥ 10 AND < 13 steps in the opposite direction of movement in step 8.2.3.
Standard:	PLACE 1/1-FLRM, CONTROL ROD MOTION CONTROL Switch in the IN position and INSERT Control Bank D Rods to a Bank position of 215 to 217 steps on both counters.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5	Verify that all rods in the bank being tested have moved by recording Test Position step counter demand AND that DRPI position indication has changed for each rod in the bank.
Standard:	OBSERVE 1-SC-CBD1, CTRL BANK D GROUP 1 and 1-SC-CBD2, CTRL BANK D GROUP 2 Step Counter Demand Position and RECORD Test Position of Control Bank D Rod Groups on Form OPT-106A-2 and VERIFY movement of Control Bank D Rods ≥ 10 steps and ≤ 13 steps.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following step is critical only if Control Rods need to be moved.**
Examiner Cue:	**The Shift Manager directs that Control Bank D rods be returned to the Pre-Test position.**
Perform Step: 6√	Return the bank being tested to Pre-test position (step 8.2.1) OR as directed by the Shift Manager.
Standard:	PLACE 1/1-FLRM, CONTROL ROD MOTION CONTROL Switch in the IN direction and ADJUST until Control Bank D Rods are at the Pre-Test Positions documented on OPT-106A-2.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7	Record the Final step counter demand position for each rod group in the bank being tested.
Standard:	OBSERVE 1-SC-CBD1, CTRL BANK D GROUP 1 and 1-SC-CBD2, CTRL BANK D GROUP 2 Step Counter Demand Position and RECORD Final Position of Control Bank D Rod Groups on Form OPT-106A-2.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8√	Place 1/1-RBSS, CONTROL ROD BANK SELECT in MAN.
Standard:	PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in MANUAL.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9	Verify the following alarms are clear <u>OR</u> evaluate for current plant conditions: • "CONTROL ROD CTRL URGENT FAIL" (6D-1.6) • "ANY CONTROL ROD BANK AT LO LMT" (6D-1.7) • "CONTROL ROD CTRL NON-URGENT FAIL" (6D-2.6) • "ANY CONTROL ROD BANK AT LO-LO LMT" (6D-2.7) • "DRPI ROD DEV" (6D-3.5) • "DRPI URGENT FAIL" (6D-3.6) • "DRPI NON-URGENT FAIL" (6D-4.6) • "QUADRANT PWR TILT" (6D-4.10)
Standard:	VERIFY the following alarms on ALB-6D are clear: • 6D-1.6, CONTROL ROD CTRL URGENT FAIL • 6D-1.7, ANY CONTROL ROD BANK AT LO LMT • 6D-2.6, CONTROL ROD CTRL NON-URGENT FAIL • 6D-2.7, ANY CONTROL ROD BANK AT LO-LO LMT • 6D-3.5, DRPI ROD DEV • 6D-3.6, DRPI URGENT FAIL • 6D-4.6, DRPI NON-URGENT FAIL • 6D-4.10, QUADRANT PWR TILT
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The examinee may perform an Annunciator Alarm Test to verify PCIP Window 2-4 is clear.**
Perform Step: 10	IF AUTO rod control is desired, THEN perform the following: • Verify alarm "LO TURB PWR ROD WTHDRWL BLK C-5" is clear (PCIP-2.4).
Standard:	VERIFY alarm PCIP-2.4, LO TURB PWR ROD WTHDRWL BLK C-5 is clear.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11	IF AUTO rod control is desired, THEN perform the following: • Ensure Tavg and Tref are within 1ºF of each other.
Standard:	OBSERVE 1-TI-412A, AVE T_{AVE} T_{REF} DEV meter and VERIFY T_{AVE} and T_{REF} are within 1ºF of each other.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12√	IF AUTO rod control is desired, THEN perform the following: • Place 1/1-RBSS, CONTROL ROD BANK SELECT in AUTO.
Standard:	PLACE 1/1-RBSS, Control Rod Bank Select in AUTO if conditions allow.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **Unit 1 is operating at 97% with all controls in AUTOMATIC.**
- **OPT-106A, Control Rod Exercise, is in progress.**
- **The fuel is fully conditioned.**
- **ETP-106, Monthly RCCA Repositioning, is not being performed concurrently with this activity.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **EXERCISE Control Rods in Control Bank D per OPT-106A, Control Rod Exercise.**
- **WITHDRAW Control Bank D Rods per Shift Manager direction.**
- **RESTORE Automatic Rod Control when complete.**

Facility: CPNPP JPM # RO/SRO NRC S-2 Task #RO1404 K/A #006.A4.07 4.4 / 4.4 SF-2

Title: Align Cold Leg Injection During a Loss of Inventory

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:	X	Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following Unit 1 conditions:

- There has been a Total Loss of Decay Heat Removal Capability while in MODE 5 following Core Reload.
- It has been 20 days and 20 hours since the Unit was shut down.
- There are NO temporary seals installed.
- IPO-010A, Reactor Coolant System Reduced Inventory Conditions, Attachment 1, Shiftly Checklist was just completed.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- INITIATE ABN-104, Residual Heat Removal System Malfunction, Section 8.0, MODE 5 or 6 Complete Loss of Decay Heat Removal Capability - RCS Not Filled, STARTING at Step 8.3.8.

Task Standard: Align Cold Leg Injection via the Charging or Safety Injection headers using the Centrifugal Charging Pumps when Hot Leg Injection fails per ABN-104.

Required Materials: ABN-104, Residual Heat Removal System Malfunction, Rev. 8, PCN-6.

Validation Time: 15 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-56 or any MIDLOOP Initial Condition and ENSURE the following:

- **INSERT malfunction RH01A, RHR Pump 1-01 TRIP.**
- **INSERT override DIR HHS APRH2 for RHR Pump 1-02 to STP.**
- **CLOSE valve HC-128.**
- **INSERT remote function SIR01, SI Pump 1-01 Breaker RACKED IN.**
- **INSERT remote function SIR02, SI Pump 1-02 Breaker RACKED IN.**
- **INSERT malfunction SI04A, SI Pump 1-01 TRIP.**
- **INSERT override DIS 18802A, SI Pump Valve 8802A to CLOSE.**
- **INSERT override DIS 18802B, SI Pump Valve 8802B to CLOSE.**
- **ENSURE Charging flow is approximately 25 gpm as read on 1-FI-121A.**

NOTE: Return Safety Injection Key to Key Locker when JPM is complete.

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-104, Residual Heat Removal System Malfunction,**
  - **Section 8.0, MODE 5 or 6 Complete Loss of Decay Heat Removal Capability - RCS Not Filled.**
    - **INITIAL and N/A as appropriate through Step 8.3.8.**
  - **Attachment 2, RWST Injection Flow Required.**

√ - Check Mark Denotes Critical Step

START TIME:	

Perform Step: 1	OPEN BOTH pressurizer PORV block valves AND OPEN BOTH pressurizer PORVs.
Standard:	PERFORM the following: • DETERMINE 1/1-8000A, PRZR PORV BLK VLV switch in OPEN and OBSERVE red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2	OPEN BOTH pressurizer PORV block valves AND OPEN BOTH pressurizer PORVs.
Standard:	PERFORM the following: • DETERMINE 1/1-8000B, PRZR PORV BLK VLV switch in OPEN and OBSERVE red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following four steps can be performed in any order.**
Perform Step: 3√	OPEN BOTH pressurizer PORV block valves AND OPEN BOTH pressurizer PORVs.
Standard:	PERFORM the following: • PLACE 1/1-PCV-455A, PRZR PORV switch in OPEN and OBSERVE red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	OPEN BOTH pressurizer PORV block valves AND OPEN BOTH pressurizer PORVs.
Standard:	PERFORM the following: • PLACE 1/1-PCV-456, PRZR PORV switch in OPEN and OBSERVE red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

CAUTION: Racking in the SIP Breaker will place the unit into the Action Statement of TS 3.4.12.

Perform Step: 5	Locally rack in Affected Unit Safety Injection Pump breaker(s). • 1EA1/10/BKR, SAFETY INJECTION PUMP 1-01 MOTOR BREAKER • 1EA2/9/BKR, SAFETY INJECTION PUMP 1-02 MOTOR BREAKER
Standard:	OBSERVE green FAN and TRIP lights LIT and DETERMINE and both Safety Injection Pump Breakers are RACKED IN.
Examiner Cue:	**If asked, REPORT the Safety Injection Pump Breakers RACKED IN.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6	Verify available Safety Injection Train(s) - ALIGNED PER IPO-010A/B, ATTACHMENT 1.
Standard:	DETERMINE Safety Injection Trains ALIGNED per Initial Conditions.
Examiner Cue:	**If asked, REPORT Attachment 1 is complete.**
Comment:	**SAT ☐ UNSAT ☐**

CAUTION: The use of SIP hot leg injection can cause an increase in RCS pressure and subsequent failure of temporary seals, if the temporary seal maximum allowable pressure is exceeded.

Perform Step: 7	Verify NO opening exists in any RCS loop.
Standard:	DETERMINE no opening exists in any RCS Loop per Initial Conditions.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: The preferred SIP to start is for the train that supplies loop with NO opening. Crossconnecting SIP discharge may be necessary if the preferred SIP is NOT available.

Perform Step: 8	Start the selected SI Pump.
Standard:	PLACE 1/1-APSI1, SIP 1 handswitch in START and OBSERVE red FAN and amber MISMATCH and white TRIP lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: The preferred SIP to start is for the train that supplies loop with NO opening. Crossconnecting SIP discharge may be necessary if the preferred SIP is NOT available.

Perform Step: 9	Start the selected SI Pump.
Standard:	PLACE 1/1-APSI2, SIP 2 handswitch in START and OBSERVE red FAN and PUMP lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10	Open the associated hot leg injection valve: • 1/u-8802B, SI TO HL 1 & 4 INJ ISOL VLV
Standard:	INSERT key and TURN 1/1-8802B, SI TO HL 1 & 4 INJ ISOL VLV switch to OPEN and OBSERVE green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**With the Safety Injection Pumps cross-connected, the examinee may attempt to open valve 1/1-8802A. This valve will also NOT open.**
Perform Step: 11	Open the associated hot leg injection valve: • 1/u-8802A, SI TO HL 2 & 3 INJ ISOL VLV
Standard:	INSERT key and TURN 1/1-8802A, SI TO HL 2 & 3 INJ ISOL VLV switch in OPEN and OBSERVE green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12	Verify Hot Leg Injection Flow.
Standard:	DETERMINE NO Hot Leg Injection Flow exists due to Safety Injection Pump 1-01 TRIPPED and 1/1-8802B, SI TO HL 1 & 4 INJ ISOL VLV failed to OPEN.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps will initiate Cold Leg Injection and represent the alternate path for this JPM.**
CAUTION: Racking in the CCP breaker may place the unit in violation of TS 3.5.3.	
Perform Step: 13	IF Hot Leg Injection cannot be established, THEN GO TO Step 10 to Initiate Cold Leg Injection.
Standard:	DETERMINE Hot Leg Injection Flow cannot be established and PERFORM RNO Actions to INITIATE Cold Leg Injection.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14	Locally rack in Affected Unit Centrifugal Charging Pump breaker(s). • 1EA1/11/BKR, 1APCH1, CENTRIFUGAL CHARGING PUMP 1-01 MOTOR BREAKER • 1EA2/12/BKR, 1APCH2, CENTRIFUGAL CHARGING PUMP 1-02 MOTOR BREAKER
Standard:	OBSERVE breaker lights LIT and DETERMINE both Centrifugal Charging Pump Breakers are RACKED IN.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Opening either valve 1/1-LCV-112D or 1/1-LCV-112E satisfies alignment of RWST suction to the CCPs (parallel flowpath).**
Perform Step: 15√	Verify the RWST suction isolation valves - OPEN: • 1/u-LCV-112D, RWST TO CHRG PMP SUCT VLV
Standard:	PLACE 1/1-LCV-112D, RWST TO CHRG PMP SUCT VLV switch in OPEN and OBSERVE red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Opening either valve 1/1-LCV-112D or 1/1-LCV-112E satisfies alignment of RWST suction to the CCPs (parallel flowpath).**
Perform Step: 16√	Verify the RWST suction isolation valves - OPEN: • 1/u-LCV-112E, RWST TO CHRG PMP SUCT VLV
Standard:	PLACE 1/1-LCV-112E, RWST TO CHRG PMP SUCT VLV switch in OPEN and OBSERVE red OPEN light LIT.

Comment:	SAT ☐ UNSAT ☐

Examiner Note:	**Closing <u>either</u> valve 1/1-LCV-112B <u>or</u> 1/1-LCV-112C satisfies isolation of the VCT suction to the CCPs (series flowpath).**
Perform Step: 17√	Verify VCT suction isolation valves - CLOSED: • 1/<u>u</u>-LCV-112B, VCT TO CHRG PMP SUCT VLV
Standard:	PLACE 1/1-LCV-112B, VCT TO CHRG PMP SUCT VLV switch in CLOSE and OBSERVE green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Closing <u>either</u> valve 1/1-LCV-112B <u>or</u> 1/1-LCV-112C satisfies isolation of the VCT suction to the CCPs (series flowpath).**
Perform Step: 18√	Verify VCT suction isolation valves - CLOSED: • 1/<u>u</u>-LCV-112C, VCT TO CHRG PMP SUCT VLV
Standard:	PLACE 1/1-LCV-112C, VCT TO CHRG PMP SUCT VLV switch in CLOSE and OBSERVE green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 19	Verify <u>u</u>-ZL-8220 <u>AND</u> <u>u</u>-ZL-8221, CHRG PMP SUCT HI POINT VENT VLV - CLOSED.
Standard:	OBSERVE 1-ZL-8220 **<u>and</u>** 1-ZL-8221, CHRG PMP SUCT HI POINT VENT VLV green CLOSE lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 20	Ensure 1/<u>u</u>-8202A <u>AND</u> 1/<u>u</u>-8202B, VENT VLV - CLOSED.
Standard:	OBSERVE 1/1-8202A, VENT VLV **<u>and</u>** 1/1-8202B, VENT VLV green CLOSE lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The examinee can align flow using JPM Steps 21a, 21b, <u>or</u> 21c.**
Perform Step: 21a	Align <u>ONE</u> of the following charging flow paths, as necessary to bypass any known open RCS loop penetrations: • Loop 4 Cold Leg Charging
Standard:	DETERMINE 1/1-8146, LOOP 4 CHRG VLV red OPEN light LIT.

Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 21b	Align ONE of the following charging flow paths, as necessary to bypass any known open RCS loop penetrations: • Loop 1 Cold Leg Charging
Standard:	PLACE 1/1-8147, LOOP CHRG VLV in OPEN and OBSERVE red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**If either of the CCP High Head Injection Loop Valves are opened, flow will exceed that required by JPM Step 23.**
Perform Step: 21c	Align ONE of the following charging flow paths, as necessary to bypass any known open RCS loop penetrations: • Centrifugal Charging Pump High Head Injection - Loops 1-4 Cold Leg
Standard:	PLACE 1/1-8801A **and/or** 1/1-8801B, CCP SI ISOL VLV in OPEN and OBSERVE red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 22	Start the selected charging pump.
Standard:	DETERMINE Centrifugal Charging Pump 1-01 RUNNING and OBSERVE red FAN and PUMP lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 23	Adjust charging flow per Attachment 2.
Standard:	REFER to Attachment 2 and DETERMINE Time After Shutdown EQUALS 500 hours (20 days and 20 hours) per the Initial Conditions and FLOW required is 45 gpm.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 24√	Adjust charging flow per Attachment 2.
Standard:	DEPRESS amber MANUAL and red RAISE (▲) pushbuttons to ADJUST 1-FK-121, CCP CHRG FLO CTRL Valve to establish **at least** 45 gpm Charging flow as read on 1-FI-121A, CHRG FLO.

Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **There has been a Total Loss of Decay Heat Removal Capability while in MODE 5 following Core Reload.**
- **It has been 20 days and 20 hours since the Unit was shut down.**
- **There are NO temporary seals installed.**
- **IPO-010A, Reactor Coolant System Reduced Inventory Conditions, Attachment 1, Shiftly Checklist was just completed.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **INITIATE ABN-104, Residual Heat Removal System Malfunction, Section 8.0, MODE 5 or 6 Complete Loss of Decay Heat Removal Capability - RCS Not Filled, STARTING at Step 8.3.8.**

Facility: CPNPP JPM # RO/SRO NRC S-3 Task #RO1209B K/A #010.A1.07 3.7 / 3.7 SF-3

Title: Reduce Reactor Coolant System Pressure and Block Safety Injection

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- A Plant Shutdown and Cooldown for Refueling is in progress.
- An Emergency Boration is in progress and Chemistry reports the Reactor Coolant System is currently borated for MODE 4 entry.
- The Reactor Coolant System is ~515ºF and ~2235 psig.
- A BOP operator is maintaining RCS temperature.
- The extra RO is performing OPT-407, RCS Temperature and Pressure Verification and Reactor Coolant Pump Data Monitoring.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- INITIATE a RCS depressurization per IPO-005A, Plant Cooldown from Hot Standby to Cold Shutdown, STARTING at Step 5.1.5.C.
- OPEN both Pressurizer Spray Valves to 60% to INITIATE the depressurization.
- STABILIZE pressure at 1925 ± 25 psig and BLOCK Safety Injection.

Task Standard: Depressurize the RCS and Block Safety Injection Signals per IPO-005A.

Required Materials: IPO-005A, Plant Cooldown from Hot Standby to Cold Shutdown, Rev. 23, PCN-17.

Validation Time: 25 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-50 or any Hot Zero Power IC and ENSURE the following:

- **Cooldown using the Steam Dump System is in progress.**
- **FREEZE the Simulator until the examinee is prepared to begin.**
- **PLACE SPDS PRESS/TEMP GRAPH on the RO Desk Monitor.**
- **PLACE GTGC-MODE 3 on the Plant Monitor.**

EXAMINER:

PROVIDE the examinee with a copy of:

- **IPO-005A, Plant Cooldown from Hot Standby to Cold Shutdown, Section 5.1, Cooldown from MODE 3 to MODE 5 (Solid Operation).**
  - **INITIAL or N/A through Step 5.1.5.B.**

√ - Check Mark Denotes Critical Step

START TIME:	

CAUTION:
- Main Steam Line Low Pressure Safety Injection and Pressurizer Low Pressure Safety Injection must be blocked when RCS pressure is below 1960 psig to prevent inadvertent actuation from low Pressurizer pressure at 1820 psig or low steam line pressure at 605 psig.
- It is expected that RCS Cooldown and Depressurization be controlled such that SI block is accomplished AFTER Shutdown Margin verification AND PRIOR to SI actuation setpoint.

NOTE:
- Pressurizer cooldown should be conducted at a uniform rate vice permitting stepwise temperature decreases.
- Maximum spray flow should be maintained to allow for Pressurizer mixing and aid in RCS H_2 control.
- 1-PK-455A, PZR MASTER PRESS CTRL may be adjusted in MANUAL to energize Group C Pressurizer Heaters and maximize spray flow.

Perform Step: 1√	Place Pressurizer Spray Valve Controller(s) in MANUAL
Standard:	DEPRESS 1-PK-455B, RC LOOP 1 PRZR SPR VLV CTRL and 1-PK-455C, RC LOOP 4 PRZR SPR VLV CTRL amber MANUAL pushbutton and OBSERVE amber light LIT and white AUTO light DARK
Comment:	**SAT ☐ UNSAT ☐**

CAUTION: RCS pressure and temperature should be maintained within limits per TDM-301A.

NOTE: If RCP 1 or 4 is stopped, the associated spray valve controller should remain in MANUAL with zero demand to prevent bypassing of the spray flow.

Perform Step: 2√	Slowly THROTTLE OPEN Pressurizer spray valve(s), as necessary, to begin a slow RCS Pressure reduction: • 1-PK-455B, RC LOOP 1 PRZR SPR VLV CTRL • 1-PK-455C, RC LOOP 4 PRZR SPR VLV CTRL
Standard:	THROTTLE OPEN Pressurizer Spray Valves to 60% OPEN as follows: • DEPRESS 1-PK-455B, RC LOOP 1 PRZR SPR VLV CTRL red RAISE (▲) pushbutton and OBSERVE ZL-455B, RC LOOP 1 PRZR SPR VLV red OPEN light LIT with demand at ~ 60%. • DEPRESS 1-PK-455C, RC LOOP 4 PRZR SPR VLV CTRL red RAISE (▲) pushbutton and OBSERVE ZL-455C, RC LOOP 4 PRZR SPR VLV red OPEN light LIT with demand at ~ 60%.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	WHEN RCS pressure < 2185 psig, THEN verify the following annunciators are ON: • 1-ALB-5B, 1.6, PRZR LO PRESS PORV 456 BLK • 1-ALB-5B, 2.6, PRZR LO PRESS PORV 455A BLK
Standard:	OBSERVE and ACKNOWLEDGE the following Annunciators: • 1-ALB-5B, Window 1.6, PRZR LO PRESS PORV 456 BLK • 1-ALB-5B, Window 2.6, PRZR LO PRESS PORV 455A BLK
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This step is performed when pressure is lowered to 1925 ± 25 psig.**
Perform Step: 4√	As PRZR PRESS channels approach 1925 psig, adjust pressurizer heaters and spray valves as necessary to maintain RCS pressure between 1900 psig and 1950 psig.
Standard:	When PRZR pressure approaches 1925 psig PERFORM the following: • DEPRESS 1-PK-455B, RC LOOP 1 PRZR SPR VLV CTRL red RAISE (▲) or green LOWER (▼) pushbuttons as required to maintain pressure between 1900 psig and 1950 psig, **and/or**, • DEPRESS 1-PK-455C, RC LOOP 4 PRZR SPR VLV CTRL red RAISE (▲) or green LOWER (▼) pushbuttons as required to maintain pressure between 1900 psig and 1950 psig.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: During RCS pressure reduction, letdown flow will decrease and charging flow will have to be reduced. A minimum charging flow to RCP seals shall be maintained. This will cause Pressurizer level to gradually increase.

