JPM RA-2
CONTAINS
PROPRIETARY
INFORMATION AND
HAS BEEN
WITHHELD FROM
PUBLIC
DISCLOSURE

JPM SA-2
CONTAINS
PROPRIETARY
INFORMATION AND
HAS BEEN
WITHHELD FROM
PUBLIC
DISCLOSURE

Facility: CPNPP JPM # NRC RA1 Task # RO1404 K/A # 2.1.25 3.9 / 4.2

Title: Determine Minimum and Maximum RHR Flow Rate

Examinee (Print): _____

Testing Method:

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

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 shut down for 20 days and 20 hours.
- Reactor Coolant System is in a Reduced Inventory Condition.
- 1-LI-3615A, RX VSL LVL (NR) is 50 inches above Core Plate.
- Reactor Coolant System temperature is 160°F.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following in accordance with ABN-104, Residual Heat Removal System Malfunction:

- Utilizing ABN-104, Attachment 3, Minimum RHR Flow Guideline For Decay Heat Removal DETERMINE the minimum Residual Heat Removal flow rate given the Time after Shutdown.

  _____ gpm
- DETERMINE the maximum Residual Heat Removal flow rate given Reactor Coolant System level.

  _____ gpm

Task Standard: Utilizing ABN-104, Attachments 3, 4, and 16, calculated the minimum and maximum Residual Heat Removal System flow rates with the Reactor Coolant System in a Reduced Inventory Condition based on 500 hours after shutdown, Reactor Vessel Level of 50 inches above Core Plate and Reactor Coolant System temperature of 160°F.

Required Materials: ABN-104, Residual Heat Removal System Malfunction, Rev. 9.

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-104, Residual Heat Removal System Malfunction.**
  - **Attachment 3, Minimum RHR Flow Guideline For Decay Heat Removal.**
  - **Attachment 4, RHR Maximum Flow Limit Versus RCS Level.**
  - **Attachment 16, Actual Versus Indicated Reactor Vessel Level.**

√ - Check Mark Denotes Critical Step

START TIME:	

Examiner Note:	**The following steps are from ABN-104, Attachment 3.**
Perform Step: 1√	DETERMINE the minimum Residual Heat Removal flow rate given the Time after Shutdown.
Standard:	PERFORMED the following: • CALCULATED Time after Shutdown as **500 hours**. • REFERENCED ABN-104, Attachment 3 at 500 hours. • DETERMINED **minimum** RHR flow is **2200 ± 50 gpm**.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps are from ABN-104, Attachment 16.**
Perform Step: 2	DETERMINE the maximum Residual Heat Removal flow rate given the Time after Shutdown.
Standard:	PERFORMED the following: • DETERMINED 1-LI-3615A, RX VSL LVL (NR) is 50 inches above Core Plate indicated level **without** temperature correction. • REFERENCED ABN-104, Attachment 16, Page 2 of 2 at 50 inches above Core Plate indicated level and 160°F. • DETERMINED 1-LI-3615A, RX VSL LVL (NR) is **55 inches** actual level **with** temperature correction.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps are from ABN-104, Attachment 4.**
Perform Step: 3√	DETERMINE the maximum Residual Heat Removal flow rate given the Time after Shutdown with temperature correction applied.
Standard:	PERFORMED the following: • DETERMINED actual level of 1-LI-3615A, RX VSL LVL (NR) is 55 inches above Core Plate. • REFERENCED ABN-104, Attachment 4 at 55 inches above Core Plate. • DETERMINED **maximum** RHR flow is **4000 gpm**.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **Unit 1 has been shut down for 20 days and 20 hours.**
- **Reactor Coolant System is in a Reduced Inventory Condition.**
- **1-LI-3615A, RX VSL LVL (NR) is 50 inches above Core Plate.**
- **Reactor Coolant System temperature is 160°F.**

INITIATING CUE: **The Unit Supervisor directs you to PERFORM the following in accordance with ABN-104, Residual Heat Removal System Malfunction:**