Perform Step: 5	WHEN RCS pressure is below 1960 psig, THEN perform the following to block SI: • Verify 1-PCIP, 2.6, PRZR PRESS SI BLK PERM P-11 is ON.
Standard:	OBSERVE blue PCIP light LIT: • 1-PCIP, Window 2.6, PRZR PRESS SI BLK PERM P-11
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6	Verify the following status lights are OFF: • 1-TSLB-9, 1.3, PRZR PRESS SI PERM PB-455B • 1-TSLB-9, 2.3, PRZR PRESS SI PERM PB-456B • 1-TSLB-9, 3.3, PRZR PRESS SI PERM PB-457B
Standard:	OBSERVE white TSLB sugar cube lights DARK: • 1-TSLB-9, Window 1.3 - PRZR PRESS SI PERM PB-455B. • 1-TSLB-9, Window 2.3 - PRZR PRESS SI PERM PB-456B. • 1-TSLB-9, Window 3.3 - PRZR PRESS SI PERM PB-457B.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Main Steam Line Low Pressure Safety Injection setpoint is 605 psig.**
Perform Step: 7√	Turn BOTH MSL ISOL SI RESET/BLOCK switches to BLOCK and release: • 1/1-SLSIRBA, MSL ISOL SI RESET/BLOCK • 1/1-SLSIRBB, MSL ISOL SI RESET/BLOCK
Standard:	TURN 1/1-SLSIRBA, MSL ISOL SI RESET/BLOCK **and** 1/1-SLSIRBB, MSL ISOL SI RESET/BLOCK Switches CLOCKWISE to BLOCK position.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8	Verify the following are ON: • 1-PCIP, 3.8, MSL PRESS LO TRN A SI BLK • 1-PCIP, 4.8, MSL PRESS LO TRN B SI BLK
Standard:	OBSERVE blue PCIP lights LIT: • 1-PCIP, Window 3.8 - MSL PRESS LO TRN A SI BLK • 1-PCIP, Window 4.8 - MSL PRESS LO TRN B SI BLK
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Pressurizer Low Pressure Safety Injection setpoint is 1820 psig.**
Perform Step: 9√	Turn BOTH PRZR PRESS SI RESET/BLOCK switches to BLOCK and release: • 1/1-PPSIRBA, PRZR PRESS SI RESET/BLOCK • 1/1-PPSIRBB, PRZR PRESS SI RESET/BLOCK
Standard:	TURN 1/1-PPSIRBA, PRZR PRESS SI RESET/BLOCK **and** 1/1-PPSIRBB, PRZR PRESS SI RESET/BLOCK Switches CLOCKWISE to BLOCK position.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10	Verify the following are ON: • 1-PCIP, 3.7, PRZR PRESS LO TRN A SI BLK • 1-PCIP, 4.7, PRZR PRESS LO TRN B SI BLK
Standard:	OBSERVE blue PCIP lights LIT: • 1-PCIP, Window 3.7 - PRZR PRESS LO TRN A SI BLK • 1-PCIP, Window 4.7 - PRZR PRESS LO TRN B SI BLK
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **A Plant Shutdown and Cooldown for Refueling is in progress.**
- **An Emergency Boration is in progress and Chemistry reports the Reactor Coolant System is currently borated for MODE 4 entry.**
- **The Reactor Coolant System is ~515ºF and ~2235 psig.**
- **A BOP operator is maintaining RCS temperature.**
- **The extra RO is performing OPT-407, RCS Temperature and Pressure Verification and Reactor Coolant Pump Data Monitoring.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **INITIATE a RCS depressurization per IPO-005A, Plant Cooldown from Hot Standby to Cold Shutdown, STARTING at Step 5.1.5.C.**
- **OPEN both Pressurizer Spray Valves to 60% to INITIATE the depressurization.**
- **STABILIZE pressure at 1925 ± 25 psig and BLOCK Safety Injection.**

Facility: CPNPP JPM # RO/SRO NRC S-4 Task #RO1118 K/A #015.AA1.22 4.5 / 4.8 SF-4P

Title: Respond to a Reactor Coolant Pump Seal Malfunction

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Unit 1 is operating at 100% power with all controls in AUTOMATIC.

Initiating Cue: The Unit Supervisor directs you to RESPOND to any Primary Side alarms.

Task Standard: Evaluate RCP seal leakoff flow condition, trip the Reactor and affected RCP, and isolate affected RCP seal water leakoff per ABN-101.

Required Materials: ABN-101, Reactor Coolant Pump Trip/Malfunction, Rev. 10, PCN-6.

ALM-0051A, 1-ALB-5A, Window 1-2 - ANY RCP SEAL 1 LKOFF FLO HI, Rev.5, PCN-2.

Validation Time: 10 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to any 100% power IC and PERFORM the following:

- **When directed, INSERT malfunction CV27C, RCP 1-03 Seal #1 failure at 36%.**
- **MONITOR malfunction CV27C and ADJUST as necessary to maintain RCP 1-03 Seal #1 failure > 8 gpm.**

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-101, Reactor Coolant Pump Trip/Malfunction, Section 4.0.**

√ - Check Mark Denotes Critical Step

START TIME:	

Booth Operator:	**When directed, EXECUTE malfunction CV27C at 36%.**
Perform Step: 1	Evaluate alarms and select appropriate Alarm Procedure.
Standard:	ACKNOWLEDGE alarm 1-ALB-5A, Window 1.2 - ANY RCP SEAL 1 LKOFF FLO HI and REFER to ABN-101, Reactor Coolant Pump Trip/Malfunction.
Examiner Note:	**When examinee determines ABN-101 is required, PROVIDE copy.**
Comment:	**SAT ☐ UNSAT ☐**

Booth Operator:	**MONITOR malfunction CV27C and ADJUST as necessary to maintain RCP 1-03 Seal #1 failure > 8 gpm.**
Perform Step: 2	Determine appropriate action step.
Standard:	OBSERVE 1-FR-0155, RCP 3 SEAL LKOFF FLO (NR) at 1.0 gpm and 1-FR-0159, RCP 3 SEAL LKOFF FLO (WR) at > 8 gpm **or** 1-FI-143, RCP 3 SEAL WTR INJ FLO at > 8 gpm.
Comment:	**SAT ☐ UNSAT ☐**

Note:
- Total #1 Seal Flow = #1 Leakoff plus #2 Leakoff indications
- For immediate shutdown required, a manual plant trip must precede RCP Shutdown.
- #2 seal leakoff is read locally in containment. If containment entry is not practicable it is acceptable to assume a #2 seal leakoff of 1 gpm if the "ANY SEAL 2 LEAKOFF FLO HI", u-ALB-5A, window 3.2 is DARK.
- Attachment 1 lists computer points for temperature monitoring.

#1 Seal Leakoff Flow	OR	Total #1 Seal Flow	AND	Pump Bearing/Seal Inlet Temperature	THEN	RCP Shutdown Step
>6.0 gpm		>6.0 gpm		Increasing		Immediate Step 2
>6.0 gpm		>6.0 gpm and <8.0 gpm		Stable		Orderly Step 3
		>8.0 gpm		NA		Immediate Step 2
<0.8 gpm		<0.8 gpm		Stable		Orderly Step 3
<0.8 gpm		<0.8 gpm		Increasing		Immediate Step 2

Perform Step: 3	Determine appropriate action step.
Standard:	DETERMINE Total #1 Seal Leak Off Flow greater than 8.0 gpm and IMMEDIATELY PERFORM Step 2 of ABN-101.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Trip the Reactor and GO TO EOP-0.0A/B while other operators continue this procedure.
Standard:	PLACE 1/1-RTC, RX TRIP BKR Switch **or** 1/1-RT, RX TRIP Switch in TRIP position and VERIFY the following: • Reactor Trip Breakers - at least one OPEN. • Neutron flux - DECREASING. • All Control Rod position rod bottom lights - ON.
Examiner Cue:	**Another operator will perform EOP-0.0A, CONTINUE in ABN-101.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√	STOP affected RCP(s).
Standard:	PLACE 1/1-PCPX3, RCP 3 to STOP and OBSERVE the following: • Green STOP light LIT. • 1-II-RCP 3, RCP MOT CURRENT at zero (0) amps. • 1-FI-434/435/436 RC LOOP 3 FLO CHAN I/II/III to zero (0) flow.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**When examinee verbalizes time requirement, REPORT 4 minutes have passed.**
Perform Step: 6√	Between 3 to 5 minutes after RCP stopped, CLOSE No. 1 Seal Leakoff Valve for affected RCP.
Standard:	PLACE 1/1-8141C, RCP 3 SEAL 1 LKOFF VLV to CLOSE and OBSERVE green CLOSE light LIT.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Unit 1 is operating at 100% power with all controls in AUTOMATIC.**

INITIATING CUE: **The Unit Supervisor directs you to RESPOND to any Primary Side alarms.**

Facility: CPNPP JPM # RO/SRO NRC S-5 Task #RO3504 K/A #061.A1.05 3.6 / 3.7 SF-4S

Title: Perform Post-Maintenance Testing of Turbine Driven Auxiliary Feedwater Pump

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:	X	Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is at 97% power to accommodate Turbine Driven Auxiliary Feedwater (TDAFW) Pump Testing.
- All controls are in AUTOMATIC.
- The TDAFW Pump has been out of service for bearing replacement and is ready for testing.
- All Prerequisites of SOP-304A, Auxiliary Feedwater System, for performing a post-maintenance run of the TDAFW Pump are complete.
- A Nuclear Equipment Operator is standing by at the TDAFW Pump.
- 1-HS-2452-1, AFWPT STM SPLY VLV-MSL 4, is available to warm steam lines.
- Pump Governor maintenance was NOT performed.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- INITIATE a post-maintenance run per SOP-304A, Auxiliary Feedwater System, Section 5.1.2, Turbine Driven Auxiliary Feedwater Pump Maintenance / Performance Run With Flow to Steam Generators.
- ESTABLISH 50 gpm flow to each Steam Generator during testing.
- APPROVAL has been granted for two-handed operation per Operations Guideline 3.

Task Standard: Perform testing of the Turbine Driven AFW Pump, establish Auxiliary Feedwater Flow to Steam Generators, and respond to low TDAFW Pump lube oil pressure per SOP-304A and ALM-0082A.

Required Materials: SOP-304A, Auxiliary Feedwater System, Rev. 16, PCN-4.
ALM-0082A, 1-ALB-8B, Window 2.7 - TD AFWP L/O SYS TRBL, Rev. 8, PCN-7.

Validation Time: 20 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-52 or any 97% power Initial Condition and ENSURE the following:

When contacted as the Nuclear Equipment Operator:

- **EXECUTE remote function FWR055, TDAFWP [TR] / THROTTLE [TR] VLV HS-2452 to OPEN and CLOSE as directed on Key 2.**
- **EXECUTE remote function MSR37, 1-HS-2452-1, BYP VLV 1MS-712 (MSL #4) to OPEN and CLOSE as directed on Key 3.**
- **When directed by examiner, EXECUTE the following OVERRIDES on Key 1:**
  - **LOFWPL24523 to ON.**
  - **AN 8B_26, ALB-8B, Window 2.7 - TD AFWP L/O SYS TRBL - Alarm ON.**

EXAMINER:

PROVIDE the examinee with a copy of:

- **SOP- 304A, Auxiliary Feedwater System with initials and N/As as appropriate up to Step 5.1.2.B.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**1-HV-2452, Trip and Throttle Valve can only closed locally.**
Examiner Note:	**1-ALB-08B, Window 3-7, TD AFWP STOP VLV NOT OPEN HV-2452, will alarm when 1-HV-2452, Trip and Throttle Valve is closed. Examinee should reference alarm if not identified as expected.**

CAUTION: When operating the Turbine Driven Auxiliary Feedwater Pump, the room temperature must be monitored to ensure it does not exceed TRM. 13.7.36.

NOTE:

- If any work has been performed on the Governor, then turbine speed must be raise to approximately 4075 rpm to check functional operability. Refer to section 5.5.5 for TDAFW Pump uncoupled run.
- If the turbine has tripped on overspeed, the overspeed trip linkage must be manually reset prior to attempting restart. For instructions on manually resetting the turbine trip and throttle valve, see Attachment 1.
- An RCS temperature reduction of approximately 3°F has been experienced when this evolution was performed in MODE 4.
- Oil level in the TDAFWP Governor Oil sightglass should be between 1.0" and 1.25" above bottom mark prior to start.
- Max Speed - Any oil visible in sight glass.

Perform Step: 1	Close 1-HV-2452, AFWPT 1-01 TRIP AND THROT VLV (both OPER & VLV green lights lit).
Standard:	DIRECT Plant Equipment Operator to CLOSE 1-HV-2452, AFWPT TRIP AND THROT VLV and OBSERVE both green 1-HS-2452G OPER & VLV lights illuminated.
Booth Operator:	**When contacted, EXECUTE remote function FWR055 and CLOSE HV-2452, TDAFP Trip & Throttle Valve.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Lower 1-SK-2452A, AFWPT SPD CTRL to 0% output.
Standard:	DEPRESS green LOWER (▼) pushbutton on 1-SK-2452A, AFWPT SPD CTRL until 0% DEMAND is indicated.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**JPM Step 3 <u>may</u> be performed using two-handed operation.**
Perform Step: 3√	Close the following valves by placing the controllers at 0% output: • 1-FK-2459A, TD AFWP SG 1 FLO CTRL
Standard:	DEPRESS green LOWER (▼) pushbutton on 1-FK-2459A, TD AFWP SG 1 FLO CTRL until 0% DEMAND is indicated and green CLOSE light is LIT on 1-ZL-2459A.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**JPM Step 4 <u>may</u> be performed using two-handed operation.**
Perform Step: 4√	Close the following valves by placing the controllers at 0% output: • 1-FK-2460A, TD AFWP SG 2 FLO CTRL
Standard:	DEPRESS green LOWER (▼) pushbutton on 1-FK-2460A, TD AFWP SG 2 FLO CTRL until 0% DEMAND is indicated and green CLOSE light is LIT on 1-ZL-2460A.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**JPM Step 5 <u>may</u> be performed using two-handed operation.**
Perform Step: 5√	Close the following valves by placing the controllers at 0% output: • 1-FK-2461A, TD AFWP SG 3 FLO CTRL
Standard:	DEPRESS green LOWER (▼) pushbutton on 1-FK-2461A, TD AFWP SG 3 FLO CTRL until 0% DEMAND is indicated and green CLOSE light is LIT on 1-ZL-2461A.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**JPM Step 6 <u>may</u> be performed using two-handed operation.**
Perform Step: 6√	Close the following valves by placing the controllers at 0% output: • 1-FK-2462A, TD AFWP SG 4 FLO CTRL
Standard:	DEPRESS green LOWER (▼) pushbutton on 1-FK-2462A, TD AFWP SG 2 FLO CTRL until 0% DEMAND is indicated and green CLOSE light is LIT on 1-ZL-246A2.
Comment:	**SAT ☐ UNSAT ☐**

[C]

CAUTION: Do not operate the AFWPT at speeds below 1800 RPM for an extended period of time due to loss of oil flow to the bearings.

[C]

NOTE: The warm-up by-pass line around each steam supply isolation/control valve for the Turbine Driven Aux. Feedwater pump is normally locked closed and will only be used in the surveillance testing of the TDAFWP operability

Perform Step: 7	Unlock and open one or both of the following valves to warm the steam lines: (approximately 2-3 minutes) • 1MS-0712, MSL 1-04 TO AFWPT STM SPLY VLV BYP VLV
Standard:	DIRECT Plant Equipment Operator to UNLOCK and OPEN 1MS-0712, MSL 1-04 TO AFWPT STM SPLY VLV BYP VLV.
Booth Operator:	**When contacted, EXECUTE remote function MSR37, 1-HS-2452-1, AFWPT STM SPLY VLV-MSL 4 to OPEN.**
Examiner Cue:	**When examinee verbalizes time requirement, REPORT 2 minutes have passed.**
Comment:	**SAT ☐ UNSAT ☐**

Booth Operator:	**When contacted, EXECUTE remote function FWR055 and OPEN HV-2452, TDAFP Trip & Throttle Valve.**
Examiner Note:	**1-ALB-08B, Window 4-4, TD AFWP SUCT PRESS LO, will alarm and clear when 1-HV-2452, Trip and Throttle Valve is opened.**
Perform Step: 8	Slowly open 1-HV-2452, AFWPT 1-01 TRIP AND THROT VLV: • IF performing maintenance/performance run in MODE 3 or above, THEN increase to 2000 rpm. Verify governor control at approximately 2000 rpm, THEN fully open the valve (both OPER & VLV red lights lit).
Standard:	DIRECT Nuclear Equipment Operator to: • Slowly OPEN 1-HV-2452, AFWPT 1-01 TRIP AND THROT VLV and VERIFY Governor Control at approximately 1800 rpm. • Fully OPEN 1-HV-2452, AFWPT 1-01 TRIP AND THROT VLV and OBSERVE both red 1-HS-2452H OPER & VLV lights illuminated.
Examiner Cue:	**If the examinee questions speed stabilizing at 1800 rpm, REPORT as Unit Supervisor to continue with testing.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9√	Open the selected steam supply valve. • 1-HS-2452-1, AFWPT STM SPLY VLV-MSL 4
Standard:	PLACE 1-HS-2452-1, AFWPT STM SPLY VLV MSL 4 in START and OBSERVE red OPEN light illuminated.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10	Close and lock the following valves: • 1MS-0712, MSL 1-04 TO AFWPT STM SPLY VLV BYP VLV
Standard:	DIRECT Nuclear Equipment Operator to CLOSE and LOCK 1MS-0712, MSL 1-04 TO AFWPT STM SPLY VLV BYP VLV.
Booth Operator:	**When contacted, EXECUTE remote function MSR37, 1-HS-2452-1, AFWPT STM SPLY VLV-MSL 4 to CLOSE.**
Booth Cue:	**1MS-0712 is CLOSED and LOCKED.**
Comment:	**SAT ☐ UNSAT ☐**

NOTE: Speed may be cycled several times to bleed air from governor hydraulics.

Perform Step: 11√	Slowly increase the speed of the turbine using 1-SK-2452A, AFWPT SPD CTRL until max RPM (approximately 4075 for MODE 3 and above) is obtained.
Standard:	Slowly RAISE 1-SK-2452A, AFWPT SPD CTRL by depressing red RAISE (▲) pushbutton and OBSERVE speed of TDAFP on 1-SI-2452A, AFWPT SPD until max RPM of 4075 is obtained.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Total TDAFP flow should be continuously adjusted to > 130 gpm.**

CAUTION: Damage to a Turbine Driven AFW Pump may result from continuous operation (more than 20 minutes) at flows less than 130 GPM.

NOTE: Coordinate with Maintenance and System Engineering to adjust compensating needle valve if maintenance was performed on the governor.

Perform Step: 12√	Regulate the feed flow to each steam generator by pressing the OPEN or CLOSE pushbuttons. • 1-FK-2459A, TD AFWP SG 1 FLO CTRL
Standard:	ESTABLISH 50 gpm flow to Steam Generator 1-01 by DEPRESSING the red RAISE (▲) or green LOWER (▼) pushbuttons on 1-FK-2459A, TD AFWP SG 1 FLO CTRL and OBSERVE 1-FI-2463A **or** 1-FI-2463C, SG 1 AFW FLO indication.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13√	Regulate the feed flow to each steam generator by pressing the OPEN or CLOSE pushbuttons. • 1-FK-2460A, TD AFWP SG 2 FLO CTRL
Standard:	ESTABLISH 50 gpm flow to Steam Generator 1-02 by DEPRESSING the red RAISE (▲) or green LOWER (▼) pushbuttons on 1-FK-2460A, TD AFWP SG 2 FLO CTRL and OBSERVE 1-FI-2464A **or** 1-FI-2464C, SG 2 AFW FLO indication.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14√	Regulate the feed flow to each steam generator by pressing the OPEN or CLOSE pushbuttons. • 1-FK-2461A, TD AFWP SG 3 FLO CTRL
Standard:	ESTABLISH 50 gpm flow to Steam Generator 1-03 by DEPRESSING the red RAISE (▲) or green LOWER (▼) pushbuttons on 1-FK-2461A, TD AFWP SG 3 FLO CTRL and OBSERVE 1-FI-2465C **or** 1-FI-2465A, SG 3 AFW FLO indication.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 15√	Regulate the feed flow to each steam generator by pressing the OPEN or CLOSE pushbuttons. • 1-FK-2462A, TD AFWP SG 4 FLO CTRL
Standard:	ESTABLISH 50 gpm flow to Steam Generator 1-04 by DEPRESSING the red RAISE (▲) or green LOWER (▼) pushbuttons on 1-FK-2462A, TD AFWP SG 4 FLO CTRL and OBSERVE 1-FI-2466C **or** 1-FI-2466A, SG 4 AFW FLO indication.
Comment:	**SAT ☐ UNSAT ☐**

Booth Operator:	**When directed, EXECUTE overrides for Lube Oil System Trouble.**
Examiner Note:	**The following steps represent the alternate path of this JPM.**
Examiner Note:	**Steps are from 1-ALB-8B, Window 2.7 - TD AFWP L/O SYS TRBL.**
Perform Step: 16	Respond to Annunciator alarm.
Standard:	ACKNOWLEDGE alarm 8B, Window 2.7 - TD AFWP L/O SYS TRBL.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 17	Determine if low oil pressure is indicated by 1-PL-2452-4, AFWPT L/O PRESS LO, light illuminated.
Standard:	OBSERVE 1-PL-2452-4, AFWPT L/O PRESS LO white light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**1-ALB-08B, Window 4.5, TD AFWP STM SPLY VLV LEAKING HV-2452-1/2, will alarm when TDAFW Pump is tripped.**
Perform Step: 18√	If low oil pressure is indicated AND speed is >2200 RPM, trip the TDAFWP.
Standard:	DEPRESS 1-HS-2452-F, AFWPT TRIP pushbutton and OBSERVE Turbine speed lowering on 1-SI-2552A, AFWPT SPD and green VLV light LIT on 1-HS-2452G, AFWPT TRIP & THROTTLE VLV.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **Unit 1 is at 97% power to accommodate Turbine Driven Auxiliary Feedwater (TDAFW) Pump Testing.**
- **All controls are in AUTOMATIC.**
- **The TDAFW Pump has been out of service for bearing replacement and is ready for testing.**
- **All Prerequisites of SOP-304A, Auxiliary Feedwater System, for performing a post-maintenance run of the TDAFW Pump are complete.**
- **A Nuclear Equipment Operator is standing by at the TDAFW Pump.**
- **1-HS-2452-1, AFWPT STM SPLY VLV-MSL 4, is available to warm steam lines.**
- **Pump Governor maintenance was NOT performed.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **INITIATE a post-maintenance run per SOP-304A, Auxiliary Feedwater System, Section 5.1.2, Turbine Driven Auxiliary Feedwater Pump Maintenance / Performance Run With Flow to Steam Generators.**
- **ESTABLISH 50 gpm flow to each Steam Generator during testing.**
- **APPROVAL has been granted for two-handed operation per Operations Guideline 3.**

Facility: CPNPP JPM # RO/SRO NRC S-6 Task #RO2101A K/A #022.A1.01 3.6 / 3.7 SF-5

Title: Respond to a Containment High Temperature Alarm

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:	X	Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Unit 1 is operating at 100% power when Containment Fan Cooler 1-01 trips.
- Containment ambient temperatures are rising.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- RESPOND to alarm 1-ALB-3A, Window 1.1 - CNTMT TEMP HI.

Task Standard: Align equipment to support cooling of Containment when normal methods fail per ALM-0031A and SOP-801A.

Required Materials: ALM-0031A, 1-ALB-3A, Window 1.1 - CNTMT TEMP HI, Rev. 7, PCN-10.
SOP-801A, Containment Ventilation System, Rev. 13, PCN-1.