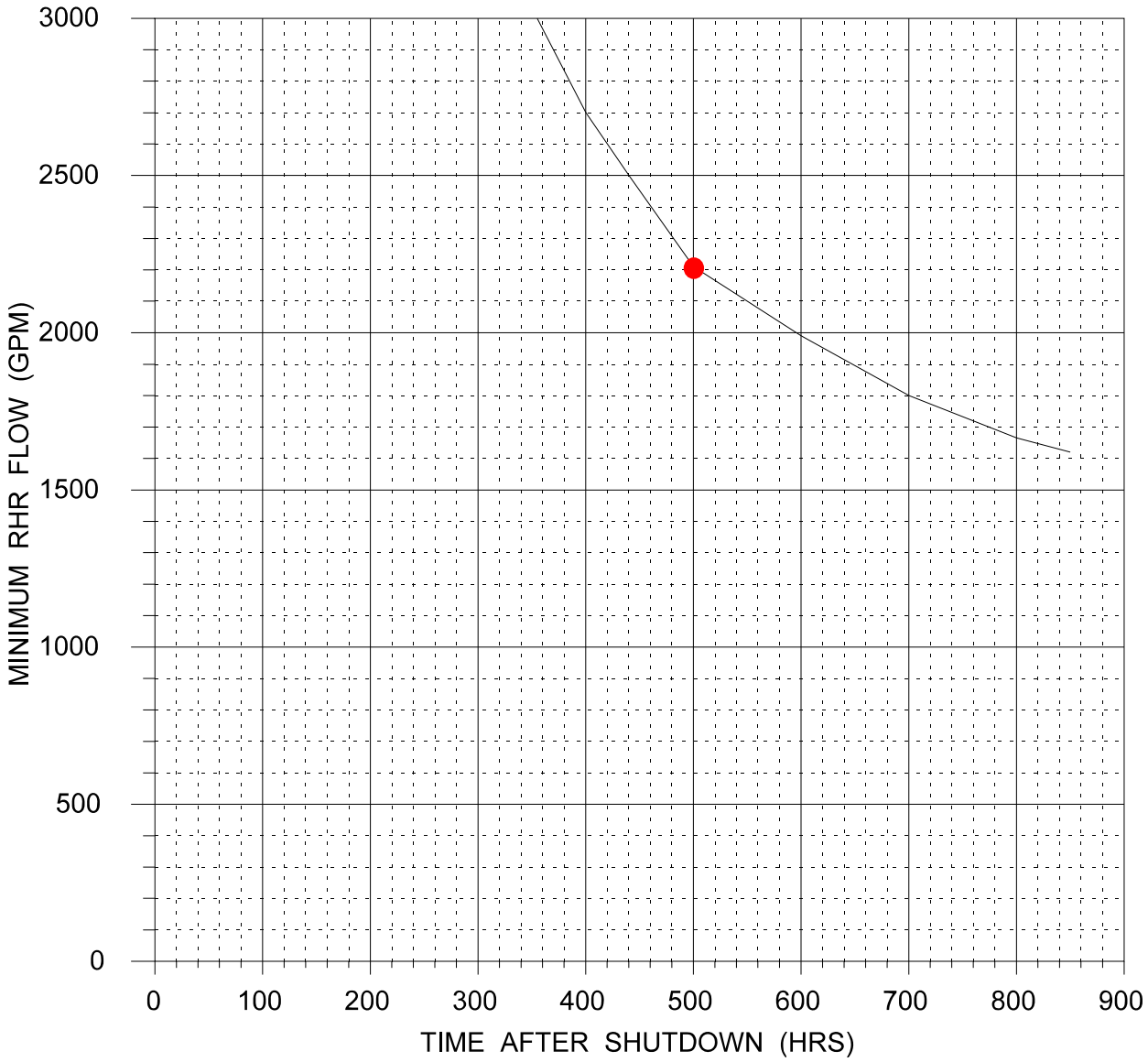
- **Utilizing ABN-104, Attachment 3, Minimum RHR Flow Guideline For Decay Heat Removal DETERMINE the minimum Residual Heat Removal flow rate given the Time after Shutdown.**

  _____ gpm
- **DETERMINE the maximum Residual Heat Removal flow rate given Reactor Coolant System level.**

  _____ gpm

ATTACHMENT 3
PAGE 1 OF 1

[C] MINIMUM RHR FLOW GUIDELINE FOR DECAY HEAT REMOVAL



ATTACHMENT 4
PAGE 1 OF 2

[C] RHR MAXIMUM FLOW LIMIT VERSUS RCS LEVEL

CAUTION: Do NOT reduce RHR flow below 1000 gpm. (TS 3.9.6)

NOTE:
- For RHR System limits, see Page 2 this attachment.
- IF RCS temperature exceeds 110°F, THEN actual vessel level will be higher than indicated. Refer to Attachment 16 for the correction.
- The narrow range instrument u-LI-3615A, RX VSL LVL (NR), should be used to verify limits since instrument errors assumed in the limits are based on this instrument.
- These limits reflect analyzed uncertainties in level and flow instrumentation.

ELEVATION	IN. ABOVE CORE PLATE (u-LI-3615A)	MAXIMUM RHR FLOW u-FI-618/619
827' 7-1/2"	55-1/2"	4800
827' 7"	55"	4000
827' 6"	54"	3300
827' 5"	53"	2800
827' 4"	52"	2400
827' 3"	51"	2000
827' 2"	50"	1700
827' 1"	49"	1400
827' 0"	48"	1100

ATTACHMENT 4
PAGE 2 OF 2

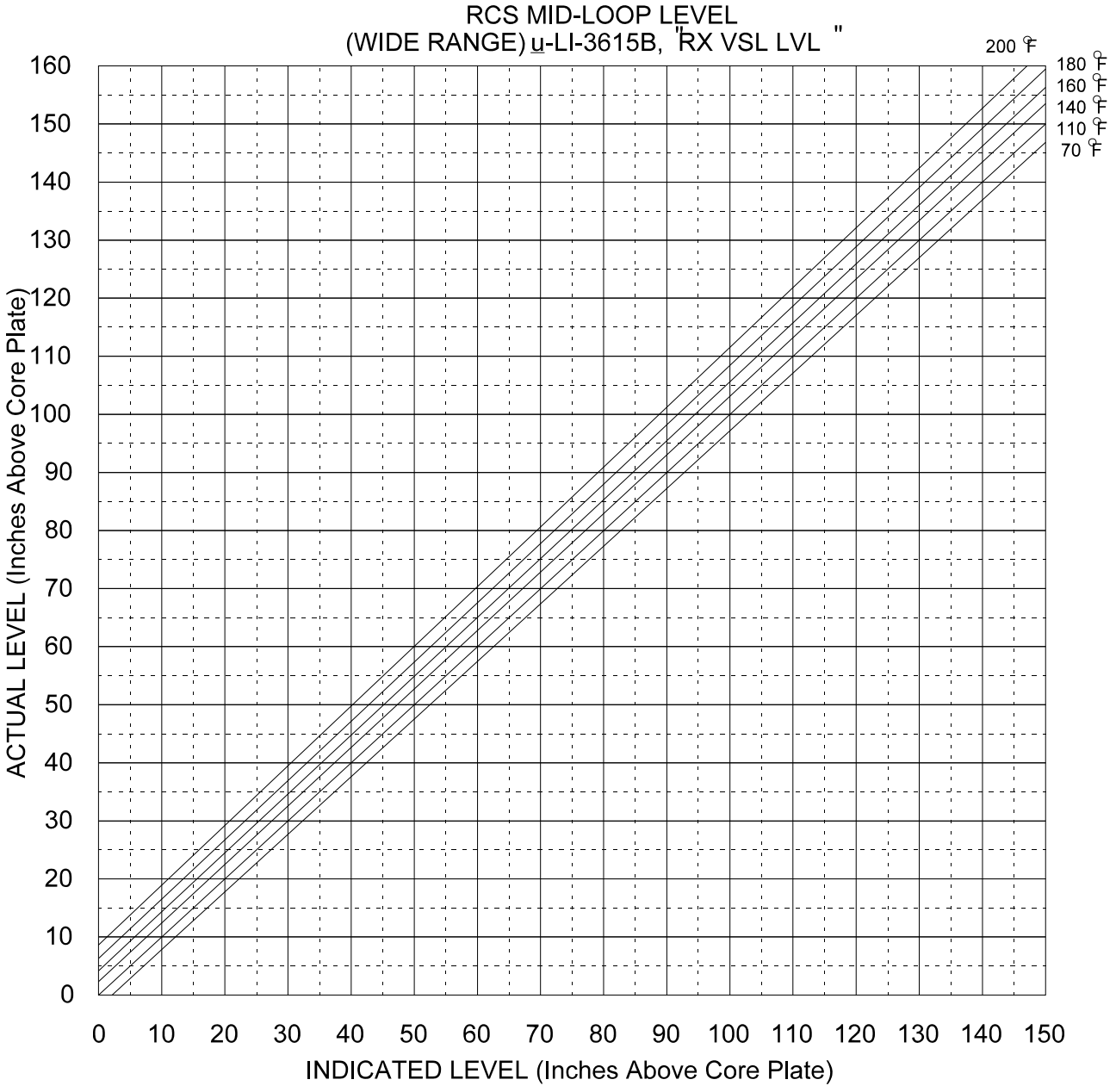
RHR MAXIMUM FLOW LIMIT VERSUS RCS LEVEL

RHR System and pump limitations RCS Loops not filled.