Validation Time: 20 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-18 or any 100% power IC and ENSURE the following:

- **INSERT malfunction CH06, CNTMT FN CLR FN 1 PHASE OVER CURRENT.**
- **EXECUTE remote function CHR 23 to ON and CHR 24 - 120ºF to ON.**
- **EXECUTE OVERRIDE DICHHS 5413A to STOP.**
- **EXECUTE OVERRIDE LOANAN14_26 to OFF.**

When contacted to OPEN the breakers for 1-HV-6074 and 1-HV-6076 EXECUTE the following OVERRIDES as applicable:

- **DICHHS 6074 to OPEN on Key 2.**
- **LOCHHS 6074_2 to OFF on Key 2.**
- **DICHHS 6076 to OPEN on Key 3.**
- **LOCHHS 6076_2 to OFF on Key 3.**

NOTE: RESET / ACKNOWLEDGE DAD when JPM is complete.

EXAMINER:

PROVIDE the examinee with a copy of:

- **ALM-0031A, 1-ALB-3A, Window 1.1 - CNTMT TEMP HI.**
- **SOP-801A, Containment Ventilation System.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The following steps are from ALM-0031A, 1-ALB-3A, Window 1.1.**
Perform Step: 1	Respond to alarms and select appropriate Alarm Procedure.
Standard:	ACKNOWLEDGE 1-ALB-3A, Window 1.1 - CNTMT TEMP HI.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: 1-TE-5400, 5401, 5402 and 5403 are averaged to provide indication on 1-TI-5400A, CNTMT AVE TEMP. A single instrument malfunction will invalidate these indications.

NOTE: 1-HV-6082, 1-HV-6083 and 1-HV-6084 close on Phase A Isolation.

Perform Step: 2	Monitor Containment Pressure. • 1-PI-934/935/936/937, CNTMT PRESS (IR) CHAN IV/III/II/I • 1-PI-5470A/B, CNTMT PRESS (NR)
Standard:	OBSERVE1-PI-934/935/936/937, CNTMT PRESS CHAN IV/III/II/I indications and DETERMINE Containment pressure is normal.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	Determine the affected temperature instrument from the Plant Computer.
Standard:	OBSERVE the following instruments on the Plant Computer and DETERMINE Containment temperature is elevated: • T5653A, CONT AVE TEMP. • T6400A / T6401A / T6402A, CONT TEMP.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: Due to instrument inaccuracies, containment average temperature should be assumed to be 10°F higher than indicated on the main control board. This value may then be used to determine if temperature is within Technical Specification limits.

Perform Step: 4	Monitor 1-TI-5400A, CNTMT AVE TEMP.
Standard:	OBSERVE 1-TI-5400A, CNTMT AVE TEMP and DETERMINE Containment temperature is elevated.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: Due to instrument inaccuracies containment average temperature should be assumed to be 4°F higher than indicated on the plant computer. This value may then be used to determine if temperature is within Technical Specification limits.

Perform Step: 5	If 1-TI-5400A is >110ºF, MONITOR Containment average temperature on the Plant Computer.
Standard:	MONITOR T5653A, CONT AVE TEMP on Plant Computer and DETERMINE Containment temperature is > 110ºF.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: If a more accurate method of temperature measurement is required to meet LCO, I & C personnel may measure resistance at individual RTD terminations and calculate average temperature. This method of measurement is accurate to within 1°F.

Perform Step: 6	If Containment average temperature is > 116ºF on the Plant Computer, notify I&C personnel to determine Containment average temperature by measuring individual loop resistance, as desired.
Standard:	CONTACT I&C to perform loop resistance measurements.
Examiner Cue:	**The Unit Supervisor has contacted I&C.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7	Refer to TS 3.6.5 and TRM 13.7.36.
Standard:	REFER to Technical Specification 3.6.5 and Technical Requirements Manual 13.7.36.
Examiner Cue:	**The Unit Supervisor is referencing Tech Specs and the TRM.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8	Ensure Chilled Water supply and return valves for Containment are open: • 1-HS-6082, CH WTR RET ISOL VLV • 1-HS-6083, CH WTR RET ISOL VLV • 1-HS-6084, CH WTR SPLY ISOL VLV
Standard:	DETERMINE all Chill Water Return Isolation Valves are OPEN.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9	Ensure Chilled Water return valves from in service Containment Recirc Fans are open (X-CV-01). • 1-HS-6074, CNTMT FN CLR 1 CH WTR RET VLV • 1-HS-6075, CNTMT FN CLR 2 CH WTR RET VLV • 1-HS-6076, CNTMT FN CLR 3 CH WTR RET VLV • 1-HS-6077, CNTMT FN CLR 4 CH WTR RET VLV
Standard:	DETERMINE Chilled Water Return Valves from Containment Recirc Fans 2 and 4 are OPEN at Panel X-CV-01.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10	Ensure Ventilation Chilled Water Chillers and Pumps operating per SOP-814 for Ventilation Water Chiller X-01, X-02, X-03 and X-04 Startup.
Standard:	ENSURE Ventilation Chilled Water Chillers and Pumps operating per SOP-814, Ventilation Chilled Water System.
Examiner Cue:	**Another operator has verified proper Chill Water System operation.**
Comment:	**SAT ☐ UNSAT ☐**

NOTE: Adjusting flow through containment fan coolers will affect flow to CRDM fan coolers. Most containment fan cooler discharge flow is normally routed through CRDM fan cooler units.

Perform Step: 11	Verify 1-FI-6081, CNTMT FN CLR CH WTR RET FLO, is between 912 and 1008 gpm with any combination of 3 of 4 units in service (X-CV-01).
Standard:	OBSERVE 1-FI-6081, CNTMT FN CLR CH WTR RET FLO and DETERMINE flow is less than 912 gpm at Panel X-CV-01 and that only two (2) units are in service.
Examiner Cue:	**If asked, a Containment entry cannot be performed at this time. If asked, REPORT Unit Supervisor acknowledges low flow condition and directs you to continue with procedure.**
Comment:	**SAT ☐ UNSAT ☐**

CAUTION: Chilled Water temperature should not be allowed to increase above 100°F. Recirculation through chiller units may actuate the rupture discs.

Perform Step: 12	Verify X-TI-6071, CH WTR SPLY HDR TEMP, is 45º - 55ºF (X-CV-01).
Standard:	OBSERVE X-TI-6071, CH WTR SPLY HDR TEMP and DETERMINE temperature is less than 45ºF at Panel X-CV-01 due to system loading.
Examiner Cue:	**If asked, REPORT Unit Supervisor acknowledges low Chill Water temperature and directs you to continue with procedure.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13	Monitor Containment Dewpoint Temperatures on the Plant Computer.
Standard:	OBSERVE temperatures on the Plant Computer and DETERMINE no increase in Containment dewpoint temperatures is occurring.
Examiner Cue:	**Another operator is monitoring Containment Dewpoint Temperature and there currently is no increasing trend.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14	Start additional Containment Air Cooling and Recirc Fans to reduce temperature to ≤ 100ºF per SOP-801A.
Standard:	REFER to SOP-801A, Containment Ventilation System, Step 5.1.1, Containment Air Cooling and Recirculation Systems Startup.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**If asked, REPORT Unit Supervisor states Prerequisites are met.**
Perform Step: 14a	Ensure the prerequisites in Section 2.1 are met.
Standard:	DETERMINE prerequisites of Section 2.1 are met since system is already in service.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**If asked, REPORT Unit Supervisor states Radiation Protection has been notified.**
Perform Step: 14b	Verify the Hydrogen Purge Supply and Exhaust System is NOT in service.
Standard:	DETERMINE the Hydrogen Purge Supply and Exhaust System is NOT in service given current plant conditions.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14c	Start one cooling unit. Verify the associated discharge damper on the running fan opens AND the dampers for the non-running fans remain closed. • 1-HS-5413A, CNTMT FN CLR FN 3 (1-HV-5413D)
Standard:	PLACE 1-HS-5413A, CNTMT FN CLR FN 3 in START and OBSERVE green TRIP light illuminated and DETERMINE fan did NOT start.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps represent the alternate path of this JPM.**
Perform Step: 15√	IF inadequate Containment Air Cooling and Recirc Fans are available (e.g. < three), THEN the following contingency actions may be used to reduce temperature. Start the non-operating CRDM fan cooler. • 1-HS-5421, CRDM VENT FN 1 • 1-HS-5423, CRDM VENT FN 2
Standard:	PLACE1-HS-5423, CRDM VENT FN 2 in START and OBSERVE red START light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 16√	Hold Chilled Water return valves from non-operating Containment Recirc Fans in open. (X-CV-01). • 1-HS-6074, CNTMT FN CLR 1 CH WTR RET VLV
Standard:	HOLD the following Chilled Water Return Valves in OPEN at Panel X-CV-01. • 1-HS-6074, CNTMT FN CLR 1 CH WTR RET VLV
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 17√	Place breaker for the non-operating Containment Air Cooling and Recirc Fans - OFF • 1EB3-2/5G/BKR-1, CNTMT RECIRC FAN 1-01 CLG COIL CH WTR RET VLV 6074 MOT BKR 1
Standard:	DISPATCH a Nuclear Equipment Operator to PLACE breakers for the following Containment Air Cooling and Recirc Fans in OFF: • 1EB3-2/5G/BKR-1, CNTMT RECIRC FAN 1-01 CLG COIL CH WTR RET VLV 6074 MOT BKR 1
Examiner Cue:	**If asked, REPORT an operator is standing by to open the breaker.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 18√	Release handswitch(es) selected in step 12.B.
Standard:	RELEASE 1-HS-6074, CNTMT FN CLR 1 CH WTR RET VLV handswitch when green CLOSE light is DARK.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 19√	Hold Chilled Water return valves from non-operating Containment Recirc Fans in open. (X-CV-01). • 1-HS-6076, CNTMT FN CLR 3 CH WTR RET VLV
Standard:	HOLD the following Chilled Water Return Valves in OPEN at Panel X-CV-01. • 1-HS-6076, CNTMT FN CLR 3 CH WTR RET VLV
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 20√	Place breaker for the non-operating Containment Air Cooling and Recirc Fans - OFF • 1EB3-2/4G/BKR-1, CNTMT RECIRC FAN 1-03 CLG COIL CH WTR IRC RET VLV1-HV-6076 MOT BKR 1
Standard:	DISPATCH a Nuclear Equipment Operator to PLACE breakers for the following Containment Air Cooling and Recirc Fans in OFF: • 1EB3-2/4G/BKR-1, CNTMT RECIRC FAN 1-03 CLG COIL CH WTR IRC RET VLV1-HV-6076 MOT BKR 1
Examiner Cue:	**If asked, REPORT an operator is standing by to open the breaker.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 21√	Release handswitch(es) selected in step 12.B.
Standard:	RELEASE 1-HS-6076, CNTMT FN CLR 3 CH WTR RET VLV handswitch when green CLOSE light is DARK.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions:**

- **Unit 1 is operating at 100% power when Containment Fan Cooler 1-01 trips.**
- **Containment ambient temperatures are rising.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **RESPOND to alarm 1-ALB-3A, Window 1.1 - CNTMT TEMP HI.**

Facility: CPNPP JPM # RO/SRO NRC S-7 Task #RO4205 K/A #062.A3.05 3.5 / 3.6 SF-6

Title: Transfer 480 VAC Safeguards Bus from Normal to Alternate Source

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:		Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Given the following conditions:

- Maintenance on 6.9 KV / 480V Transformer T1EB2 is required.
- Operations verified the Train B Battery Chargers are aligned to Bus 1EB4.
- Operations verified battery BT1ED2 is in service.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:

- ALIGN 480 VAC Bus 1EB2 to the Alternate Power Source per SOP-604A, 480 VAC Switchgear and MCCs, Step 5.3.2, 480 V Safeguards Bus Transfer from the Normal to the Alternate Power Source.
- DEENERGIZE Transformer T1EB2 once the Bus Tie is completed.
- APPROVAL has been granted for two-handed operation per Operations Guideline 3.

Task Standard: Align alternate power to Safeguards Bus 1EB2 and deenergize Transformer T1EB2 per SOP-604A.

Required Materials: SOP-604A, 480 VAC Switchgear and MCCs, Rev. 10, PCN-22.

Validation Time: 10 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-18 or any at power Initial Condition.

EXAMINER:

PROVIDE the examinee with a copy of:

- **SOP-604A, 480 VAC Switchgear and MCCs, Step 5.3.2.**
  - **INITIAL or N/A Steps 5.3.2 that will not be performed.**

√ - Check Mark Denotes Critical Step

START TIME:	

CAUTION:

- When one 6.9KV - 480V transformer is feeding two 480V buses, the potential exists to overload the 480V supply breaker. Therefore, in order to reduce this risk, the supplied current should be maintained <200 amps, as read on the 6.9KV supply breaker.
- Energizing a safeguards bus from its alternate power source may require entry into an LCO per TS 3.8.9 or 3.8.10.
- When transferring from the normal to alternate supply or the alternate to normal supply, some loads may be lost since these are dead bus transfers.
- In the following steps, the Bus Tie Breaker handswitch must be held in the CLOSE position until the Bus Feeder Breaker is opened and the Bus Tie Breaker closes. This will minimize the voltage drop on the bus during the transfer.

Perform Step: 1	Ensure the battery charger aligned to the 480 VAC Bus to be transferred has its associated Battery in service: • BT1ED2
Standard:	DETERMINE Battery BT1ED2 is service per the Initial Conditions.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Failure to <u>hold</u> the Bus Tie Breaker in the CLOSE position will prevent the associated Feeder Breaker from OPENING.**
Perform Step: 2√	<u>Hold</u> the selected bus tie breaker handswitch in the CLOSE position until the bus tie breaker is closed. • CS-BT-1EB24, BUS TIE BKR BT-1EB24
Standard:	PLACE and HOLD CS-BT1EB24, BUS TIE BKR BT1EB24 handswitch in CLOSE and OBSERVE green TRIP and amber MISMATCH lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	Ensure the AMBER disagreement light is lit on the selected bus tie breaker.
Standard:	OBSERVE amber MISMATCH light is LIT on CS-BT-1EB24, BUS TIE BKR BT-1EB24.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Train B Annunciator SSII-B, Window 2-5, 480 VAC, will alarm.**
Perform Step: 4√	Open the feeder breaker to the selected bus and ensure the bus tie breaker closes. • CS-1EB2-1, INCOMING BKR 1EB2-1
Standard:	PLACE CS-1EB2-1, INCOMING BKR 1EB2-1 handswitch in TRIP and OBSERVE Bus Tie Breaker BT-1EB24 red CLOSE light LIT and VERIFY CS-1EB2-1, INCOMING BKR 1EB2-1 green TRIP light LIT.
Booth Operator:	**ACKNOWLEDGE alarm when received.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5	Ensure the bus undervoltage alarm is clear.
Standard:	OBSERVE Annunciators 1-ALB-10B, Window 1.10, 480V ANY 1E BUS VOLT HI/LO **and/or** 1-ALB-10B, Window 4.11, 480V ANY 1E BUS VOLT LOSS are DARK.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6	Check all phases of bus voltage locally at the switchgear panel (should be between 445 and 508 volts).
Standard:	CONTACT an operator to CHECK all phases of bus voltage locally at the Switchgear Panel.
Examiner Cue:	**The Nuclear Equipment Operator REPORTS all phases of bus voltages normal.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Annunciator 1-ALB-10B, Window 1-11, 6.9KV ANY 1E XFMR BKR OPEN, will alarm when the breaker is open.**
Perform Step: 7√	IF it is desired to deenergize the 6.9KV/480V transformers, THEN Open the 6.9KV transformer feeder breaker associated with the 480V incoming breaker that was opened. • CS-T1EB2, XFMR BKR T1EB2
Standard:	PLACE CS-T1EB2, XFMR BKR T1EB2 handswitch in TRIP and OBSERVE Bus Feeder Breaker T1EB2 green TRIP light LIT and ACKNOWLEDGE annunciator alarm.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

INITIAL CONDITIONS: **Given the following conditions:**

- **Maintenance on 6.9 KV / 480V Transformer T1EB2 is required.**
- **Operations verified the Train B Battery Chargers are aligned to Bus 1EB4.**
- **Operations verified battery BT1ED2 is in service.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following:**

- **ALIGN 480 VAC Bus 1EB2 to the Alternate Power Source per SOP-604A, 480 VAC Switchgear and MCCs, Step 5.3.2, 480 V Safeguards Bus Transfer from the Normal to the Alternate Power Source.**
- **DEENERGIZE Transformer T1EB2 once the Bus Tie is completed.**
- **APPROVAL has been granted for two-handed operation per Operations Guideline 3.**

Facility: CPNPP JPM # RO/SRO NRC S-8 Task #RO1829 K/A #016.A2.01 3.0 / 3.1 SF-7

Title: Respond to Steam Flow Instrument Failure

Examinee (Print): _____

Testing Method:

Simulated Performance:		Classroom:	
Actual Performance:	X	Simulator:	X
Alternate Path:	X	Plant:	

READ TO THE EXAMINEE

I will explain the Initial Conditions, which steps to simulate or discuss, and provide an Initiating Cue. When you complete the task successfully, the objective for this JPM will be satisfied.

Initial Conditions: Unit 1 is operating at 100% power with all controls in AUTOMATIC.

Initiating Cue: The Unit Supervisor directs you to RESPOND to any Balance of Plant alarms.

Task Standard: Establish control of Steam Generator water level following Steam Flow instrument failure, align the Alternate Channel, and maintain level when AUTO control cannot be restored per 1-ALB-8A-1.8 and ABN-707.

Required Materials: ALM-0081A, 1-ALB-8A, Window 1.8 - SG 1 STM & FW FLO MISMATCH, Rev. 8, PCN-1.

ABN-707, Steam Flow Instrument Malfunction, Rev. 6, PCN-2.

Validation Time: 15 minutes Time Critical: N/A Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-18 or any 100% power Initial Condition and ENSURE the following:

- **ENSURE FT-512A is aligned as the in-service Steam Flow Transmitter on SG 1-01.**

When directed by the Examiner, PERFORM the following:

- **INSERT malfunction RX02A, SG 1-01 Steam Flow Transmitter (FT-512) fails to 0% on Key 4.**
- **Once MANUAL is selected on 1-FK-510 either at JPM Step 3 or Step 9, INSERT malfunction FW34B, 1-FK-510, SG 1 FLO CTRL trip from AUTO to MANUAL to prevent the controller from being returned to AUTO on Key 5.**

NOTE: When the JPM is completed, VERIFY the blue Control Channel Tag on the Steam Flow Instrument is moved in front of 1-FI-512A prior to next candidate performance.

EXAMINER:

PROVIDE the examinee with a copy of:

- **ALM-0081A, 1-ALB-8A, Window 1.8 - SG 1 STM & FW FLO MISMATCH.**
- **ABN-707, Steam Flow Instrument Malfunction.**