- While in MODE 5 with the Reactor Coolant loops not filled, two RHR loops shall be operable and one RHR loop shall be in operation per TS 3.4.8.
- The RHR flow/RCS level limits of page 1 of this attachment shall not be exceeded when RCS level is less than elevation 829' 8".(i.e., indicated level less than five (5) feet below the vessel flange).
- While in MODE 5, the RHR pump in operation may be de-energized for up to one hour, provided the core outlet temperature is maintained at least 10°F below saturation temperature, no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and no draining operations to further reduce the RCS water volume are permitted.
- While in MODE 6 with the water level above the top of the reactor vessel flange greater than or equal to 23 feet, at least one RHR loop shall be operable and in operation per TS 3.9.5.
- While in MODE 6 with the water level above the top of the reactor vessel flange less than 23 feet, two independent RHR loops shall be operable and one RHR loop shall be in operation per TS 3.9.6.
- While in MODE 6 with greater than or equal to 23 feet of water above the reactor vessel flange, the RHR pump in operation may be stopped up to one hour per eight-hour period during Core Alterations in the vicinity of the hot legs.
- A maximum of two consecutive starts of the RHR pumps are allowed with the motors cold. With the motor at operating temperture only one consecutive start is allowed. Subsequent starts with the motor running between starts must be 15 minutes apart. Subsequent starts with the motor idle between starts must be 45 minutes apart.