√ - Check Mark Denotes Critical Step | **START TIME:** |

Examiner Note:	**The examinee may choose to respond to the controller failure per ODA-102 which allows transfer from AUTO to MANUAL control when in the operator's judgment AUTO control is inappropriate. This action would be performed immediately at JPM Step 3 or JPM Step 10.**
Booth Operator:	**When directed, INSERT malfunction RX02A, SG 1-01 Steam Flow Transmitter failure to 0%.**
Perform Step: 1	Evaluate alarms and select appropriate response procedure.
Standard:	SELECT 1-ALB-8A, Window 1.8 - SG 1 STM & FW FLO MISMATCH.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This Step is performed in Alarm Response 1-ALB-8A-1.8.**
Perform Step: 2	Monitor steam generator water level: • 1-LI-518, SG 1 LVL (NR) CHAN III • 1-LI-517, SG 1 LVL (NR) CHAN IV • 1-LI-551, SG 1 LVL (NR) CHAN I • 1-LI-519, SG 1 LVL (NR) CHAN II
Standard:	MONITOR Steam Generator water level instruments: • 1-LI-518, SG 1 LVL (NR) CHAN III • 1-LI-517, SG 1 LVL (NR) CHAN IV • 1-LI-551, SG 1 LVL (NR) CHAN I • 1-LI-519, SG 1 LVL (NR) CHAN II
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This Step is performed in Alarm Response 1-ALB-8A-1.8.**
Perform Step: 3√	If level is NOT maintained at approximately 67%, transfer Steam Generator Water Level Control to manual and maintain level. • 1-FK-510, SG 1 FW FLO CTRL
Standard:	DEPRESS 1-FK-510, SG 1 FW FLO CTRL amber MANUAL pushbutton to TRANSFER Steam Generator Water Level Control and OPERATE the red RAISE (▲) or green LOWER (▼) pushbuttons to MAINTAIN level at approximately 67%.
Examiner Note:	**Should the examinee choose to respond immediately to the controller failure they could continue per Alarm Response 1-ALB-8A-1.8 or transition to ABN-707, Steam Flow Instrument Malfunction. ABN-707 actions begin at JPM Step 9.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This Step is performed in Alarm Response 1-ALB-8A-1.8.**
Perform Step: 4	Stop all secondary system power changes.
Standard:	DETERMINE no secondary system power changes are in progress.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This Step is performed in Alarm Response 1-ALB-8A-1.8.**
Perform Step: 5	Verify a FWP in service. • 1-ZL-2111A, FWPT A LP STOP VLV • 1-ZL-2112A, FWPT B LP STOP VLV • 1-ZL-2111B, FWPT A HP STOP VLV • 1-ZL-2112B, FWPT B HP STOP VLV
Standard:	VERIFY both Main Feedwater Pumps are in service and OBSERVE red OPEN light LIT and green CLOSE light DARK for all Stop Valve positions: • 1-ZL-2111A, FWPT A LP STOP VLV • 1-ZL-2112A, FWPT B LP STOP VLV • 1-ZL-2111B, FWPT A HP STOP VLV • 1-ZL-2112B, FWPT B HP STOP VLV
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This Step is performed in Alarm Response 1-ALB-8A-1.8.**
NOTE: FWP speed is programmed to maintain differential pressure between steam header and feedwater pump discharge header pressure at 80 psid from 0-20% power and ramps 80-170 psid from 20-100% power. The following computer points may aid the operator: • U5002A FW-MS HDR DP • U5003A DELTA PROGRAM-ACTUAL DP • P5446A FW STM FLOW SETPOINT	
Perform Step: 6	Verify 1-PI-507, MS HDR PRESS and 1-PI-508, FWP DISCH HDR PRESS differential pressure is maintained on program.
Standard:	OBSERVE1-PI-507, MS HDR PRESS and 1-PI-508, FWP DISCH HDR PRESS and DETERMINE differential pressure is on program.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This Step is performed in Alarm Response 1-ALB-8A-1.8.**
Perform Step: 7a	Monitor main steam line pressure: • 1-PI-515A, MSL 1 PRESS CHAN II • 1-PI-514A, MSL 1 PRESS CHAN I • 1-PI-516A, MSL 1 PRESS CHAN IV • 1-PI-2325, MSL 1 PRESS If one channel is indicating > 60 psig difference between remaining operable channels, go to ABN-709 for Steam Line Pressure Instrument Malfunction.
Standard:	MONITOR main steam line pressures and DETERMINE all channels are in agreement: • 1-PI-515A, MSL 1 PRESS CHAN II • 1-PI-514A, MSL 1 PRESS CHAN I • 1-PI-516A, MSL 1 PRESS CHAN IV • 1-PI-2325, MSL 1 PRESS
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This Step is performed in Alarm Response 1-ALB-8A-1.8.**
Perform Step: 7b	Monitor main steam line pressure: • If pressure is < 1125 psig, ensure 1-ZL-2325, SG 1 ATMOS RLF VLV is closed.
Standard:	DETERMINE pressure is less than 1125 psig and VERIFY 1-ZL-2325, SG 1 ATMOS RLF VLV is CLOSED.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This Step is performed in Alarm Response 1-ALB-8A-1.8.**
Perform Step: 8	Monitor 1-FI-512A, SG 1 STM FLO and 1-FI-513A, SG 1 STM FLO. • If one steam line flow indicates higher or lower than the other, go to ABN-707.
Standard:	DETERMINE 1-FI-512A, SG 1 STM FLO has failed low and TRANSITION to ABN-707, Steam Flow Instrument Malfunction.
Examiner Note:	**The Alarm Response directs examinee to ABN-707.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**ABN-707, Steam Flow Instrument Malfunction actions begin here.**
Perform Step: 9	Verify controlling steam flow channel indicating NORMAL.
Standard:	DETERMINE controlling steam flow channel NOT indicating normal and PERFORM RNO action.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This action may have already been performed at JPM Step 3.**
Perform Step: 10a√	Manually control affected feedwater control valve to maintain program steam generator level. • u-FK-510, SG 1 FW FLO CTRL
Standard:	DEPRESS 1-FK-510, SG 1 FW FLO CTRL amber MANUAL pushbutton to TRANSFER Steam Generator Water Level Control and OPERATE the red RAISE (▲) or green LOWER (▼) pushbuttons to MAINTAIN level at approximately 67%.
Booth Operator:	**When 1-FK-510 is placed in MANUAL, INSERT malfunction FW34B, 1-FK-510, SG 1 FLO CTRL trip from AUTO to MANUAL.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10b	Manually control feedwater pump speed control, as necessary. • Manually control u-SK-509A, FWPT MASTER SPD CTRL as necessary.
Standard:	DETERMINE Manually control 1-SK-509A, FWPT MASTER SPD CTRL as necessary
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11	Verify associated steam pressure channel for failed steam flow channel indicating - NORMAL.
Standard:	REFER to Attachment 1 and DETERMINE 1-PT-514A, MSL 1 PRESS CHAN I is in agreement with 1-PT-515A, MSL 1 PRESS CHAN II.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12	Verify SG level on common instrument line - NORMAL.
Standard:	REFER to Attachment 2 and DETERMINE 1-LT-517, SG 1 LVL (NR) CHAN IV is in agreement with 1-LT-519, SG1 LVL (NR) CHAN II.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13	Verify steam flow channel selected for control - NORMAL.
Standard:	DETERMINE steam flow channel selected for control NOT indicating normal and PERFORM RNO action.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14√	IF alternate steam flow channel operable, THEN select alternate steam flow channel for control: • u-FS-512C, SG 1 STM FLO CHAN SELECT
Standard:	PLACE 1-FS-512C, SG 1 STM FLO CHAN SELECT to Alternate Channel FY-513B.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 15√	Verify SG level control restored to normal: • Level stable at programmed level AND steam and feedwater flows matched.
Standard:	DEPRESS 1-FK-510, SG 1 FW FLO CTRL red RAISE (▲)or green LOWER (▼) pushbuttons as required to manually CONTROL feedwater flow to restore Steam Generator level.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following Step is the RNO if level and flow mismatch alarms are NOT clear.**
Perform Step: 16	Perform the following: • Continue manual control of feedwater flow to maintain steam generator level. • WHEN level stable at programmed level AND steam and feedwater flows matched, THEN continue with Step 5b.
Standard:	DETERMINE Steam Generator 1-01 level is STABLE at programmed level and steam and feedwater flows are matched when 1-ALB-8A, Window 1-12, SG 1 LVL DEV, and Window 1-8, SG 1 STM & FW FLO MISMATCH, alarms CLEAR.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Controller will not transfer from MANUAL to AUTO.**
Examiner Note:	**The following steps represent the alternate path of this JPM.**
Perform Step: 17	Ensure feedwater control valve in AUTO AND controlling normally: • u-FK-510, SG 1 FW FLO CTRL
Standard:	DEPRESS 1-FK-510, SG 1 FW FLO CTRL controller AUTO pushbutton and DETERMINE white AUTO light NOT lit and controller remains in MANUAL.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 18√	Ensure feedwater control valve in AUTO AND controlling normally: • IF valve will NOT control normally in AUTO, THEN continue manual control.
Standard:	OPERATE 1-FK-510, SG 1 FW FLO CTRL red RAISE (▲) or green LOWER (▼) pushbuttons to MAINTAIN level at approximately 67%.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Unit 1 is operating at 100% power with all controls in AUTOMATIC.**

INITIATING CUE: **The Unit Supervisor directs you to RESPOND to any Balance of Plant alarms.**

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.: 1	Op Test No.: March 2010 NRC
Examiners:		Operators:	

Initial Conditions:	• 100% power MOL - RCS Boron is 910 ppm by Chemistry sample. • Motor Driven Auxiliary Feedwater Pump 1-01 OOS for coupling repair.
Turnover:	Maintain steady-state 100% power conditions.
Critical Tasks:	• Manually Trip the Main Turbine when Automatic Reactor Protection Trip Fails. • Establish Heat Removal using Reactor Coolant System Bleed and Feed.

Event No.	Malf. No.	Event Type*	Event Description
1 +10 min	RX17A	C (RO, SRO) TS (SRO)	Power Operated Relief Valve (PCV-455A) seat leakage.
2 +20 min	TC08A	N (BOP, SRO)	High Pressure Turbine Stop Valve #4 fails closed. Manual Turbine Runback required.
3 +30 min	RX05A	I (RO, SRO) TS (SRO)	Pressurizer Level Transmitter (LT-459A) fails high.
4 +35 min	TU04	C (RO, SRO)	Main Turbine vibration @ 15 mils on a 300 second ramp requiring manual Reactor trip.
5 +35 min	TC07A	C (BOP, SRO)	Main Turbine fails to trip on Reactor trip requiring manual Turbine trip.
6 +36 min	ED01		Loss of Offsite Power 30 seconds after Reactor trip.
7 +36 min	EG06B		Emergency Diesel Generator (1-02) start failure.
8 +45 min	FW09A	M (RO, BOP, SRO)	Turbine Driven Auxiliary Feedwater Pump trips on overspeed. Total Loss of Feedwater.
9 +55 min	DIRCV 8000A	C (RO)	Power Operated Relief Valve (PCV-455A) Block Valve (1/1-8000A) fails closed.

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

SCENARIO SUMMARY NRC #1

The crew will assume the watch and maintain steady-state conditions per IPO-003A, Power Operations. Auxiliary Feedwater Pump 1-01 is out-of-service for coupling repair.

The first event is a leaking Power Operated Relief Valve (PORV). The crew responds per Alarm Procedure ALM-0052A, Window 3.1, Pressurizer PORV Outlet Temperature High. Actions include cycling the PORV after its associated PORV Block Valve is closed. The PORV Block Valve will later fail to open complicating the scenario. The SRO will refer to Technical Specifications.

When ALM-0052A actions are complete, a High Pressure Turbine Stop Valve fails closed. Electrical output of the Generator will drop from approximately 1265 MWe to 950 MWe and require an immediate Turbine Runback to 900 MWe. Actions are performed per ABN-401, Main Turbine Malfunction, Section 9.0, Inadvertent Closure of an HP or LP Stop or Control Valve. When the Turbine Runback is initiated, the crew will monitor for proper Rod Control and Steam Dump System response.

When plant conditions are stable, a Pressurizer level instrument will fail high. The crew will respond per ABN-706, Pressurizer Level Instrumentation Malfunction. The RO will take manual control of Pressurizer level or Charging flow to maintain Pressurizer level on program. Once the faulty instrument is identified and an alternate controlling channel is selected, Charging flow and Pressurizer level control will be returned to AUTO. The SRO will refer to Technical Specifications.

The next event is an increasing vibration on the Main Turbine caused by the High Pressure Stop Valve closure. The Unit Supervisor will enter ABN-401, Main Turbine Malfunction, Section 2.0, Turbine Shaft or Frame Vibration High and the crew will monitor the condition of the Main Turbine and Generator and vibration will continue to increase requiring a manual Reactor and Turbine trip. When the Reactor is tripped, the Turbine will fail to trip and require a manual actuation.

At this point, the crew will enter EOP-0.0A, Reactor Trip or Safety Injection and transition to EOS-0.1A, Reactor Trip Response at Step 4. The scenario is complicated by a Loss of Offsite Power and the failure of the Train B Emergency Diesel Generator to start. While in EOS-0.1A, the crew will determine that a Total Loss of Feedwater has occurred when the Turbine Driven Auxiliary Feedwater Pump trips and a transition to FRH-0.1A, Response to Loss of Secondary Heat Sink is required. An immediate transition in FRH-0.1A to Step 12 will be identified and the RO must perform alternate actions when only one PORV will open.

The scenario is terminated when adequate Reactor Coolant System Bleed and Feed is verified.

Risk Significance:

- Risk important components out of service: Auxiliary Feedwater Pump 1-01
- Risk significant core damage sequence: Turbine Trip Failure
  Loss of Feedwater Flow
- Risk significant operator actions: Manually Trip Main Turbine
  Initiate RCS Bleed and Feed
  PORV Block Valve Fails to Open

Scenario Event Description
CPNPP 2010 NRC Scenario #1

BOOTH OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC #18 and Event File for NRC Scenario #1.

EVENT	TYPE	MALF #	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
SETUP		N/A	MDAFW Pump 1-01 OOS	PULLOUT	
		TC07A	Main Turbine fails to trip on Reactor trip	-	K0
		EG06B	Emergency Diesel Generator (1-02) start failure	-	K0
		ED01	Loss of Offsite Power 30 seconds after Reactor trip	-	K0 (30 sec post-trip)
1		RX17A	PORV (PCV-455A) seat leakage	6%	K1
1	DIRCV8000A		PORV Block Valve (1/1-8000A) **(NOTE 1)**	CLOSE	K9
NOTE 1: Override PORV Block Valve (1/1-8000A) CLOSED when Event 2 is commenced					
2		TC08A	HP Turbine Stop Valve #4 failure	CLOSE	K2
3		RX05A	Pressurizer Level Transmitter (LT-0459) fails high	100%	K3
4		TU04	Main Turbine high vibration	15 mils	K4 (300 sec ramp)
5		TC07A	Main Turbine fails to trip on Reactor trip	-	K0
6		ED01	Loss of Offsite Power 30 seconds after Reactor trip	RX TRIP	K0 (30 sec post-trip)
7		EG06B	Emergency Diesel Generator (1-02) start failure	-	K0
8		FW09A	TD Auxiliary Feedwater Pump trips on overspeed when directed in EOS-0.1A **(NOTE 2)**	-	K8
NOTE 2: Lead Examiner will determine when TDAFW Pump will be tripped					
9	DIRCV8000A		PORV Block Valve (1/1-8000A) fails closed	-	K9

Scenario Event Description
CPNPP 2010 NRC Scenario #1

Booth Operator: **INITIALIZE to IC #18 and NRC Scenario #1 SETUP file.**
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE Control Board Tags are hung:
- Red tag Motor Driven Auxiliary Feedwater Pump 1-01.
ENSURE Operator Aid Tags reflect current boron conditions.
ENSURE Control Rods are in AUTO with Bank D at 215 steps.
ENSURE Rod Bank Update (RBU) is performed.
ENSURE Turbine Load Rate set at 10 MWe/minute.
ENSURE Reactivity Briefing Sheet printout provided with Turnover.
ENSURE procedures in progress are on SRO desk:
- COPY of IPO-003A, Power Operations, Section 5.5, Operating at Constant Turbine Load.

Significant Control Room Annunciators in Alarm:

PCIP-1.1 – SR TRN A RX TRIP BLK
PCIP-1.2 – IR TRN A RX TRIP BLK
PCIP-1.4 – CNDSR AVAIL STM DMP ARMED C-9
PCIP-1.6 – RX ≥ 10% PWR P-10
PCIP-2.1 – SR TRN B RX TRIP BLK
PCIP-2.2 – IR TRN B RX TRIP BLK
PCIP-2.5 – SR RX TRIP BLK PERM P-6
PCIP-3.2 – PR TRN A LO SETPT RX TRIP BLK
PCIP-4.2 – PR TRN B LO SETPT RX TRIP BLK

Operating Test :	NRC	Scenario #	1	Event #	1	Page	5	of	19
Event Description:	Power Operated Relief Valve Leakage								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 1. - RX17A @ 6%, Power Operated Relief Valve (PCV-455A) seat leakage.		
Indications Available: **5B-3.1 – PRZR PORV OUT TEMP HI** **5B-4.1 – PRZR ANY SFTY RLF VLV OUT TEMP HI** **1-TI-463 – PRZR PORV OUT TEMP indicates > 200ºF** **1-TI-464 – PRZR SFTY RLF VLV C OUT TEMP indicates > 200ºF** **1-TI-465 – PRZR SFTY RLF VLV B OUT TEMP indicates > 200ºF** **1-TI-466 – PRZR SFTY RLF VLV A OUT TEMP indicates > 200ºF**		
+1 min	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE increasing Safety Valve and PORV outlet temperatures.
	US	DIRECT performance of ALM-0052A, 1-ALB-5B, Window 3.1, Pressurizer PORV Outlet Temperature High.
	RO	MONITOR Pressurizer Pressure Channels I-IV for indication of leakage.
	RO	ENSURE both Pressurizer PORVs are closed.
	RO	VERIFY all Pressurizer Safety Valves are closed.
Examiner Note: Depending on crew response, a 50 MWe load reduction may be performed.		
	US/RO	DETERMINE Pressurizer pressure is being controlled.
	RO	MONITOR 1-TI-5400A, Containment average temperature.
	RO	MONITOR Pressurizer Relief Tank pressure, temperature, and level.
	RO	MONITOR Pressurizer PORV and Safety Valve outlet temperatures.
	RO	CYCLE PORV Block Valves one at a time to DETERMINE affected PORV.
		• 1/1-8000A, PRZR PORV BLK VLV.

Operating Test : NRC	Scenario # 1	Event # 1	Page 6 of 19
Event Description: Power Operated Relief Valve Leakage			

Time	Position	Applicant's Actions or Behavior
		• 1/1-8000B, PRZR PORV BLK VLV.
	US/RO	DETERMINE PCV-455A, PRZR PORV is the leaking valve.
	RO	PERFORM the following in an attempt to stop PORV leakage:
		• ENSURE 1/1-8000A, PRZR PORV BLK VLV is CLOSED.
		• CYCLE PCV-455A, PRZR PORV OPEN then CLOSE at least two times.
Examiner Note: The PORV Block Valve must remain closed from 48 to 96 hours in order to reestablish a loop seal.		
	RO	CLOSE 1/1-8000A, PRZR PORV BLK VLV to restore loop seal.
		• 1/1-8000A, PRZR PORV BLK VLV.
Floor Cue: Another operator will perform OPT-303 to verify PORV seat leakage has been terminated.		
Booth Operator: Prior to completion of Event 1, INSERT override DIRCV8000A to block opening of the PORV Block Valve later in the scenario.		
	US	EVALUATE Technical Specifications.
		• LCO 3.4.11.A, Pressurizer Power Operated Relief Valves.
		• CONDITION A – One or more PORVs inoperable and capable of being manually cycled. • ACTION A.1 – Close and maintain power to associated block valve within 1 hour.
Examiner Note: The DNB condition is in and out quickly. The US may or may not address the following Technical Specification.		
		• LCO 3.4.1.A, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits.
		• CONDITION A – One or more RCS DNB parameters not within limits. • ACTION A.1 – Restore RCS DNB parameter(s) to within limits within 2 hours.

Operating Test :	NRC	Scenario #	1	Event #	1	Page	7	of	19
Event Description:	Power Operated Relief Valve Leakage								

Time	Position	Applicant's Actions or Behavior
+10 min	US	INITIATE a Work Request per STA-606.
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Event 2.		

Operating Test :	NRC	Scenario #	1	Event #	2	Page	8	of	19
Event Description:	High Pressure Turbine Stop Valve Closure / Initiate a Manual Turbine Runback								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 2. - TC08A, High Pressure Turbine Stop Valve #4 fails closed.		
Indications Available: **8A-1.10 – 1 OF 4 TURB STM STOP VLV CLOSE** **8A-1.8 – SG 1 STM & FW FLO MISMATCH** **8A-2.8 – SG 2 STM & FW FLO MISMATCH** **8A-1.12 – SG 1 LVL DEV** **6D-1.10 – AVE TAVE TREF DEV** **Bank D Control Rods are stepping in** **1-ZL-2428A, HPT STOP VLV 4 green CLOSE light LIT** **Steam Dump Valves opening** **Various Feedwater Heater level alarms**		
+30 sec	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	DETERMINE HP Stop Valve CLOSED.
	US	DIRECT performance of ABN-401, Main Turbine Malfunction, Section 9.0.
Examiner Note: Turbine load dropped to approximately 950 MWe during validation.		
	US	DETERMINE HP Control Valves are > 98% OPEN and PERFORM the following:
		• ENSURE Control Rods are in AUTO.
		• REDUCE Turbine load to at least 50 MWe less than current load (~950 MWe) at 100 MWe/min.
Examiner Note: Either method listed is acceptable for lowering Turbine load.		
	BOP	PERFORM the following to LOWER Turbine Load:
		• SELECT appropriate Manual Runback button.
		• CLICK on "O/I" button.
		• CLICK on "EXECUTE" and VERIFY Manual Turbine Runback in progress.
		OR
		• CHANGE Turbine Load Rate to 100 MWe/min.
		• OPEN "Load Target" OSD.

Operating Test : NRC	Scenario # 1	Event # 2	Page 9 of 19
Event Description: High Pressure Turbine Stop Valve Closure / Initiate a Manual Turbine Runback			

Time	Position	Applicant's Actions or Behavior
		• SELECT blue bar and ENTER desired load.
		• DEPRESS "Select" then VERIFY value in blue bar is desired "Load Target" (magnitude and direction).
		• DEPRESS "Execute" then VERIFY "Load Target" changes to desired load.
	BOP	VERIFY Steam Generator levels trending to program.
	RO	VERIFY Power Range ΔFlux in the Target Band.
	BOP	VERIFY Steam Dumps responding to MAINTAIN Tave to Tref.
	RO	VERIFY Rod Control responding to MAINTAIN Tave to Tref.
	RO	VERIFY Pressurizer level TRENDING to program.
	RO	VERIFY Pressurizer pressure TRENDING to program.
	BOP	VERIFY Steam Generator levels at 67% with Feedwater Flow Control Valves in AUTO.
	BOP	RESET the Steam Dump System by PERFORMING the following:
		• VERIFY all STEAM Dump Valves CLOSED.
		• VERIFY 1/UI-500, Steam Dump Demand is 0%.
		• PLACE 43/1-SD, STM DMP MODE SELECT to RESET then Tave position.
	BOP	VERIFY Turbine load STABLE.
	BOP	VERIFY all OPERABLE HP Turbine Control Valves indicate less than 100% OPEN.

Operating Test :	NRC	Scenario #	1	Event #	2	Page	10	of	19
Event Description:	High Pressure Turbine Stop Valve Closure / Initiate a Manual Turbine Runback								

Time	Position	Applicant's Actions or Behavior
Examiner Note: Resetting of Turbine Runback will only be required if a Manual Runback was initiated as opposed to lowering load at 100 MWe/min.		
	BOP	If required, RESET Turbine Runback per ABN-401, Section 8.0 as follows:
		• VERIFY alarm 6D-1.9, ANY TURB RUNBACK EFFECTIVE is DARK.
		• ENSURE Load Rate Setpoint Controller is set for actual MWe.
		• If Manual Runback was used, TURN OFF the appropriate Subloop Controller on the TG Control Display in the MANUAL RUNBACKS Section.
		• VERIFY the Runback is RESET.
+10 min	US	NOTIFY Chemistry to perform isotopic analysis for iodine between 2 and 6 hours after power change.
When Turbine Runback is reset, or at Lead Examiner discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	1	Event #	3	Page	11	of	19
Event Description:	Pressurizer Level Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 3. - RX05A, Pressurizer Level Transmitter (LT-459A) fails high.		
Indications Available: **5A-1.6 – ANY RCP SEAL WTR INJ FLO LO** **5C-4.2 – PRZR 1 OF 3 LVL HI** **5C-1.3 – PRZR LVL DEV HI** **1-LI-459A, PRZR LVL CHAN I indication failed high**		
+30 secs	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE PZR level lowering and DETERMINE Pressurizer Level Channel (LT-459A) malfunction.
	RO	REPORT Pressurizer Level Channel I (LT-459A) failed high.
	US	DIRECT performance of ABN-706, Pressurizer Level Instrumentation Malfunction, Section 2.0.
	RO	PLACE PZR Level Control **or** Charging Flow in MANUAL to maintain level on program using one of the following controllers:
		• 1-LK-459, PRZR LVL CTRL
		• 1-FK-121, CCP CHRG FLO CTRL
	RO/BOP	TRANSFER 1/1-LS-459D, PZR Level Control Channel Select to an OPERABLE channel.
	RO/BOP	TRANSFER 1/1-LS-459E, 1/1-LR-459 PZR Level Select to an OPERABLE channel.
	RO	DETERMINE normal Letdown aligned.
	RO	VERIFY PZR Control Heater Group C operating normally.
	RO	RESTORE PZR Level Control **or** Charging Flow Control to AUTO as desired.

Operating Test :	NRC	Scenario #	1	Event #	3	Page	12	of	19
Event Description:	Pressurizer Level Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
	RO	VERIFY instruments on common instrument line indicate NORMAL.
		• VERIFY Loop 1 Instrument PT-455 responding normally per Attachment 1.
+10 min	US	EVALUATE Technical Specifications.
		• LCO 3.3.1.M, Reactor Trip System Instrumentation is applicable.
		• CONDITION M – One channel inoperable. • ACTION M.1 – Place channel in trip within 72 hours.
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Events 4 and 5.		

Operating Test :	NRC	Scenario #	1	Event #	6, 7, 8, & 9	Page	13	of	19
Event Description:	Loss of Offsite Power / Emergency Diesel Generator Start Failure / TDAFW Pump Overspeed Trip / PORV Block Valve Failure								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Events 4 and 5. - TU04, Main Turbine high vibration @ 15 mils on a 300 second ramp. - TC07A, Main Turbine fails to trip upon Reactor Trip.		
Indications Available: **DIGITAL ALARM ASD – 1SB13V041 XH01 LP1 SHAFT REAR > 10 MILS (at BOP Desk) DIGITAL ALARM ASD – 1SB14V041 XH01 LP2 SHAFT REAR > 10 MILS (at BOP Desk) 9B-2.5 – TURB VIB HI**		
+2 min	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE increasing vibration on the Main Turbine and Generator shafts.
	US	DIRECT performance of ABN-401, Main Turbine Malfunction, Section 2.0.
	BOP	OBSERVE Turbine and Generator Vibration Displays and DETERMINE alarms are valid.
	BOP	OBSERVE Turbine and Generator Vibration Displays and DETERMINE Turbine shaft vibration has exceeded 14 mils.
	US	DIRECT a Reactor and Turbine Trip and TRANSITION to EOP-0.0A, Reactor Trip or Safety Injection.
+5 min	RO	MANUALLY TRIP the Reactor.

Operating Test :	NRC	Scenario #	1	Event #	6, 7, 8, & 9	Page	14	of	19
Event Description:	Loss of Offsite Power / Emergency Diesel Generator Start Failure / TDAFW Pump Overspeed Trip / PORV Block Valve Failure								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**If the manual turbine tripped is delayed by more than approximately 15 seconds, an automatic Safety Injection may occur on Main Steam Line low pressure. This changes the flowpath slightly such that the crew remains in EOP-0.0 until directed to implement Critical Safety Functions, when a transition would be made to FRH-0.1A. If Safety Injection does occur, and the crew remains in EOP-0.0, the Turbine Driven Auxiliary Feedwater Pump trip must be directed in EOP-0.0A.**
CRITICAL TASK STATEMENT		**Manually Trip the Main Turbine when Automatic Reactor Protection Trip Fails Prior to Reaching 0% Wide Range Steam Generator Level.**
CRITICAL TASK	BOP	DETERMINE Turbine failed to trip upon Reactor Trip and MANUALLY TRIP Turbine.
		• DEPRESS 1-TTSW, Turbine Trip red pushbutton and OBSERVE all HP and LP Turbine Stop Valves CLOSED.
When Turbine is tripped, or at Lead Examiner discretion, PROCEED to Events 6, 7, 8, and 9.		

Operating Test :	NRC	Scenario #	1	Event #	6, 7, 8, & 9	Page	15	of	19
Event Description:	Loss of Offsite Power / Emergency Diesel Generator Start Failure / TDAFW Pump Overspeed Trip / PORV Block Valve Failure								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Events 6, 7, 8 and 9. **- ED01, Loss of Offsite Power 30 seconds after Main Turbine trip.** **- EG06B, Emergency Diesel Generator (1-02) start failure.** **- FW09A, Turbine Driven Auxiliary Feedwater Pump trips on overspeed when directed in EOS-0.1A.** **- OVERRIDE, PORV (PCV-455A) Block Valve (1/1-8000A) fails closed.**		
Indications Available: **Normal alarms followed by Loss of Offsite Power alarms 30 seconds post Reactor trip**		
+1 min	US	DIRECT performance of EOP-0.0A, Reactor Trip or Safety Injection.
	RO	VERIFY Reactor Trip:
		• DETERMINE Reactor Trip Breakers – OPEN.
		• DETERMINE Neutron flux – DECREASING.
		• DETERMINE all Control Rod Position Rod Bottom Lights – ON.
	BOP	VERIFY Turbine Trip:
		• DETERMINE all HP Turbine Stop Valves – NOT CLOSED.
		• MANUALLY TRIP Turbine.
	BOP	VERIFY Power to AC Safeguards Buses:
		• DETERMINE AC Safeguards Buses – AT LEAST ONE ENERGIZED.
		• DETERMINE Train B Safeguards Bus DEENERGIZED.
		• [RNO] REFER to ABN-601 **or** ABN-602 to restore power when time permits.
	RO/BOP	DETERMINE SI is NOT actuated and is NOT required.

Operating Test :	NRC	Scenario #	1	Event #	6, 7, 8, & 9	Page	16	of	19
Event Description:	Loss of Offsite Power / Emergency Diesel Generator Start Failure / TDAFW Pump Overspeed Trip / PORV Block Valve Failure								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**EOS-0.1A, Reactor Trip Response steps begin here.** **Failure to direct tripping of the Turbine Driven Auxiliary Feedwater Pump in a timely manner by the Lead Examiner, following crew entry into EOS-0.1A, is likely to lead to an extremely long delay in the scenario prior to the crew meeting the conditions for a transition to FRH-0.1A, Response to Loss of Secondary Heat Sink.**
	RO	CHECK RCS Temperature -
		• DETERMINE RCS average temperature stable at or trending to 557ºF.
	RO/BOP	CHECK FW Status:
		• VERIFY Reactor Trip Breakers – OPEN.
		• CHECK RCS average temperatures < 564ºF.
		• VERIFY Feedwater Isolation - ISOLATION Complete.
	BOP	DETERMINE total AFW flow to SGs > 460 GPM.
	RO	CHECK PRZR Level Control:
		• VERIFY PRZR Level > 17%.
		• VERIFY Charging - IN SERVICE.
		• VERIFY Letdown - IN SERVICE.
		• DETERMINE PRZR Level TRENDING to 25%.
	RO	CHECK PRZR Pressure Control:
		• DETERMINE PRZR Pressure > 1820 PSIG.
		• DETERMINE PRZR Pressure - TRENDING TO 2235 PSIG.
Examiner Note:		**Lead examiner will determine when the TDAFW Pump will be tripped. When the TDAFW Pump is tripped the following indications will be observed.**
	BOP	CHECK Steam Generator Levels:
		• DETERMINE Narrow range level < 43% and slowly lowering.

Operating Test : NRC	Scenario # 1	Event # 6, 7, 8, & 9	Page 17 of 19
Event Description: Loss of Offsite Power / Emergency Diesel Generator Start Failure / TDAFW Pump Overspeed Trip / PORV Block Valve Failure			

Time	Position	Applicant's Actions or Behavior
		• DETERMINE no AFW flow available.
Examiner Note: At this point the US should recognize that a RED Path exists for the HEAT SINK CSFST and a transition to FRH-0.1A, Response to a Loss of Secondary Heat Sink is warranted. FRH-0.1A steps begin here.		
	US/BOP	CHECK If Secondary Heat Sink Is Required:
		• DETERMINE RCS pressure – > ANY NON-FAULTED SG PRESSURE.
		• DETERMINE RCS temperature > 350ºF.
	US/RO	CHECK CCP Status –
		• DETERMINE only one CCP (1-01) – AVAILABLE.
		• [RNO] DETERMINE RCPs already STOPPED.
		• [RNO] DETERMINE power to one (1) PORV Block Valve – NOT AVAILABLE.
		• [RNO] TRANSITION to Step 12.
Examiner Note: FRH-0.1A Steps 12 through 21 must be performed quickly in order to establish RCS heat removal by RCS bleed and feed.		
	RO/BOP	Manually ACTUATE Safety Injection.
	RO/BOP	VERIFY RCS Feed Path:
		• DETERMINE at least one (1) CCP and one (1) SI PUMP – RUNNING.
		• CHECK valve alignment for operating pumps - PROPER EMERGENCY ALIGNMENT per ATTACHMENT 3.
Examiner Note: The following six (6) steps are performed per FRH-0.1A, Attachment 1.D.		
	BOP	[1.D] PLACE Train A DG EMER STOP/START handswitch In START.
	BOP	[1.D] RESET Safety Injection.

Operating Test : NRC	Scenario # 1	Event # 6, 7, 8, & 9	Page 18 of 19
Event Description: Loss of Offsite Power / Emergency Diesel Generator Start Failure / TDAFW Pump Overspeed Trip / PORV Block Valve Failure			

Time	Position	Applicant's Actions or Behavior
	BOP	[1.D] RESET Safety Injection Sequencers.
	BOP	[1.D] RESET Containment Isolation Phase A and B.
	BOP	[1.D] RESET Containment Spray Signal.
Booth Operator: When directed, RESET Instrument Air Compressor 1-01 or ALIGN Common Air Compressor X-01 and manually START.		
	BOP/RO	[1.D] ESTABLISH instrument Air and Nitrogen To Containment.
		• DETERMINE Air Compressors – NOT RUNNING.
		• [RNO] Manually START Air Compressor and align valve as appropriate. (No power available.)
		• DETERMINE Nitrogen to Containment – NOT AVAILABLE.
		• [RNO] Manually CLOSE valves.
CRITICAL TASK STATEMENT		**Establish Core Cooling using RCS Bleed and Feed prior to exiting FRH-0.1.**
CRITICAL TASK	RO	ESTABLISH Reactor Coolant System Bleed and Feed.
Examiner Note: PORV Block Valves 8000A has power available, but will not open when the RO attempts to open the valve. PORV Block Valve 8000B has no power available, but was open prior to the loss of power. This combination renders only PORV 456 capable of being used as an RCS bleed path.		
	RO	ESTABLISH RCS Bleed Path:
		• DETERMINE power to one (1) PRZR PORV block valve – AVAILABLE.
		• OPEN 1/1-8000B, PRZR PORV Block Valve.
		• OPEN 1-PCV-456, PRZR PORV.
+20 min	RO	VERIFY adequate RCS Bleed Path:
		• DETERMINE only one (1) PRZR PORV – OPEN.

Operating Test :	NRC	Scenario #	1	Event #	6, 7, 8, & 9	Page	19	of	19
Event Description:	Loss of Offsite Power / Emergency Diesel Generator Start Failure / TDAFW Pump Overspeed Trip / PORV Block Valve Failure								

Time	Position	Applicant's Actions or Behavior
		• [RNO] OPEN vents on the Reactor Vessel head and PRZR.
		• [RNO] OPEN 1-HV-3607, RV HEAD VENT VLV.
		• [RNO] OPEN 1-HV-3608, RV HEAD VENT VLV.
		• [RNO] OPEN 1-HV-3609, PRZR VENT VLV.
		• [RNO] OPEN 1-HV-3610, PRZR VENT VLV.
When an adequate Reactor Coolant System bleed and feed path is aligned, TERMINATE the scenario.		

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.:	3	Op Test No.:	March 2010 NRC
Examiners:		Operators:			

Initial Conditions:	• 72% power MOL - RCS Boron is 916 ppm by Chemistry sample. • Motor Driven Auxiliary Feedwater Pump 1-01 OOS for coupling repair.
Turnover:	Maintaining 72% power per Load Controller direction. Rod Control in AUTO.
Critical Tasks:	• Emergency Borate due to Loss of Digital Rod Position Indication. • Identify and Isolate the Ruptured Steam Generator. • Cooldown the Reactor Coolant System.

Event No.	Malf. No.	Event Type*	Event Description
1 +15 min	FW16	C (BOP, SRO)	Lowering Condenser vacuum requiring power reduction.
2 +25 min	RP05A	I (RO, SRO) TS (SRO)	Reactor Coolant System Loop (1-01) Narrow Range Cold Leg Temperature Instrument (TI-411B) fails low.
3 +30 min	RX01G	I (BOP, SRO)	Steam Generator (1-04) Feed Flow Instrument (FT-540) fails high.
4 +40 min	CV01B	C (RO, SRO) TS (SRO)	Centrifugal Charging Pump (1-01) trip.
5 +45 min	SG01D	M (RO, BOP, SRO)	Steam Generator (1-04) Tube Rupture ramping to 650 gpm over 5 minutes.
6 +45 min	MS07D		Steam Generator (1-04) Main Steam Isolation Valve (HV-2336A) fails closed upon initial Radiation Monitor alarm.
7 +45 min	RD12C	I (RO)	Digital Rod Position Indication power failure upon manual or auto Reactor trip actuation. Emergency boration required.
8 +55 min	Override	C (BOP)	Steam Generator (1-04) Turbine Driven Auxiliary Feedwater Pump Steam Supply Valve (HV-2452-1) fails to close.

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

SCENARIO SUMMARY NRC #3

The crew will assume the watch at 72% power with no scheduled activities per IPO-003A, Power Operations. The Grid Controller has requested that power remain at this level due to transmission line overload until further notice. Auxiliary Feedwater Pump 1-01 is out-of-service for coupling repair.

The first event is a loss of Condenser vacuum due to a drained loop seal. The crew will respond per ABN-304, Main Condenser and Circulating Water System Malfunction, Section 3.0. Actions include lowering of Main Turbine load until Condenser vacuum is maintained above 24.5" of vacuum.

The next event it is a low failure of T_{COLD} transmitter, TI-411B. Operator actions are per ABN-704, T_{COLD} / N-16 Instrumentation Malfunction, Section 2.0 and require stopping the withdrawal of Control Rods and restoring Reactor Coolant System temperature and Pressurizer level to normal. The SRO will refer to Technical Specifications.

When conditions are stable, a Steam Generator Flow Transmitter fails high. Operator response is per ABN-708, Feedwater Flow Instrument Malfunction, Section 2.0. The operator must take manual control of the affected Feed Control Valve to prevent a Unit trip on low Steam Generator water level. After manual control is established, an Alternate Channel is selected and Automatic control restored.

When the Steam Generator level control has been returned to Automatic, a loss of the running Centrifugal Charging Pump will occur. The crew will enter ABN-105, Chemical and Volume Control System Malfunction and perform actions to immediately restored Charging flow. The SRO will refer to Technical Specifications.

When Technical Specifications have been addressed, a Steam Generator Tube Rupture will ramp in over five minutes on Steam Generator 1-04. With increasing Main Steam Line radiation levels and lowering Pressurizer pressure, the Unit Supervisor will direct a Reactor and Turbine Trip.

The crew enters EOP-0.0A, Reactor Trip or Safety Injection and performs actions through Step 13 and then transitions to EOP-3.0A, Steam Generator Tube Rupture. Once it has been determined that Steam Generator 1-04 is the source of the tube rupture, the Main Steam Isolation Valve for that Steam Generator will fail closed. Isolation of Steam Generator 1-04 is complicated when its associated Main Steam Supply Valve to the Turbine Driven Auxiliary Feedwater (TDAFW) Pump will not close. The Response Not Obtained actions include tripping the TDAFW Pump. Additionally a Loss of Digital Rod Position Indication System will require an Emergency Boration.

This scenario is terminated when the ruptured Steam Generator is isolated and the crew is commencing a cooldown and depressurization of the Reactor Coolant System.

Risk Significance:

- Risk important components out of service: Auxiliary Feedwater Pump 1-01
- Failure of risk important system prior to trip: Centrifugal Charging Pump 1-01
- Risk significant core damage sequence: Steam Generator Tube Rupture
- Risk significant operator actions: Emergency Borate Due to Loss of DRPI

  Isolate Ruptured Steam Generator

Scenario Event Description
NRC Scenario #3

BOOTH OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC #17 and Event File for NRC Scenario #3.

EVENT	TYPE	MALF #	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
SETUP		N/A	MDAFWP 1-01 OOS	PULL OUT	
		RD12C	DRPI failure upon manual or auto Reactor trip	-	K0
NOTE: Ensure Rod Control is in <u>AUTO</u>					
1		FW16	Lowering Condenser vacuum **(NOTE 1)**	5%	K1
NOTE 1: ADJUST malfunction FW16 until load is reduced at least one time					
2		RP05A	NR Cold Leg Instrument (TI-411B) fails low	510ºF	K2
3		RX01G	Feed Flow Instrument (FT-540) fails high	$5E^{+6}$ lbm/hr	K3
4		CV01B	Centrifugal Charging Pump (1-01) trip	-	K4
5		SG01D	Steam Generator (1-04) Tube Rupture	650 gpm	K5 (300 sec ramp)
6		MS07D	MSIV HV-2336A fails closed **(NOTE 2)**	CLOSE	K6
NOTE 2: MSIV HV-2336A fails closed after initial Main Steam Line Radiation Monitor alarms					
7		RD12C	DRPI failure upon manual or auto Reactor trip		K0 Reactor Trip
8	OVRDE DIFWHS24521		TDAFWP Steam Supply (HV-2452-1) fails open **(NOTE 3)**	OPEN	K8
NOTE 3: TDAFWP Steam Supply Valve (HV-2452-1) fails open after TDAFW Pump AUTO starts					
8	OVRDE DIFWHS24521		TDAFWP Steam Supply (HV-2452-1) **(NOTE 4)**	CLOSE	-
NOTE 4: When directed, CLOSE TDAFWP Steam Supply Valve (HV-2452-1) and RESET TDAFW Pump					

Scenario Event Description
NRC Scenario #3

Booth Operator: **INITIALIZE to IC #17 and NRC Scenario #3 SETUP file.**
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE Control Board Tags are hung:
- Red Tag on MDAFW Pump 1-01.
ENSURE Operator Aid Tags reflect current boron conditions.
ENSURE Rod Bank Update (RBU) is performed.
ENSURE Turbine Load Rate set at 10 MWe/minute.
ENSURE Reactivity Briefing Sheet printout provided with Turnover.
ENSURE procedures in progress are on SRO desk:
- COPY of IPO-003A, Power Operations, Section 5.5, Operating at Constant Turbine Load.
ENSURE Control Rods are in AUTO at 179 steps.

Control Room Annunciators in Alarm:

PCIP-1.1 – SR TRN A RX TRIP BLK
PCIP-1.2 – IR TRN A RX TRIP BLK
PCIP-1.4 – CNDSR AVAIL STM DMP ARMED C-9
PCIP-1.6 – RX ≥ 10% PWR P-10
PCIP-2.1 – SR TRN B RX TRIP BLK
PCIP-2.2 – IR TRN B RX TRIP BLK
PCIP-2.5 – SR RX TRIP BLK PERM P-6
PCIP-3.2 – PR TRN A LO SETPT RX TRIP BLK
PCIP-4.2 – PR TRN B LO SETPT RX TRIP BLK

Operating Test :	NRC	Scenario #	3	Event #	1	Page	5	of	20
Event Description:	Partial Loss of Condenser Vacuum / Main Turbine Downpower								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 1. - FW16, Partial Loss of Condenser Vacuum @ 5%.		
Indications Available: **P6600A – CNDSR A PRESS (VA)** **P6601A – CNDSR B PRESS (VA)** **Lowering Condenser pressure on 1-PI-2042-1 & 2042-2** **Control Rods stepping out** **Main Steam pressure lowering**		
+1 min	BOP	REFER to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Main Condenser vacuum decreasing.
	US	DIRECT implementation of ABN-304, Main Condenser and Circulating Water System Malfunction, Section 3.0.
	BOP	START all available Condenser Vacuum Pumps.
	RO/BOP	DISPATCH an operator to VERIFY CEV seal water tank level indicated.
	BOP	VERIFY Main Condenser vacuum > 21" Hg.
	BOP	DETERMINE Main Condenser vacuum < 26.5" Hg.
		• ENSURE Turbine not operating in the NOT PERMISSIBLE region.
	US/BOP	DETERMINE Main Condenser Vacuum NOT being maintained > 24.5" Hg and stable.
	BOP	• CONTROL Turbine load as necessary to maintain vacuum > 24.5" Hg and power less than 100%.
		• As required, LOWER Turbine load to RAISE Condenser vacuum.
	US	• NOTIFY Shift Manager and Generation Controller of load changes.
	RO	ENSURE 1/1-RBSS Control Rod Bank Select Switch in AUTO.
Booth Operator: ADJUST malfunction FW16 until load is reduced at least one time.		

Operating Test :	NRC	Scenario #	3	Event #	1	Page	6	of	20
Event Description:	Partial Loss of Condenser Vacuum / Main Turbine Downpower								

Time	Position	Applicant's Actions or Behavior
Examiner Note: Either method listed is acceptable for lowering Turbine load.		
	BOP	PERFORM the following to LOWER Turbine Load:
		• SELECT the Load Reduction 50 MW button.
		• CLICK on "O/I" button.
		• CLICK on "EXECUTE" and VERIFY Manual Turbine Load Reduction in progress.
		OR
	BOP	PERFORM the following to LOWER Turbine Load:
		• VERIFY Turbine Load Rate is 10 MWe/min.
		• OPEN "Load Target" OSD.
		• SELECT blue bar and ENTER desired MWe.
		• DEPRESS "Select" then VERIFY value in blue bar is desired "Load Target" (magnitude and direction).
		• DEPRESS "Execute" then VERIFY "Load Target" changes to desired load.
		• CLOSE "Load Target" OSD.
	BOP/RO	VERIFY Main Condenser vacuum maintained > 24.5" Hg and stable with power < 100%.
Booth Operator: When load has been reduced at least once, REMOVE malfunction FW16 and REPORT to Control Room that the vacuum breaker water seal was dry and REFILL is in progress.		
	BOP	ENSURE Seal Steam pressure is approximately 4" H_2O.
	BOP	VERIFY Main Feedwater Pumps operating within limits.
	US	DETERMINE Reactor power change < 15%.
+15 min	BOP	VERIFY Main Condenser vacuum stable within the normal range.
When Condenser vacuum is restored, or at Lead Evaluator's discretion, PROCEED to Event 2.		

Operating Test :	NRC	Scenario #	3	Event #	2	Page	7	of	20
Event Description:	Reactor Coolant System Loop 1 T_{COLD} Temperature Instrument Failure								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 2. - RP05A, RCS Loop 1-01 T_{COLD} NR temperature instrument (TI-411B) fails low.		
Indications Available: **5C-3.5 – ANY T_{AVE} DEV HI / LO** **6D-1.10 – AVE T_{AVE} - T_{REF} DEV** **6D-3.10 – 1 OF 4 AVE T_{AVE} LO-LO** **6D-3.13 – T_{REF} - AUCT LOW T_{AVE} MISMATCH** **6D-4.13 – AUCT T_{AVE} LOW** **1-TI-411A, CL 1 TEMP (NR) CHAN I indication fails low** **1-TI-412, RC LOOP T_{AVE} CHAN I indicates low**		
+30 sec	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE Control Rods withdrawing due to T_{COLD} failed low.
	US	DIRECT performance of ABN-704, Tc / N16 Instrumentation Malfunction, Section 2.0.
Examiner Note: Depending upon operator response to the failure, the Charging Flow Controller may need to be placed in MANUAL.		
	RO	PLACE 1/1-RBSS Control Rod Bank Select Switch in MANUAL.
	RO	SELECT LOOP 1 on 1-TS-412T, T_{AVE} Channel Defeat.
	BOP	VERIFY Steam Dump System is NOT actuated and NOT armed.
	RO	RESTORE T_{AVE} to within 1ºF of T_{REF}.
	RO	SELECT LOOP 1 on 1/1-JS-411E, N16 Power Channel Defeat.
	RO	ENSURE a valid N16 channel supplying recorder on 1/1-TS-411E, 1-TR-411 CHAN SELECT.
	RO/BOP	VERIFY Steam Dump System is NOT armed by OBSERVING PCIP-3.4 alarm NOT lit.

Operating Test :	NRC	Scenario #	3	Event #	2	Page	8	of	20
Event Description:	Reactor Coolant System Loop 1 T_{COLD} Temperature Instrument Failure								

Time	Position	Applicant's Actions or Behavior
+10 min	US	EVALUATE Technical Specifications.
		• LCO 3.3.1.E, Reactor Trip System Instrumentation.
		• CONDITION E - One channel inoperable. • ACTION E.1 - Place channel in trip within 72 hours.
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	3	Event #	3	Page	9	of	20
Event Description:	Steam Generator Feed Flow Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 3. - RX01G, SG 1-04 Feed Flow Transmitter (FT-540) fails high.		
Indications Available: **8A-4.8 – SG 4 STM & FW FLO MISMATCH** **1-FI-540A, SG 4 FW FLO indication fails high**		
+30 sec	BOP	REFER to Annunciator Alarm Procedures.
	BOP	RECOGNIZE SG 1-04 Feed Flow Transmitter (FT-540) failed high.
	US	DIRECT implementation of ABN-708, Feedwater Flow Instrument Malfunction, Section 2.0.
	BOP	DETERMINE controlling flow channel has failed.
	BOP	PLACE 1-FK-540, SG 4 FW FLO CTRL in MANUAL and CONTROL level.
	BOP	VERIFY automatic SG 1-04 level control available and desired:
		• DETERMINE Alternate Level Control Channel responding normally.
	BOP	SELECT an alternate channel.
		• PLACE 1-FS-540C, SG 4 FW FLO CHAN SELECT to 1-FT-541B.
	BOP	VERIFY Steam Generator 1-04 ready for AUTO Level Control:
		• DETERMINE Feedwater and Steam Flows matched.
		• VERIFY Steam Generator level stable at program.
	BOP	PLACE 1-FK-540, SG 4 FW FLO CTRL in AUTO and MONITOR operation.
+5 min	US	INITIATE repairs per STA-606.
When Feedwater Control and T_{AVE} are restored with Charging flow in AUTO, or at Lead Evaluator's discretion, PROCEED to Event 4.		

Operating Test :	NRC	Scenario #	3	Event #	4	Page	10	of	20
Event Description:	Centrifugal Charging Pump Trip								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 4. - CV01B, Centrifugal Charging Pump 1-01 trip.		
Indications Available: **5A-1.6 – ANY RCP SEAL WTR INJ FLO LO** **6A-1.4 – REGEN HX LTDN OUT TEMP HI** **6A-1.7 – ANY CHG PMP OVRLOAD / TRIP** **6A-3.4 – CHG FLO HI / LO**		
+1 min	RO	RESPOND to Annunciator Procedure Alarms.
	RO	RECOGNIZE Charging Pump 1-01 trip.
Examiner Note: The next step is an Initial Operator Action.		
	RO	START Centrifugal Charging Pump 1-02.
	US	DIRECT performance of ABN-105, CVCS Malfunction, Section 3.0.
	RO	VERIFY one Centrifugal Charging Pump running.
	RO	VERIFY Seal Injection Flow to each RCP between 6 gpm and 13 gpm.
	RO/BOP	VERIFY RCP parameters in normal operating range.
	RO	VERIFY PRZR level > 17% and rising.
	RO	VERIFY RCS leakage normal.
		• DETERMINE PRZR level stable at or trending to program.
		• DETERMINE Charging flow < 15 gpm above Letdown flow.

Operating Test :	NRC	Scenario #	3	Event #	4	Page	11	of	20
Event Description:	Centrifugal Charging Pump Trip								

Time	Position	Applicant's Actions or Behavior
+10 min	US	EVALUATE Technical Specifications.
		• LCO 3.5.2.A, ECCS - Operating.
		• CONDITION A - One train inoperable because of the inoperability of a centrifugal charging pump. • ACTION A.1 - Restore pump to OPERABLE status within 7 days.
Examiner Note: The US may or may not address the following Technical Requirement.		
		• TR LCO 13.1.31, Boron Injection System - Operating.
		• CONDITION B - One charging pump inoperable. • ACTION B.1 - Restore pump to OPERABLE status within 7 days.
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Events 5, 6, 7, and 8.		

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	12	of	20
Event Description:	Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Events 5, 6, 7, and 8. **- SG01D, SG 1-04 Tube Rupture @ 650 gpm on 300 second ramp.** **- MS07D, SG 1-04 MSIV (HV-2336A) fails closed upon initial Rad Monitor alarm.** **- RD12C, DRPI power failure upon Reactor trip actuation.** **- OVERRIDE, SG 1-04 TDAFWP Steam Supply Valve (HV-2452-1) fails open.**		
Indications Available: **7A-4.2 – MSIV 4 N2 PRESS LO** **7A-4.3 – MSIV 4 HYD OIL SYS TRBL** **7A-4.12 – MSIV 4 NOT OPEN** **Main Steam Line Radiation level rising** **Pressurizer pressure lowering**		
+2 min	RO/BOP	RECOGNIZE Pressurizer level and pressure decreasing at an increasing rate.
	RO/BOP	RECOGNIZE PRZR pressure decreasing with steam line radiation monitors in alarm and steam / feed mismatch.
	US	DIRECT performance of EOP-0.0A, Reactor Trip or Safety Injection.
Examiner Note: RO is likely to initiate Safety Injection immediately after manually tripping the Reactor per guidance of ABN-106.		
	RO	VERIFY Reactor Trip:
		• DETERMINE Reactor Trip Breakers – OPEN.
		• DETERMINE Neutron flux – DECREASING.
	RO	DETERMINE all control rod position rod bottom lights – NOT LIT.
	BOP	VERIFY Turbine Trip:
		• DETERMINE all HP Turbine Stop Valves – CLOSED.
	BOP	VERIFY Power to AC Safeguards Buses:
		• DETERMINE AC Safeguards Buses – BOTH ENERGIZED.
	RO	DETERMINE SI is NOT actuated BUT will eventually be required.

Operating Test : NRC	Scenario # 3	Event # 5, 6, 7, & 8	Page 13 of 20
Event Description:	Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open		

Time	Position	Applicant's Actions or Behavior
		• Manually INITIATE both Trains of Safety Injection.
CRITICAL TASK STATEMENT		**Initiate Emergency Boration with a Loss of Digital Rod Position Indication Prior to Exiting EOP-0.0.**
CRITICAL TASK	RO	INITIATE Emergency Boration of 3600 gallons of Boric Acid.
		• ENSURE a Charging Pump is RUNNING.
		• START either Boric Acid Transfer Pump.
		• PLACE 1/1-APBA1, BA XFER PMP 1 in START.
		• PLACE 1/1-APBA1, BA XFER PMP 2 in START.
		• PLACE 1/1-8104, EMER BORATE VLV in OPEN.
		• VERIFY flow on 1-FI-183A, EMER BORATE FLO.
		• VERIFY flow on 1-FI-121A, CHRG FLO.
<u>Examiner Note</u>: EOP-0.0A, Attachment 2 steps performed by BOP are identified later in the scenario.		
	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2.
	RO	VERIFY AFW Alignment:
		• DETERMINE MDAFW Pump 1-02 – RUNNING.
		• DETERMINE Turbine Driven AFW Pump – RUNNING.
		• DETERMINE AFW total flow – GREATER THAN 460 GPM.
		• DETERMINE AFW valve alignment – PROPER ALIGNMENT.
	RO	DETERMINE Containment Spray NOT Required:
		• VERIFY 1-ALB-2B window 1-8, CS ACT NOT ILLUMINATED.
		• VERIFY 1-ALB-2B window 4-11, CNTMT ISOL PHASE B ACT NOT ILLUMINATED.
		• VERIFY Containment pressure < 18.0 PSIG.
		• VERIFY Containment Spray Heat Exchanger Out Valves – CLOSED.
		• VERIFY Containment all Spray Pumps – RUNNING.

Operating Test : NRC	Scenario # 3	Event # 5, 6, 7, & 8	Page 14 of 20
Event Description: Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open			

Time	Position	Applicant's Actions or Behavior
	RO	CHECK If Main Steam lines should be Isolated:
		• DETERMINE Containment pressure 0 PSIG and stable.
		• DETERMINE Main Steam pressure ~ 1000 PSIG and stable.
Examiner Note: Depending upon timing of operator actions, RCS temperature may or may not be stable.		
	RO	CHECK RCS Temperature:
		• DETERMINE RCS T_{AVE} – NOT stable at OR trending to 557ºF.
		• [RNO] STOP dumping steam.
	RO	CHECK PRZR Valve Status:
		• DETERMINE PRZR Safeties – CLOSED.
		• DETERMINE Normal PRZR Spray Valves – CLOSED.
		• DETERMINE PORVs – CLOSED.
		• DETERMINE Power to at least one Block Valve – AVAILABLE.
		• VERIFY both PORV Block Valves –OPEN.
	RO	CHECK If RCPs Should Be Stopped:
		• DETERMINE ECCS Pumps – AT LEAST ONE RUNNING.
		• DETERMINE CCP Pump 1-02 and SI Pumps – RUNNING.
		• DETERMINE RCS subcooling – GREATER THAN 25ºF.
	US/RO	DETERMINE RCPs should remain running.
	US/RO	CHECK if any SG is Faulted:
		• DETERMINE pressure in all SGs – NORMAL.
	US/RO	CHECK if SG Tubes are Ruptured:
		• DETERMINE SG 1-04 is ruptured and TRANSITION to EOP-3.0A, Steam Generator Tube Rupture, Step 1.

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	15	of	20
Event Description:	Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open								

Time	Position	Applicant's Actions or Behavior
		Examiner Note: These steps are performed by the BOP as required per EOP-0.0A, Attachment 2. EOP-3.0A steps are identified later in the scenario.
	BOP	VERIFY SSW Alignment:
		• VERIFY SSW Pumps – RUNNING.
		• VERIFY Diesel Generator Cooler SSW return flow.
	BOP	VERIFY Safety Injection Pumps – RUNNING.
	BOP	VERIFY Containment Isolation Phase A.
	BOP	VERIFY Containment Ventilation Isolation.
	BOP	VERIFY CCW Pumps – RUNNING.
	BOP	VERIFY RHR Pumps – RUNNING.
	BOP	VERIFY Proper CVCS Alignment:
		• VERIFY CCP 1-02 – RUNNING.
		• VERIFY Letdown Relief Valve isolation:
		• DETERMINE Letdown Orifice Isolation Valves – CLOSED.
		• DETERMINE Letdown Isolation Valves – CLOSED.
		• 1/1-LCV-459 and 1/1-LCV-460.
	BOP	VERIFY ECCS flow:
		• VERIFY CCP SI flow indicator.
		• VERIFY RCS pressure < 1800 PSIG.
		• VERIFY SI Pumps discharge flow indicator.
		• VERIFY RCS pressure > 325 PSIG.

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	16	of	20
Event Description:	Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open								

Time	Position	Applicant's Actions or Behavior
	BOP	VERIFY Feedwater Isolation Complete:
		• VERIFY Feedwater Isolation Valves CLOSED.
		• VERIFY Feedwater Isolation Bypass Valves CLOSED.
		• VERIFY Feedwater Bypass Control Valves CLOSED.
		• VERIFY Feedwater Control Valves CLOSED.
	BOP	VERIFY both Diesel Generators – RUNNING.
	BOP	VERIFY Monitor Lights For SI Load Shedding – LIT.
	BOP	VERIFY Proper SI alignment per MLB light indication.
	BOP	VERIFY Components Properly Aligned per Table 1.

Location	Equipment	Description	Condition
CB-03	X-HS-5534	H2 PRG SPLY FN 4	STOPPED
CB-03	X-HS-5532	H2 PRG SPLY FN 3	STOPPED
CB-04	1/1-8716A	RHRP 1 XTIE VLV	OPEN
CB-04	1/1-8716B	RHRP 2 XTIE VLV	OPEN
CB-06	1/1-8153	XS LTDN ISOL VLV	CLOSED
CB-06	1/1-8154	XS LTDN ISOL VLV	CLOSED
CB-07	1/1-RTBAL	RX TRIP BKR	OPEN
CB-07	1/1-RTBBL	RX TRIP BKR	OPEN
CB-07	1/1-BBAL	RX TRIP BYP BKR	OPEN/DEENERGIZED
CB-07	1/1-BBBL	RX TRIP BYP BKR	OPEN/DEENERGIZED
CB-08	1-HS-2397A	SG 1 BLDN HELB ISOL VLV	CLOSED
CB-08	1-HS-2398A	SG 2 BLDN HELB ISOL VLV	CLOSED
CB-08	1-HS-2399A	SG 3 BLDN HELB ISOL VLV	CLOSED
CB-08	1-HS-2400A	SG 4 BLDN HELB ISOL VLV	CLOSED
CB-08	1-HS-2111C	FWPT A TRIP	TRIPPED
CB-08	1-HS-2112C	FWPT B TRIP	TRIPPED
CB-09	1-HS-2490	CNDS XFER PUMP	STOPPED (MCC deenergized on SI)

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	17	of	20
Event Description:	Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open								

Time	Position	Applicant's Actions or Behavior

	CV-01	X-HS-6181	PRI PLT SPLY FN 17 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6188	PRI PLT SPLY FN 18 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6195	PRI PLT SPLY FN 19 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6202	PRI PLT SPLY FN 20 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6209	PRI PLT SPLY FN 21 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6216	PRI PLT SPLY FN 22 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6223	PRI PLT SPLY FN 23 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6230	PRI PLT SPLY FN 24 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-3631	UPS & DISTR RM A/C FN 1 & BSTR FN 42	STARTED
	CV-01	X-HS-3632	UPS & DISTR RM A/C FN 2 & BSTR FN 43	STARTED
	CV-01	1-HS-5600	ELEC AREA EXH FN 1	STOPPED/DEENERGIZED
	CV-01	1-HS-5601	ELEC AREA EXH FN 2	STOPPED/DEENERGIZED
	CV-01	1-HS-5602	MS & FW PIPE AREA EXH FN 3 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5603	MS & FW PIPE AREA EXH FN 4 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5618	MS & FW PIPE AREA SPLY FN 17	STOPPED/DEENERGIZED
	CV-01	1-HS-5620	MS & FW PIPE AREA SPLY FN 18	STOPPED/DEENERGIZED
	CV-03	X-HS-5855	CR EXH FN 1	STOPPED/DEENERGIZED
	CV-03	X-HS-5856	CR EXH FN 2	STOPPED/DEENERGIZED
	CV-03	X-HS-5731	SFP EXH FN 33	STOPPED/DEENERGIZED
	CV-03	X-HS-5733	SFP EXH FN 34	STOPPED/DEENERGIZED
	CV-03	X-HS-5727	SFP EXH FN 35	STOPPED/DEENERGIZED
	CV-03	X-HS-5729	SFP EXH FN 36	STOPPED/DEENERGIZED
Examiner Note: The next four (4) steps would be performed on Unit 2.				
	CB-03	2-HS-5538	AIR PRG EXH ISOL DMPR	CLOSED
	CB-03	2-HS-5539	AIR PRG EXH ISOL DMPR	CLOSED

Operating Test : NRC	Scenario # 3	Event # 5, 6, 7, & 8	Page 18 of 20
Event Description: Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open			

Time	Position	Applicant's Actions or Behavior
		CB-03 | 2-HS-5537 | AIR PRG SPLY ISOL DMPR | CLOSED
		CB-03 | 2-HS-5536 | AIR PRG SPLY ISOL DMPR | CLOSED
	BOP	NOTIFY Unit Supervisor attachment instructions complete and to IMPLEMENT FRGs as required.
Examiner Note: EOP-3.0A, Steam Generator Tube Rupture steps begin here.		
+15 min	US/RO	CHECK If RCPs Should Be Stopped:
		• OBSERVE ECCS pumps – AT LEAST ONE RUNNING.
		• OBSERVE CCP 1-02 and both SI Pumps – RUNNING.
		• DETERMINE RCS subcooling – GREATER THAN 25ºF.
	US/RO	DETERMINE RCPs should remain RUNNING.
	US/BOP	DETERMINE Steam Generator 1-04 is ruptured.
		• OBSERVE increase in Steam Generator 1-04 narrow range level.
		• OBSERVE high radiation from Steam Generator 1-04 Main Steam line.
CRITICAL TASK STATEMENT		**Identify and Isolate Flow from the Ruptured Steam Generator Prior to Commencing an Operator Induced Cooldown.**
CRITICAL TASK	RO/BOP	ISOLATE Flow From Ruptured Steam Generator 1-04:
		• VERIFY SG 1-04 Atmospheric Controller Setpoint at 1160 PSIG.
		• CHECK SG 1-04 Atmospheric Relief Valve – CLOSED.
		• DETERMINE SG 1-04 Main Steam Line Isolation Valve failed closed.
		• CLOSE SG 1-04 Drip Pot Isolation Valves.
	BOP	• DETERMINE SG 1-04 TDAFW Pump Steam Supply Valve – NOT CLOSED.
		• [RNO] VERIFY Motor Driven AFW Pump 1-02 – RUNNING.
		• [RNO] DIRECT an operator to locally TRIP TDAFW Pump or DIRECT an operator to locally isolate the steam supply from SG 1-04 to the TDAFW Pump.

Operating Test : NRC	Scenario # 3	Event # 5, 6, 7, & 8	Page 19 of 20
Event Description: Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open			

Time	Position	Applicant's Actions or Behavior
		• CLOSE SG 1-04 Blowdown Valves.
Booth Operator: When directed, EXECUTE remote function FWR055, TDAFWP TRIP [TR] THROTTLE [TH] VLV HS-2452 to CLOSE.		
Booth Operator: EXECUTE override DIFWHS24521, to CLOSE HV-2452-1, TDAFWP Steam Supply to TDAFW Pump.		
Booth Operator: When HV-2452-1 is closed, EXECUTE remote function FWR055, TDAFWP TRIP [TR] THROTTLE [TH] VLV HS-2452 to OPEN to reset TDAFW Pump.		
	RO/BOP	CHECK Ruptured SG 1-04 Level:
		• VERIFY narrow range level > 43%.
		• ISOLATE AFW flow to SG 1-04.
	RO/BOP	VERIFY SG 1-04 Pressure > 420 PSIG.
EOP-3.0A Caution: If RCPs are NOT running, the following steps may cause a false INTEGRITY STATUS TREE (FRP) indication for the ruptured loop. Disregard ruptured loop Cold Leg Wide Range Temperature indication until after performing Step 32.		
CRITICAL TASK STATEMENT		**Cooldown the Reactor Coolant System Prior to Exiting EOP-3.0.**
CRITICAL TASK	RO/BOP	INITIATE RCS Cooldown.
	RO/BOP	When PRZR pressure decreases to less than 1960 psig, BLOCK the Low Steam Line Pressure SI Signal.
	US	DETERMINE required Core Exit Thermocouple (CET) temperature from Table 1.
		• OBSERVED Steam Generator pressure = _____ PSIG
		• TARGET Core Exit Thermocouple (CET) temperature = _____ ºF

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	20	of	20
Event Description:	Steam Generator Tube Rupture / Main Steam Isolation Valve Failure / DRPI Failure / TDAFW Pump Steam Supply Valve Fails Open								

Time	Position	Applicant's Actions or Behavior
	BOP	DUMP steam to Condenser from intact SG(s) at maximum rate using the Steam Dump Valves.
	BOP	TRANSFER the Steam Dump Valves to STEAM PRESSURE Mode.
	BOP	PLACE the Steam Pressure Controller in MANUAL and INCREASE demand.
	BOP	When P-12 is reached, select bypass interlock on Steam Dumps and continue cooldown.
	US/RO	DETERMINE required CET temperature is met.
	BOP	STOP RCS cooldown.
	RO/BOP	MAINTAIN required CET temperature.
+30 min	RO/BOP	CHECK Intact SG Levels:
		• VERIFY Narrow Range Level > 43%.
		• CONTROL AFW flow to maintain level between 50% and 60%.
When the Steam Generator is isolated or required CET temperature is met, TERMINATE the scenario.		

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.:	4	Op Test No.:	March 2010 NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		

Initial Conditions:	• ~3% power BOL - RCS Boron is 1545 ppm by Chemistry sample. • Steam Dump System in service for RCS Temperature Control.
Turnover:	Transfer from Auxiliary Feedwater System to Main Feedwater System.
Critical Tasks:	• Identify Excess Reactor Coolant System leakage and Manually Trip Reactor. • Trip Reactor Coolant Pumps on Loss of Subcooling.

Event No.	Malf. No.	Event Type*	Event Description
1 +15 min		N (BOP, SRO)	Transfer from Auxiliary Feedwater System to Main Feedwater System and place Feedwater Bypass Control Valves in AUTO.
2 +30 min		R (RO, BOP) N (SRO)	Raise power to 8% in preparation for synchronizing the Main Generator to the electrical grid.
3 +40 min	RX04C	I (BOP, SRO) TS (SRO)	Steam Generator (1-03) Level Transmitter (LT-553) fails low.
4 +50 min	NI03A	C (BOP, SRO) TS (SRO)	Power Range Nuclear Instrument (N-41) detector fails high.
5 +55 min	AN2A_02.1 AN2A_03.1		ALB-02A-2.1, Seismic Monitoring System Activation. ALB-02A-3.1, Operating Basis Earthquake Exceedance.
6 +65 min	CV02	C (RO, SRO)	Charging Line leak inside Containment.
7 +65 min	RC08B1	M (RO, BOP, SRO)	Small Break Loss of Coolant Accident inside Containment.
8 +65 min	RP01	I (RO)	Automatic Reactor Trip failure.
9 +65 min	Override	C (RO)	Reactor Coolant Pump (1-02) fails to manually trip. Manually open feeder breaker to 6.9 kV Bus 1A2.

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

SCENARIO SUMMARY NRC #4

The crew will assume the watch with power at approximately 3% per IPO-002A, Plant Startup from Hot Standby. The crew will transfer Feedwater flow from the Auxiliary Feedwater System to the Main Feedwater System in preparation for raising power to 8%. This is followed by entry into SOP-304A, Auxiliary Feedwater System, Section 5.2, Shutdown and Standby of the Auxiliary Feedwater System.

When transfer of Feedwater has been completed, the crew will enter IPO-003A, Power Operations, Section 5.1, Warmup and Synchronization of the Turbine Generator and perform a power ascension using the Rod Control and Steam Dump Systems.

When power has been raised 3% to 5%, a Steam Generator Level Transmitter will fail low. Actions are per ABN-710, Steam Generator Level Instrumentation Malfunction. The BOP will be required to take manual control of the Feedwater Bypass Control Valve and then select an alternate controlling channel to return the Feedwater System to automatic control. The SRO will refer to Technical Specifications.

When Technical Specifications are addressed, a Power Range Nuclear Instrument will fail high. The crew will enter ABN-703, Power Range Instrument Malfunction. The crew will perform actions to defeat inputs from the failed channel. The SRO will refer to Technical Specifications.

When ABN-703 actions are complete, a seismic event will occur. The crew will enter ABN-907, Acts of Nature, Section 2.0, Earthquake and perform actions as required by the ABN. This is the initiating event for the Charging Line Leak inside Containment. The crew will enter ABN-103, Excessive Reactor Coolant Leakage and perform actions in an attempt to locate the source of the leakage. While performing actions in ABN-103 the crew will isolate Letdown and Charging and determine that the source of leakage is in the Charging Line. When actions to place Excess Letdown in service are reached a Small Break Loss of Coolant Accident will occur.

With the automatic Reactor Trip function disabled, the crew will determine that a manual Reactor Trip must be performed with entry into EOP-0.0A, Reactor Trip or Safety Injection. While performing EOP-0.0A actions the Reactor Coolant Pumps (RCP) must be stopped due to a loss of subcooling. RCP 1-02 will not trip from its normal location and require deenergizing of the associated 6900 V Bus or local trip of the breaker by an operator in the field. At Step 14, a transition to EOP-1.0A, Loss of a Reactor or Secondary Coolant will occur.

The scenario is terminated when an evaluation of plant status is performed to verify Cold Leg Recirculation capability.

Risk Significance:

- Risk important components out of service: None
- Risk significant core damage sequence: Small Break Loss of Coolant Accident
  Automatic Reactor Trip Failure
- Risk significant operator actions: Manually Trip Reactor Due to SBLOCA
  Manually Trip Reactor Coolant Pumps

Scenario Event Description
NRC Scenario #4

BOOTH OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC #53 and Event File for NRC Scenario #4.

EVENT	TYPE	MALF #	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
	DIR CRCP2		Reactor Coolant Pump 1-02 fails to manually trip	STR	K0
		RP01	Automatic Reactor Trip failure	-	K0
1		-	Transfer from AFW to Main Feedwater System	-	N/A
1		FWR106	PV-2242 FWP SUCT HDR PRESS override	NORMAL	-
2		-	Raise power to 10%		N/A
3		RX04C	SG (1-03) Level Transmitter (LT-553) failure	0%	K3
4		NI03A	Power Range NI (N-41) detector failure	100%	K4
5		AN2A_02	02A-2.1, Seismic Monitoring System Activation	ALARM ON	K5
5		AN2A_03	02A-3.1, OBE Exceedance	ALARM ON	K5
6		CV02	Charging Line leak inside Containment	30 gpm	K6
7		RC08B1	3” diameter SBLOCA inside Containment	-	K7
8		RP01	Automatic Reactor Trip failure	-	K0
9	DIR CRCP2		Locally trip Reactor Coolant Pump 1-02 **(NOTE 1)**	STP	K9
NOTE 1: MODIFY DIR CRCP2 to STP if contacted in EOP-0.0A					

Scenario Event Description
NRC Scenario #4

Booth Operator: **INITIALIZE to IC #53 and NRC Scenario #4 SETUP file.**
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE all Control Board Tags are removed.
ENSURE Operator Aid Tags reflect current boron conditions.
ENSURE Control Rods are in MANUAL with Control Rod Bank C @ 226 steps and Bank D @ 111 steps.
ENSURE Rod Bank Update (RBU) is performed.
SET Plant Computer screen for MODE 2.
ENSURE Reactivity Briefing Sheet printout provided with Turnover.
PLACE Plant Computer, right hand RO and US Computer screens for MODE 2.
PLACE Group Display LPTDIFF on the BOP Desktop Computer.
ENSURE all PRZR Heaters energized.
ENSURE procedures in progress are on SRO desk:
- COPY of IPO-002A, Plant Startup from Hot Standby, INITIALED to Step 5.4.8.
- COPY of SOP-304A, Auxiliary Feedwater System, Section 5.2, with N/As as required in preparation for placing the AFW System in Standby.
- COPY of IPO-003A, Power Operations, Section 5.1, Warmup and Synchronization of the Turbine Generator, INITIALED as appropriate.

Significant Control Room Annunciators in Alarm:

PCIP-1.1 – SR TRN A RX TRIP BLK
PCIP-1.3 – AMSAC BLK TURB < 40% PWR C-20
PCIP-1.4 – CNDNSR AVAIL STM DUMP ARMED C-9
PCIP-1.7 – RX ≤ 50% PWR TURB TRIP PERM P-9
PCIP-2.1 – SR TRN B RX TRIP BLK
PCIP-2.4 – LO TURB PWR ROD WTHDRWL BLK C-5
PCIP-2.5 – SR RX TRIP BLK PERM P-6
PCIP-3.5 – RX & TURB ≤ 10% PWR P-7
PCIP-4.5 – RX ≤ 48% PWR 3-LOOP FLO PERM P-8
PCIP-4.6 – TURB ≤ 10% PWR P-13
6D-1.1 – SR HI VOLT FAIL
7B-4.8 – FWP A/B RECIRC VLV NOT CLOSED
8A-1.3 – FWPT B TRIP
8A-1.10 – 1 OF 4 TURB STOP VLV CLOSE
Numerous 9A Feedwater alarms

Operating Test :	NRC	Scenario #	4	Event #	1	Page	5	of	29
Event Description:	Transfer from the Auxiliary Feedwater System to the Main Feedwater System / Shutdown AFW System								

Time	Position	Applicant's Actions or Behavior
Booth Operator: ENSURE Simulator in RUN when crew is ready to assume the watch.		
+1 min	US	DIRECT performance of IPO-002A, Plant Startup from Hot Standby, Step 5.4.10.
	BOP	ENSURE all Steam Generator Feedwater Flow Control Valve Controllers are in MANUAL and the valves are CLOSED.
	BOP	ENSURE all Steam Generator Feedwater Bypass Control Valve Controllers are in MANUAL and 0% demand.
	BOP	ENSURE the Steam Generator Feedwater Bypass Control Valve handswitches are in AUTO and the valves are CLOSED:
		• 1-HS-2162, SG 1 FW BYP & CTRL VLV.
		• 1-HS-2163, SG 2 FW BYP & CTRL VLV.
		• 1-HS-2164, SG 3 FW BYP & CTRL VLV.
		• 1-HS-2165, SG 4 FW BYP & CTRL VLV.
	BOP	RESET the Feedwater Isolation signal by DEPRESSING pushbuttons:
		• 1/1-FWIRA, FW ISOL RESET.
		• 1/1-FWIRB, FW ISOL RESET.
	BOP	VERIFY alarm 1-ALB-8A, 1.13, LO T_{AVE} & RX TRIP FW ISOL ACT is OFF.
IPO-002A Note: When the Feedwater Bypass Control Valves are open, the SG will be fed by two sources, which will require the operator to manipulate Auxiliary Feedwater flow to prevent SG level oscillations. The following three steps should be performed simultaneously in order to maintain proper SG level.		
	BOP	Throttle OPEN Feedwater Bypass Control Valve Controllers in MANUAL:
		• 1- LK-550, SG 1 FW BYP CTRL.
		• 1- LK-560, SG 2 FW BYP CTRL.
		• 1- LK-570, SG 3 FW BYP CTRL.

Time	Position	Applicant's Actions or Behavior
		• 1- LK-580, SG 4 FW BYP CTRL.
	BOP	VERIFY flow to each Steam Generator through the Main Feed line:
		• 1- FI-510A, SG 1 FW FLO.
		• 1- FI-511A, SG 1 FW FLO.
		• 1- FI-520A, SG 2 FW FLO.
		• 1- FI-521A, SG 2 FW FLO.
		• 1- FI-530A, SG 3 FW FLO.
		• 1- FI-531A, SG 3 FW FLO.
		• 1- FI-540A, SG 4 FW FLO.
		• 1- FI-541A, SG 4 FW FLO.
	BOP	Throttle CLOSED the Auxiliary Feedwater Flow Control Valve Controllers:
		• 1- FK-2453A, MD AFWP 1 SG FLO 1 CTRL.
		• 1- FK-2453B, MD AFWP 1 SG FLO 2 CTRL.
		• 1- FK-2454A, MD AFWP 2 SG FLO 3 CTRL.
		• 1- FK-2454B, MD AFWP 2 SG FLO 4 CTRL.
IPO-002A Note:		**The SG level control system is selected to the preferred channels to preserve the 2/3 coincidence on high level Turbine trip in the event the alternate level control channel fails.**
	BOP	ENSURE Steam Generator Level Control Switches are in the following positions:
		• 1- LS-519C, SG 1 LVL CHAN SELECT - LQY-551.
		• 1- LS-529C, SG 2 LVL CHAN SELECT - LQY-552.
		• 1- LS-539C, SG 3 LVL CHAN SELECT - LQY-553.
		• 1- LS-549C, SG 4 LVL CHAN SELECT - LQY-554.
	BOP	VERIFY Main Feedwater flow is sufficient to maintain Steam Generator level and TERMINATE AFW flow in PLACE in STANDBY per SOP-304A.

Operating Test :	NRC	Scenario #	4	Event #	1	Page	7	of	29
Event Description:	Transfer from the Auxiliary Feedwater System to the Main Feedwater System / Shutdown AFW System								

Time	Position	Applicant's Actions or Behavior
	US/BOP	CONTACT Radwaste Operations to PLACE the Condensate Polishing Control System FWP Suction Header Pressure Low Trip Override Enabled Circuit to NORMAL per RWS-109A.
<u>Booth Operator</u>: When contacted, EXECUTE remote function FWR106, PV-2242 FWP SUCT HDR PRESS OVERRIDE.		
	BOP	PLACE Feedwater Bypass Control Valve Controllers in AUTO:
		• 1- LK-550, SG 1 FW BYP CTRL.
		• 1- LK-560, SG 2 FW BYP CTRL.
		• 1- LK-570, SG 3 FW BYP CTRL.
		• 1- LK-580, SG 4 FW BYP CTRL.
<u>Examiner Note</u>: The following steps are from SOP-304A, Auxiliary Feedwater System.		
	US	DIRECT performance of SOP-304A, Auxiliary Feedwater System.
	BOP	ENSURE both Motor Driven AFW Pump handswitches in AUTO after STOP.
		• 1-HS-2450A, MD AFWP 1.
		• 1-HS-2451A, MD AFWP 2.
	BOP	PLACE AFW Flow Control Valve Controllers at 100% output and MANUAL:
		• 1- FK-2453A, MD AFWP 1 SG 1 FLO CTRL.
		• 1- FK-2453B, MD AFWP 1 SG 2 FLO CTRL.
		• 1- FK-2454A, MD AFWP 2 SG 3 FLO CTRL.
		• 1- FK-2454B, MD AFWP 2 SG 4 FLO CTRL.
	US/BOP	VERIFY proper Flow Control and Isolation Valve position per OPT-206A.
<u>Floor Cue</u>: If requested, another operator will perform the actions of OPT-206A, AFW System.		

Operating Test :	NRC	Scenario #	4	Event #	1	Page	8	of	29
Event Description:	Transfer from the Auxiliary Feedwater System to the Main Feedwater System / Shutdown AFW System								

Time	Position	Applicant's Actions or Behavior
+15 min	US/BOP	MONITOR the temperature of the Auxiliary Feedwater System for approximately 30 minutes to detect any Steam Generator back leakage.
When the AFW System alignment is complete, or at Lead Examiner discretion, PROCEED to Event 2.		

Operating Test :	NRC	Scenario #	4	Event #	2	Page	9	of	29
Event Description:	Raise Reactor Power / Prepare Turbine for Operation								

Time	Position	Applicant's Actions or Behavior
Booth Operator: MONITOR Simulator parameters while the crew transitions to IPO-003A.		
+1 min	US	DIRECT performance of IPO-003A, Power Operations, Section 5.1, Warmup and Synchronization of the Turbine Generator STARTING at Step 5.1.8.
	BOP	OPEN 1-HS-2611/12, FW HTR 5A & 6A/5B & 6B BYP VLV.
	US	VERIFY the following annunciators are OFF (already initialed):
		• 1-ALB-9B, 3.9, EHC FLUID TEMP HI.
		• 1-ALB-9B, 5.6, TURB L/O TEMP HI.
	US	DETERMINE lube oil temperature is >95°F on TURB BRG TEMP RCDR 1 (already initialed).
	BOP	OPEN 1-HS-2417, HP CTRL VLV 1 ● 4 BEF SEAT DRN VLV.
	BOP	ENSURE controllers on GEN TEMP/LEAK WATER Display in AUTO:
		• PLACE 1-TV-3097, Primary Water TEMP Controller in AUTO.
		• PLACE 1-TV-3118, Hydrogen TEMP Controller in AUTO.
	BOP	ENSURE the Turbine controls ready for Start-up by PERFORMING the following:
		• ENSURE the Load Control Subloop Controller is OFF.
		• ENSURE the Load Target Setpoint Controller SET at 30 MWe.
		• ENSURE Load Rate Setpoint Controller SET at 10 MWe/MIN.
		• ENSURE Turbine in Speed Control by VERIFYING SPEED bar is red.
	BOP	VERIFY the Turbine Trip is RESET and OBSERVE Turbine Trip bar white.
	BOP	If desired, ENSURE Feedwater Bypass Control Valve Controllers in AUTO.
	US	DETERMINE Attachment 1 was COMPLETED & REVIEWED by the Shift Manager per Turnover Sheet prior to exceeding 5% power.

Operating Test :	NRC	Scenario #	4	Event #	2	Page	10	of	29
Event Description:	Raise Reactor Power / Prepare Turbine for Operation								

Time	Position	Applicant's Actions or Behavior
	US	Direct WITHDRAWAL of Control Rods in no more than five (5) step increments to raise power.
	RO	WITHDRAW Control Rods in no more than five (5) step increments while monitoring Reactor power level.
	RO	VERIFY Power Range Channels respond appropriately as power level rises.

Operating Test :	NRC	Scenario #	4	Event #	2	Page	11	of	29
Event Description:	Raise Reactor Power / Prepare Turbine for Operation								

Time	Position	Applicant's Actions or Behavior
	BOP	As Reactor power increases, VERIFY Steam Dump System continues to maintain Main Steam pressure at approximately 1092 psig.
	US	When reactor power is greater than 5%, LOG entry into MODE 1.
	US	PERFORM OPT-102A for MODE 1 Surveillances.
<u>Floor Cue</u>: If requested, another operator will perform OPT-102A, Operations Shiftly Routine Tests.		
+15 min	RO	Slowly RAISE Reactor power to between 6% and 8%.
When power level is raised 3% to 5%, or at Lead Examiner discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	4	Event #	3	Page	12	of	29
Event Description:	Steam Generator Level Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 3. - RX04C, Steam Generator 1-03 Level Transmitter (LT-553) fails low.		
Indications Available: **8A-3.6 – SG 3 LVL LO** **8A-3.8 – SG 3 STM & FW FLO MISMATCH (level dependent)** **8A-3.12 – SG 3 LVL DEV** **8A-3.14 – SG 3 1 OF 4 LVL LO-LO** **1-LI-553, SG 3 LVL (NR) CHAN II indication failed low**		
+1 min	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Steam Generator 1-03 Level Transmitter (LT-553) failed low.
	US	DIRECT performance of ABN-710, Steam Generator Level Instrumentation Malfunction, Section 2.0.
	BOP	DETERMINE controlling level channel has failed.
	BOP	Manually CONTROL 1-FK-570, SG 3 BYP CTRL as necessary to maintain Steam Generator 1-03 at programmed level.
	BOP	VERIFY instruments on common instrument line indicate NORMAL.
		• VERIFY Loop 3 Instruments FT-532, LT-539, and FT-533 responding normally per Attachment 1.
ABN-710 Caution: Turbine Trip AND Feedwater Isolation will occur if 2 or more of the 3 HI-HI level bistables for the SAME steam generator are TRIPPED.		
	BOP	DETERMINE all HI-HI level bistable windows on TSLB-3 for Steam Generator 1-03 are DARK.
	BOP	VERIFY automatic SG level control available:
		• OBSERVE alternate level control channel 1-LI-539 indication NORMAL.
		• DETERMINE automatic level control desired by Unit Supervisor.

Operating Test :	NRC	Scenario #	4	Event #	3	Page	13	of	29
Event Description:	Steam Generator Level Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	PLACE 1-LS-539C, Steam Generator 3 Level Channel Select to the LY-539 position.
	BOP	PLACE 1-FK-570, SG 3 BYP CTRL in AUTO and MONITOR operation.
+10 min	US	EVALUATE Technical Specifications.
		• LCO 3.3.1.E, Reactor Trip System Instrumentation.
		• CONDITION E - One channel inoperable (Channel 3 LO-LO).. • ACTION E.1 - Place channel in trip within 72 hours.
		• LCO 3.3.2.D, ESFAS Instrumentation.
		• CONDITION D - One channel inoperable (Channel 3 LO-LO). • ACTION D.1 - Place channel in trip within 72 hours.
		• LCO 3.3.2.I, ESFAS Instrumentation.
		• CONDITION I - One channel inoperable (Channel 3 HI-HI). • ACTION I.1 - Place channel in trip within 72 hours.
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Event 4.		

Operating Test :	NRC	Scenario #	4	Event #	4	Page	14	of	29
Event Description:	Power Range Nuclear Instrument Failure								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 4. - NI03A, Power Range Nuclear Instrument (N-41) detector fails high.		
Indications Available: **5C-2.5 – 1 OF 4 OT N-16 HI** **6D-2.3 – 1 OF 4 LO SETPT PR FLUX HI** **6D-1.4 – RX >50% PWR UP PR DET FLUX DEV HI** **6D-3.3 – 1 OF 4 PR FLUX RATE HI** **6D-3.4 – PR CHAN DEV HI** **6D-4.10 – QUADRANT PWR TILT (20 seconds later)** **6D-3.14 – 1 OF 4 OT N-16 ROD STOP & TURB RUNBACK** **1-NI-41B, PR ΔFLUX CHAN I indication fails high**		
+30 sec	RO	REFER to Annunciator Alarm Procedures.
	RO	RECOGNIZE Power Range Nuclear Instrument N-41 detector failure.
	US	DIRECT implementation of ABN-703, Power Range Instrumentation Malfunction, Section 2.0.
	RO	VERIFY rapid Control Rod insertion not required.
	RO	VERIFY Control Rods in MANUAL and T_{AVE}/T_{REF} deviation controlled to maintain current reactor power.
	RO	VERIFY Reactor Power less than 75% rated thermal power.
	RO/BOP	PERFORM at the Channel N-41 Detector Current Comparator Drawer:
		• SELECT Rod Stop Bypass Switch to N-41
		• SELECT Comparator Channel Defeat Switch to N-41.
		• SELECT Upper Section Switch to N-41.
		• SELECT Lower Section Switch to N-41.
		• SELECT Power Mismatch Bypass Switch to N-41.
	RO/BOP	At the Power Range A Drawer, SELECT Rate Mode Switch momentarily to RESET for N-41.

Operating Test :	NRC	Scenario #	4	Event #	4	Page	15	of	29
Event Description:	Power Range Nuclear Instrument Failure								

Time	Position	Applicant's Actions or Behavior
	RO/BOP	PLACE 1/1-JS-411E, N16 PWR CHAN DEFEAT Switch to LP1.
	RO/BOP	PLACE 1/1-TS-412T, T_{AVE} CHAN DEFEAT Switch to LP1.
	RO/BOP	ENSURE N16 Recorder selected to an OPERABLE channel.
	US/RO	VERIFY Permissives P-7, P-8, P-9, and P-10 MATCH current power level.
+10 min	US	EVALUATE Technical Specifications.
		• LCO 3.3.1.D, Reactor Trip System Instrumentation.
		• CONDITION D - One channel inoperable. • ACTION D.1.2 - Place channel in trip within 72 hours.
		• LCO 3.3.1.E, Reactor Trip System Instrumentation.
		• CONDITION E - One channel inoperable. • ACTION E.1 - Place channel in trip within 72 hours.
		• LCO 3.3.1.S, Reactor Trip System Instrumentation.
		• CONDITION S - One or more required channel(s) inoperable. • ACTION S.1 - Verify interlock is in the required state for existing unit conditions within 1 hour.
		• LCO 3.3.1.T, Reactor Trip System Instrumentation.
		• CONDITION T - One or more required channel(s) inoperable. • ACTION T.1 - Verify interlock is in the required state for existing unit conditions within 1 hour.
When the Technical Specification actions are addressed, or at Lead Evaluator's discretion, PROCEED to Event 5.		

Operating Test :	NRC	Scenario #	4	Event #	5	Page	16	of	29
Event Description:	Seismic Monitoring System Activation								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 5. - ALB-02A-2.1, Seismic Monitoring System Activation. - ALB-02A-3.1, Operating Basis Earthquake Exceedance.		
Indications Available: **2A-2.1 – SEISMIC MONITORING SYSTEM ACTIVATION** **2A-3.1 – OBE EXCEEDANCE**		
+1 min	BOP	RESPOND to Annunciator Alarm Procedures.
	US	DIRECT performance of ABN-907, Acts of Nature, Section 2.0, Earthquake.
	US	DETERMINE if ground motion has been reported or felt.
Booth Operator: REPORT that ground motion has been felt and reported throughout the site.		
	BOP	DETERMINE Control Room Seismic Monitoring annunciators have alarmed.
	BOP	DETERMINE that annunciator OBE EXCEEDANCE is in alarm.
	US	VERIFY no fuel movement in progress.
Booth Operator: If called, report no fuel movement in progress.		
	US	REFER to EPP-201.
+5 min	US	DISPATCH operators to conduct a visual inspection of the plant.
When operators are dispatched for inspections, or at Lead Examiner discretion, PROCEED to Event 6.		

Operating Test :	NRC	Scenario #	4	Event #	6	Page	17	of	29
Event Description:	Charging Line Leak Inside Containment								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Event 6. - CV02, Charging Line leak inside Containment @ 30 gpm.		
Indications Available: **2A-1.6 – CNTMT SMP 1 FILL RATE INCREASE** **2A-2.8 – ANY CNTMT SMP PMP RUN** **2B-3.12 – CNTMT FN CLR 3 & 4 CNDS FILL RATE HI (~2 minutes later)** **2B-4.12 – CNTMT FN CLR 1 & 2 CNDS FILL RATE HI (~3 minutes later)** **PC-11 Containment Air PIG Radiation Monitor alarms** **Containment Sump Pump 1-01 AUTO starts**		
+1 min	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE increasing Containment Sump level.
	US	DIRECT performance of ABN-103, Excessive Reactor Coolant Leakage, Section 2.0.
	RO	VERIFY Centrifugal Charging Pump 1-01 is running.
Examiner Note: The crew will perform actions to locate the source of the leak. When Charging and Letdown are isolated later in the ABN a Small Break LOCA will occur.		
	RO	DETERMINE Pressurizer level NOT at or trending to Program Level Setpoint.
	RO	PLACE Charging Pump Controller in MANUAL and ADJUST Charging flow to maintain Pressurizer level at setpoint.
	RO	DETERMINE Pressurizer level NOT at setpoint and PERFORM the following:
		• ENSURE OPEN 1/1-8149A, 45 gpm Letdown Orifice Isolation Valve in service.
		• CLOSE 1/1-8149B, 75 gpm Letdown Orifice Isolation Valve.
		• ENSURE 1-PK-121, LTDN HX OUT PRESS CTRL is maintaining 310 psig on 1-PI-131, LTDN HX OUT PRESS.
		• If necessary, START Charging Pump 1-02.

Operating Test : NRC	Scenario # 4	Event # 6	Page 18 of 29
Event Description: Charging Line Leak Inside Containment			

Time	Position	Applicant's Actions or Behavior
	RO	CHECK PRZR Power Operated Relief Valves CLOSED.
	RO	CHECK PRZR Safeties CLOSED.
	RO	CHECK PRZR Spray Valves RESPONDING to control pressure.
	RO	CHECK PRT level, temperature, and pressure NORMAL.
	RO	VERIFY Auto VCT Makeup in service.
	RO	VERIFY 1/1-LCV-112A, VCT LVL CTRL VLV aligned to VCT.
	BOP	CHECK Steam Generator levels, feed and steam flows, and radiation levels NORMAL.
	RO/BOP	CHECK Primary Sample Valves CLOSED via u-MLB-1A2- lights DARK.
		• Window 1.1 u-HV-4165, PRZR STM SMPL ISOL VLV OPEN.
		• Window 2.1 u-HV-4166, PRZR LIQ SMPL ISOL VLV OPEN.
		• Window 3.1 u-HV-4168, HL 1 SMPL ISOL VLV OPEN.
		• Window 4.1 u-HV-4169, HL 4 SMPL ISOL VLV OPEN.
	RO	CHECK Letdown and Normal Charging for leakage.
		• CHECK Area Radiation Monitor in the vicinity of Letdown and Charging.
		• CHECK Failed Fuel Radiation Monitor.
		• DETERMINE VCT level is NOT normal.
		• DETERMINE RCS Makeup Flow and Makeup intervals NOT normal.
	US	NOTIFY Radiation Protection of affected areas.

Operating Test : NRC	Scenario # 4	Event # 6	Page 19 of 29
Event Description: Charging Line Leak Inside Containment			

Time	Position	Applicant's Actions or Behavior
	RO	ISOLATE Letdown and Normal Charging as follows:
		• CLOSE Orifice Isolation Valves.
		• CLOSE Letdown Isolation Valves.
		• PLACE 1-FK-121, CCP CHRG FLO CTRL in MANUAL and REDUCE Charging flow to 32 gpm while maintaining seal injection flow to each RCP at 8 gpm.
		• CLOSE Charging Pump to Loop Charging Valves.
	US/RO	DETERMINE leak has been isolated with Pressurizer level increasing.
Booth Operator: When Charging and Letdown are isolated and Excess Letdown is to be placed in service, INITIATE the Small Break LOCA inside Containment.		
Examiner Note: RCS LEAKAGE is terminated when charging and letdown are isolated and the DNB condition is in and out quickly. The US may or may not address the following Technical Specifications.		
	US	Evaluate Technical Specifications.
		• LCO 3.4.13.A, RCS Operational LEAKAGE.
		• CONDITION A – RCS Operational LEAKAGE not within limits for other than pressure boundary leakage or primary to secondary leakage. • ACTION A.1 - Reduce LEAKAGE to within limits within 4 hours.
		• LCO 3.4.1.A, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits.
		• CONDITION A – One or more RCS DNB parameters not within limits. • ACTION A.1 – Restore RCS DNB parameter(s) to within limits within 2 hours.
+10 min	US	PLACE Excess Letdown in service per SOP-103A.
When Excess Letdown is directed, or at Lead Examiner discretion, PROCEED to Events 7, 8, and 9.		

Operating Test :	NRC	Scenario #	4	Event #	7, 8, & 9	Page	20	of	29
Event Description:	Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure								

Time	Position	Applicant's Actions or Behavior
Booth Operator: When directed, EXECUTE Events 7, 8 and 9. **- RC08B1, Small Break Loss of Coolant Accident inside Containment.** **- RP01, Automatic Reactor trip failure.** **- OVERRIDE, Reactor Coolant Pump (1-02) fails to manually trip.**		
Indications Available: **5B-1.4 – PRZR HTR GRP C CTRL TRBL** **5B-1.6 – PRZR LO PRESS PORV 456 BLK** **5B-2.6 – PRZR LO PRESS PORV 455A BLK** **5B-3.6 – PRZR LVL LO** **5C-3.3 – PRZR PRESS LO BACKUP HTRS ON**		
+1 min	RO/BOP	RECOGNIZE Pressurizer level and pressure decreasing.
CRITICAL TASK STATEMENT		**Identify Excess Reactor Coolant System Leakage and Manually Trip Reactor Prior to Reaching 0% Pressurizer Level.**
CRITICAL TASK	RO	Manually INITIATE a Reactor Trip.
Examiner Note: RO is likely to initiate Safety Injection immediately after manually tripping the Reactor per guidance of ABN-103.		
	US	DIRECT performance of EOP-0.0A, Reactor Trip or Safety Injection.
	RO	VERIFY Reactor Trip:
		• DETERMINE Reactor trip breakers – OPEN.
		• DETERMINE Neutron flux – DECREASING.
	RO	DETERMINE all control rod position rod bottom lights – ON.
	BOP	VERIFY Turbine Trip:
		• DETERMINE all HP Turbine Stop Valves – CLOSED.
	BOP	VERIFY Power to AC Safeguards Buses:
		• DETERMINE both AC Safeguards Buses – ENERGIZED.

Operating Test :	NRC	Scenario #	4	Event #	7, 8, & 9	Page	21	of	29
Event Description:	Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure								

Time	Position	Applicant's Actions or Behavior
	RO	Manually INITIATE both Trains of Safety Injection.
Examiner Note: EOP-0.0A, Attachment 2 steps performed by BOP are identified later in the scenario.		
	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2.
	RO	VERIFY AFW Alignment:
		• DETERMINE both MDAFW Pumps – RUNNING.
		• DETERMINE Turbine Driven AFW Pump – RUNNING.
		• DETERMINE AFW total flow – GREATER THAN 460 GPM.
		• DETERMINE AFW valve alignment – PROPER ALIGNMENT.
	RO	VERIFY Containment Spray Not Required:
		• VERIFY 1-ALB-2B Window 1-8, CS ACT NOT illuminated.
		• VERIFY 1-ALB-2B Window 4-11, CNTMT ISOL PHASE B ACT NOT illuminated.
		• VERIFY Containment pressure < 18.0 PSIG.
		• VERIFY Containment Spray Heat Exchanger Outlet Valves – CLOSED.
		• VERIFY all Containment Spray Pumps – RUNNING.
	RO	CHECK if Main Steam lines should be Isolated:
		• DETERMINE Containment pressure 1 PSIG and RISING.
		• DETERMINE Main Steam pressure 1000 PSIG and stable.
	RO	CHECK RCS Temperature -
		• RCS AVERAGE TEMPERATURE less than 557ºF.
	RO	STOP dumping steam.

Operating Test :	NRC	Scenario #	4	Event #	7, 8, & 9	Page	22	of	29
Event Description:	Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure								

Time	Position	Applicant's Actions or Behavior
	RO	REDUCE total AFW flow to minimize the cooldown:
		• MAINTAIN a minimum of 460 gpm UNTIL narrow range level greater than 50% in at least one SG.
		• VERIFY Turbine Driven AFW Pump – STOPPED.
	RO	CHECK PRZR Valve Status:
		• DETERMINE PRZR Safeties – CLOSED.
		• DETERMINE PRZR Spray Valves – CLOSED.
		• DETERMINE PORVs – CLOSED.
		• DETERMINE power to both PORV Block Valves – AVAILABLE.
		• DETERMINE both PORV Block Valves – OPEN.
	US/RO	CHECK If RCPs Should Be Stopped:
		• DETERMINE all ECCS Pumps – RUNNING.
		• DETERMINE RCS subcooling – LESS THAN 25ºF (55ºF).
Examiner Note:		**When it is determined that RCP 1-02 will not trip the RO will either dispatch an operator to locally trip the RCP breaker or deenergize the RCP 6900 V Buses at the Electrical Distribution Panel. Either method is acceptable.**
CRITICAL TASK STATEMENT		**Manually Trip Reactor Coolant Pumps due to Loss of Subcooling Prior to Exiting EOP-0.0.**
CRITICAL TASK	RO	DETERMINE RCS subcooling less than 25ºF (55ºF) and STOP all RCPs.
		• DETERMINE Reactor Coolant Pump 1-02 will NOT trip.
		• PLACE CS-1A2-2, Incoming Breaker 1A2-2 to TRIP to DEENERGIZE 6900 V Bus 1A2.
		• DISPATCH an operator to locally TRIP RCP 1-02 breaker.
Booth Operator:		**If dispatched to trip Reactor Coolant Pump 1-02, WAIT two minutes then MODIFY DIR CRCP2 to STP to open RCP 1-02 breaker.**

Operating Test : NRC	Scenario # 4	Event # 7, 8, & 9	Page 23 of 29
Event Description: Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure			

Time	Position	Applicant's Actions or Behavior
	RO/BOP	CHECK if Any Steam Generator Is Faulted:
		• DETERMINE pressure in all Steam Generators – NORMAL.
	RO/BOP	CHECK if any Steam Generator is Ruptured:
		• DETERMINE radiation levels in all Steam Generators – NORMAL.
	RO/BOP	CHECK if RCS is intact:
		• DETERMINE Containment pressure, radiation level and sump levels increasing.
+10 min	US	TRANSITION to EOP-1.0A, Loss of Reactor or Secondary Coolant, Step 1.
Examiner Note: EOP-1.0A, Loss of Reactor or Secondary Coolant steps begin here.		
	US	CHECK if RCPs Should Be Stopped:
		• DETERMINE all RCPs STOPPED.
	US	CHECK if Any Steam Generator Is Faulted:
		• DETERMINE pressure in all Steam Generators – NORMAL.
	US	CHECK Intact Steam Generator Levels:
		• DETERMINE Narrow range levels – GREATER THAN 43% (50%).
		• CONTROL AFW flow to maintain NR level between 43% (50%) and 60%.
	US	CHECK Secondary Radiation NORMAL:
		• DETERMINE no Steam Generator tubes ruptured.
	US	CHECK PRZR PORVs and Block Valves:
		• DETERMINE power to both PORV Block Valves – AVAILABLE.

Operating Test :	NRC	Scenario #	4	Event #	7, 8, & 9	Page	24	of	29
Event Description:	Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure								

Time	Position	Applicant's Actions or Behavior
		• DETERMINE PORVs – CLOSED.
		• DETERMINE both PORV Block Valves – OPEN.
Examiner Note: These steps are performed by the BOP as required per EOP-0.0A, Attachment 2.		
	BOP	VERIFY SSW Alignment:
		• DETERMINE both SSW Pumps – RUNNING.
		• VERIFY Diesel Generators cooler SSW return flow.
	BOP	VERIFY Safety Injection Pumps – RUNNING.
	BOP	VERIFY Containment Isolation Phase A.
	BOP	VERIFY Containment Ventilation Isolation.
	BOP	VERIFY both CCW Pumps – RUNNING.
	BOP	VERIFY both RHR Pumps – RUNNING.
	BOP	VERIFY Proper CVCS Alignment:
		• DETERMINE both CCPs – RUNNING.
		• VERIFY Letdown Relief Valve isolation:
		• DETERMINE Letdown Orifice Isolation Valves – CLOSED.
		• DETERMINE Letdown Isolation Valves – CLOSED.
	BOP	VERIFY ECCS flow:
		• VERIFY CCP SI flow indicated.
		• VERIFY RCS pressure < 1700 PSIG (1800 PSIG).
		• VERIFY SIP discharge flow indicators.
		• DETERMINE RCS pressure > 325 PSIG (425 PSIG).

Operating Test :	NRC	Scenario #	4	Event #	7, 8, & 9	Page	25	of	29
Event Description:	Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	VERIFY Feedwater Isolation Complete:
		• VERIFY Feedwater Isolation Valves – CLOSED.
		• VERIFY Feedwater Isolation Bypass Valves – CLOSED.
		• VERIFY Feedwater Bypass Control Valves – CLOSED.
		• VERIFY Feedwater Control Valves – CLOSED.
	BOP	DETERMINE both Diesel Generators – RUNNING.
	BOP	VERIFY Monitor Lights For SI Load Shedding illuminated.
	BOP	VERIFY Proper SI alignment per MLB light indication.
	BOP	VERIFY Components Properly Aligned per Table 1.

Location	Equipment	Description	Condition
CB-03	X-HS-5534	H2 PRG SPLY FN 4	STOPPED
CB-03	X-HS-5532	H2 PRG SPLY FN 3	STOPPED
CB-04	1/1-8716A	RHRP 1 XTIE VLV	OPEN
CB-04	1/1-8716B	RHRP 2 XTIE VLV	OPEN
CB-06	1/1-8153	XS LTDN ISOL VLV	CLOSED
CB-06	1/1-8154	XS LTDN ISOL VLV	CLOSED
CB-07	1/1-RTBAL	RX TRIP BKR	OPEN
CB-07	1/1-RTBBL	RX TRIP BKR	OPEN
CB-07	1/1-BBAL	RX TRIP BYP BKR	OPEN/DEENERGIZED
CB-07	1/1-BBBL	RX TRIP BYP BKR	OPEN/DEENERGIZED
CB-08	1-HS-2397A	SG 1 BLDN HELB ISOL VLV	CLOSED
CB-08	1-HS-2398A	SG 2 BLDN HELB ISOL VLV	CLOSED
CB-08	1-HS-2399A	SG 3 BLDN HELB ISOL VLV	CLOSED
CB-08	1-HS-2400A	SG 4 BLDN HELB ISOL VLV	CLOSED
CB-08	1-HS-2111C	FWPT A TRIP	TRIPPED
CB-08	1-HS-2112C	FWPT B TRIP	TRIPPED

Operating Test :	NRC	Scenario #	4	Event #	7, 8, & 9	Page	26	of	29
Event Description:	Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure								

Time	Position	Applicant's Actions or Behavior

	CB-09	1-HS-2490	CNDS XFER PUMP	STOPPED (MCC deenergized on SI)
	CV-01	X-HS-6181	PRI PLT SPLY FN 17 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6188	PRI PLT SPLY FN 18 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6195	PRI PLT SPLY FN 19 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6202	PRI PLT SPLY FN 20 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6209	PRI PLT SPLY FN 21 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6216	PRI PLT SPLY FN 22 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6223	PRI PLT SPLY FN 23 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6230	PRI PLT SPLY FN 24 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-3631	UPS & DISTR RM A/C FN 1 & BSTR FN 42	STARTED
	CV-01	X-HS-3632	UPS & DISTR RM A/C FN 2 & BSTR FN 43	STARTED
	CV-01	1-HS-5600	ELEC AREA EXH FN 1	STOPPED/DEENERGIZED
	CV-01	1-HS-5601	ELEC AREA EXH FN 2	STOPPED/DEENERGIZED
	CV-01	1-HS-5602	MS & FW PIPE AREA EXH FN 3 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5603	MS & FW PIPE AREA EXH FN 4 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5618	MS & FW PIPE AREA SPLY FN 17	STOPPED/DEENERGIZED
	CV-01	1-HS-5620	MS & FW PIPE AREA SPLY FN 18	STOPPED/DEENERGIZED
	CV-03	X-HS-5855	CR EXH FN 1	STOPPED/DEENERGIZED
	CV-03	X-HS-5856	CR EXH FN 2	STOPPED/DEENERGIZED
	CV-03	X-HS-5731	SFP EXH FN 33	STOPPED/DEENERGIZED
	CV-03	X-HS-5733	SFP EXH FN 34	STOPPED/DEENERGIZED
	CV-03	X-HS-5727	SFP EXH FN 35	STOPPED/DEENERGIZED
	CV-03	X-HS-5729	SFP EXH FN 36	STOPPED/DEENERGIZED

Operating Test : NRC	Scenario # 4	Event # 7, 8, & 9	Page 27 of 29
Event Description: Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure			

Time	Position	Applicant's Actions or Behavior
Examiner Note: The next four (4) steps would be performed on Unit 2.		
	CB-03	2-HS-5538 AIR PRG EXH ISOL DMPR CLOSED
	CB-03	2-HS-5539 AIR PRG EXH ISOL DMPR CLOSED
	CB-03	2-HS-5537 AIR PRG SPLY ISOL DMPR CLOSED
	CB-03	2-HS-5536 AIR PRG SPLY ISOL DMPR CLOSED
	BOP	NOTIFY Unit Supervisor attachment instructions complete and to IMPLEMENT FRGs as required.
Examiner Note: EOP-1.0A, Loss of Reactor or Secondary Coolant steps continue here.		
	US/RO	CHECK if ECCS Flow to Should Be Reduced:
		• VERIFY Secondary heat sink:
		• DETERMINE total AFW flow to intact SGs > 460 GPM.
		• DETERMINE Narrow range level in all SGs > 43% (50%).
		• DETERMINE RCS subcooling < 25ºF (55ºF).
	RO/BOP	RESET ESF Actuation Signals.
	RO/BOP	PLACE both Diesel Generator EMERG STOP/START Handswitches in START.
	RO/BOP	RESET SI.
	RO/BOP	RESET SI Sequencers.
	RO/BOP	RESET Containment Isolation Phase A and Phase B.
	RO/BOP	RESET Containment Spray Signal.
	US	CHECK If RHR Pumps Should Be Stopped.
		• DETERMINE RCS pressure > 325 PSIG (425 PSIG).

Operating Test : NRC	Scenario # 4	Event # 7, 8, & 9	Page 28 of 29
Event Description: Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure			

Time	Position	Applicant's Actions or Behavior
		• STOP RHR Pumps and RESET RHR Auto Switchover.
Examiner Note: With RCS pressure slowly lowering the crew may elect to keep the RHR Pumps running.		
	US	DETERMINE RCS pressure at ~1000 PSIG and SLOWLY LOWERING.
	US	DETERMINE SG pressure stable at ~950 PSIG.
	RO/BOP	STOP unloaded Diesel Generators:
		• PLACE both Diesel Generator EMERG STOP/START Handswitches in STOP.
	US	INITIATE Evaluation of Plant Status.
		• VERIFY Cold Leg Recirculation capability.
		• VERIFY RHR Valves that supply SI pumps and CCPs – AVAILABLE.
		• CHECK Auxiliary Building and Safeguards Building radiation – NORMAL.
		• NOTIFY Chemistry to obtain RCS samples to assist in determining extent of the accident.
		• EVALUATE plant equipment.
	US	DETERMINE RHR Pump flow less than 750 GPM and TRANSITION to EOS-1.2A, Post a LOCA Cooldown and Depressurization, Step 1.
Examiner Note: If desired, terminate scenario at this point, otherwise, EOS-1.2A, Post LOCA Cooldown and Depressurization steps begin here.		
	RO/BOP	DETERMINE both Diesel Generators – STOPPED.
	RO/BOP	VERIFY SI – RESET.
	RO/BOP	VERIFY SI Sequencers – RESET.

Operating Test : NRC	Scenario # 4	Event # 7, 8, & 9	Page 29 of 29
Event Description: Small Break Loss of Coolant Accident / Automatic Reactor Trip Failure / Reactor Coolant Pump Trip Failure			

Time	Position	Applicant's Actions or Behavior
	RO/BOP	VERIFY Containment Isolation Phase A and Phase B – RESET.
	RO/BOP	VERIFY Containment Spray Signal – RESET.
	RO/BOP	ESTABLISH Instrument Air and Nitrogen to Containment.
<u>Examiner Note</u>: If feeder breaker opened earlier to stop RCP 1-02, Non-safeguards bus 1A2 will not be energized.		
	BOP	VERIFY all AC Buses ENERGIZED by Offsite Power.
	RO	DEENERGIZE PRZR Heaters:
		• PLACE all PRZR heater switches in OFF.
		• CONSULT Plant Staff for a recommended minimum indicated PRZR water level that will ensure heaters are covered.
	US	DETERMINE both RHR Pumps– STOPPED.
	US	DETERMINE SG Levels between 43% (50%) and 60%.
+30 min	US	INITIATE RCS Cooldown to Cold Shutdown:
		• MAINTAIN cooldown rate in RCS cold legs less than 100ºF/hour.
		• BLOCK low steam line pressure SI signal.
		• DUMP steam from intact Steam Generators.
When transition to EOS-1.2A is initiated or RCS cooldown is commenced, TERMINATE the scenario.		

Facility: CPNPP 1 and 2		Date of Exam: 03/29/10			Operating Test No.: NRC												
APPLICANT	EVENT TYPE	SCENARIOS												TOTAL	MINIMUM(*)		
		CPNPP #1			CPNPP #2												
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SROU	RX	-			-			-			-			**-**	**1**	**1**	**0**
	NOR	2			1			-			1,2			**-**	**1**	**1**	**1**
	I/C	1,2,3,4,5			2,3,4			1,2,3,4			3,4,5,7			**-**	**4**	**4**	**2**
	MAJ	6,8			5			5			8			**-**	**2**	**2**	**1**
	TS	1,3			2,3			2,4			3,4			**-**	**0**	**2**	**2**
SROI	RX	-	-		-	1		-	-		-	2		**-**	**1**	**1**	**0**
	NOR	2	-		1	-		-	-		1,2	-		**-**	**1**	**1**	**1**
	I/C	1,2,3,4,5	1,3,4,9		2,3,4	4,6		1,2,3,4	2,4,7		3,4,5,7	7,9,10		**-**	**4**	**4**	**2**
	MAJ	6,8	6,8		5	5		5	5		8	8		**-**	**2**	**2**	**1**
	TS	1,3	-		2,3	-		2,4	-		3,4	-		**-**	**0**	**2**	**2**
RO	RX		-	-		1	-		-	-		2	-	**-**	**1**	**1**	**0**
	NOR		-	2		-	1		-	-		-	1,2	**-**	**1**	**1**	**1**
	I/C		1,3,4,9	5,7		4,6	2,3,7		2,4,7	1,3,8		7,9,10	3,5	**-**	**4**	**4**	**2**
	MAJ		6,8	6,8		5	5		5	5		8	8	**-**	**2**	**2**	**1**
	TS		-	-		-	-		-	-		-	-	**-**	**0**	**2**	**2**

Instructions:	
1.	Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the “at-the-controls (ATC)” and “balance-of-plant (BOP)” positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2.	Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
3.	Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant’s competence count toward the minimum requirements specified for the applicant’s license level in the right-hand columns.

Facility: CPNPP	Date of Examination: 03/29/10	Operating Test No. NRC 1-2

Competencies	Applicants											
	SRO				RO				BOP			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diag-nose Events and Conditions	1,2,3, 4,5,6	2,3,4,5	1,2,3, 4,5	3,4,5, 6,7,8	1,3,4, 6,8,9	4,5,6	2,4,5, 7	7,8,9, 10	2,5,6, 7,8	2,3,4, 5,7	1,3,5, 8	3,5,8
Comply With and Use Procedures (1)	ALL	ALL	ALL	ALL	1,3,6, 8,9	1,4,5,6	2,4,5, 7	2,7,8, 9,10	2,5,6, 7,8	1,2,3, 4,5,7	1,3,5, 8	1,2,3, 5,8
Operate Control Boards (2)	N/A	N/A	N/A	N/A	1,3,4, 6,8,9	1,4,5,6	2,4,5, 7	2,4,7, 8,9,10	2,5,6, 7,8	1,2,3, 4,5,7	1,3,5, 8	1,2,3, 4,5,6, 8
Communicate and Interact	ALL	ALL	ALL	ALL	1,3,4, 6,8,9	1,3,4, 5,6	1,2,4, 5,6,7	2,4,6,7, 8,9,10	2,5,6, 7,8	1,2,3, 4,5,7	1,3,5, 6,8	1,2,3,4, 5,6,8
Demonstrate Supervisory Ability (3)	ALL	ALL	ALL	ALL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comply With and Use Tech. Specs. (3)	1,3	2,3	2,4	3,4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.