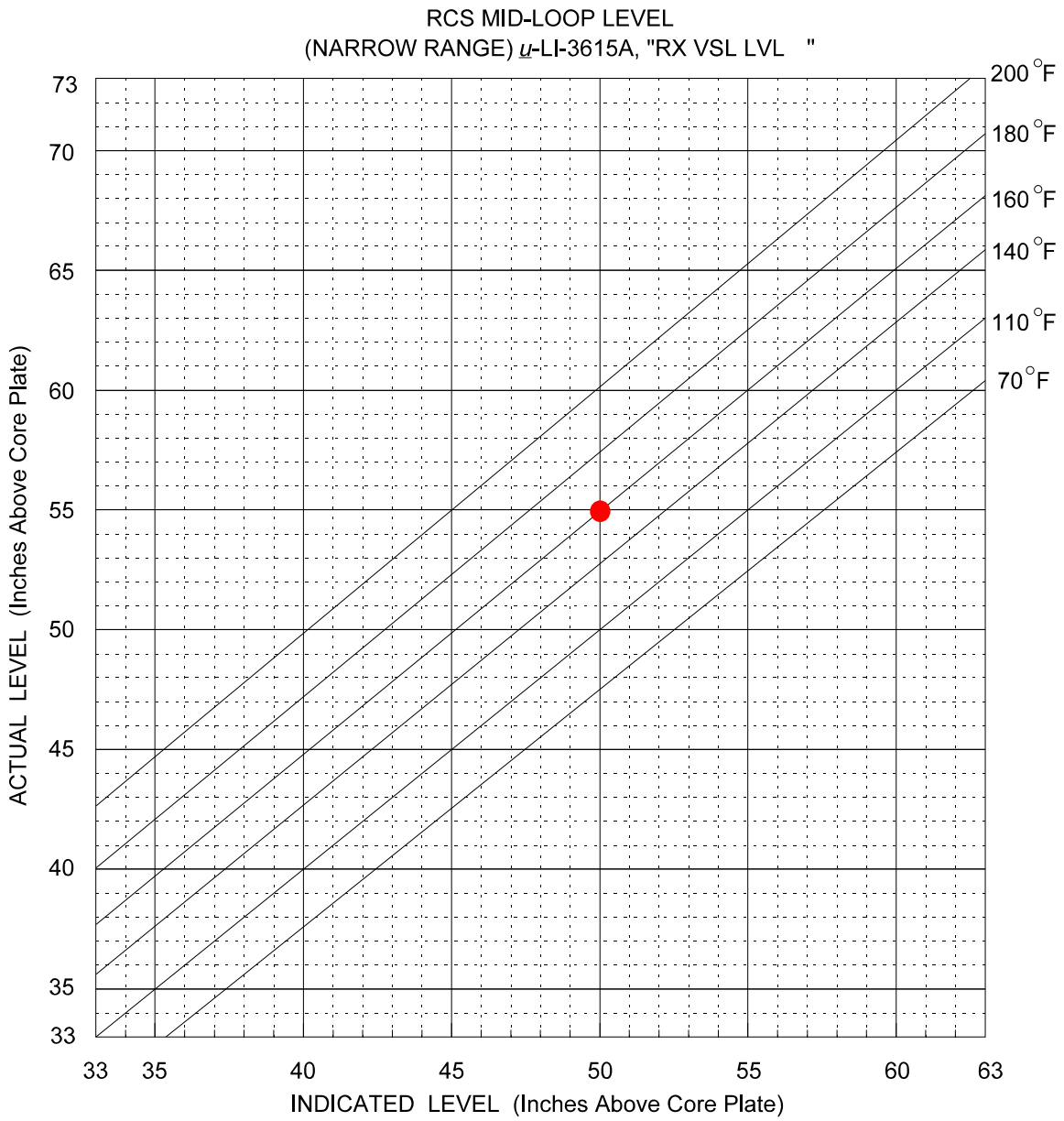
ATTACHMENT 16
PAGE 1 OF 2

ACTUAL VERSUS INDICATED REACTOR VESSEL LEVEL
(For Various Temperatures)



ATTACHMENT 16
PAGE 2 OF 2

ACTUAL VERSUS INDICATED REACTOR VESSEL LEVEL
(For Various Temperatures)



Facility: CPNPP JPM # AUDIT RA3 Task # RO1803D K/A # 2.2.12 3.7 / 4.1

Title: Perform a Manual Quadrant Power Tilt Ratio Calculation

Examinee (Print): _____

Testing Method:

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

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 100% power.
- Rod Control is in AUTO with Control Bank D at 215 steps and all other rods at the FOP of 225 steps.
- The Reactor Makeup System is aligned for AUTO operation with VCT level stable at 58%.
- NIS Power Range Meters and Power Range Detector Current Meters currently read:

Channel	Meter	Upper Detector (μA)	Lower Detector (μA)
NI-41	100.3%	163.67	167.30
NI-42	99.2%	191.36	182.35
NI-43	99.3%	158.84	157.25
NI-44	100.4%	182.05	179.11

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: Utilizing OPT-302 and OPT-302-1, performed a Manual Quadrant Power Tilt Ratio Calculation and identified SAT Acceptance Criteria for NI-41, NI-42, NI-43 and identified UNSAT Acceptance Criteria for NI-44.

Required Materials: OPT-302, Calculating Power Tilt Ratio, Rev. 11-1.
OPT-302-1, Quadrant Power Tilt Ratio Data Sheet, Rev 8.
NUC-203-8, Normalized Power Range Excore Detector Currents for Cycle 17.

Validation Time: 25 minutes 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 for Cycle 17.**
- **Calculator.**

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

Examiner Note:	**The following steps are from OPT-302, Section 8.0.**
NOTE: • RECORD all data on OPT-302-1. • Power Tilt Ratio calculations may be performed by or reviewed by a Reactor Operator or Core Performance Engineering.	
Perform Step: 1 8.1	VERIFY Prerequisites in 6.0 are satisfied.
Standard:	DETERMINED Prerequisites in 6.0 are satisfied.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2 8.2	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.
Standard:	DETERMINED all Power Range Channels OPERABLE.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3 8.3 & 8.3.1	RECORD the following information onto Form OPT-302-1: • Unit, Cycle, Date, and Time,
Standard:	DETERMINED Unit, Cycle, Date, and Time already recorded.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 8.3 & 8.3.2	RECORD the following information onto Form OPT-302-1: • Power Range NIS power level for each channel (use one minute computer point averages (N6049A01, N6050A01, N6051A01, N6052A01) or NIS Panel).
Standard:	RECORDED indication for NI-41, NI-42, NI-43, and NI-44 onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5 8.3 & 8.3.3	RECORD the following information onto Form OPT-302-1: • Control rod bank positions from the step counters.
Standard:	RECORDED Control rod bank positions from the Step Counters onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6 8.3 & 8.3.4	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:	CALCULATED average of operable NIS channels and RECORDED onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7 8.4	RECORD detector currents from DETECTOR A&B DETECTOR CURRENT for each of the power range channels, N-41 through N-44.
Standard:	RECORDED 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 for Cycle 17 is included in the handout.**
Perform Step: 8 8.5	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:	RECORDED 120% Power Normalized Excore Upper (Top) and Lower (Bottom) Detector Currents from NUC-203-8 for Cycle 17 onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9√ 8.6 & 1st bullet	DETERMINE the Actual Power Tilt Ratios by one of the following methods: • Manual calculations per QUADRANT POWER TILT RATIO DATA SHEET OPT-302-1.
Standard:	PERFORMED manual calculations for NI-41, NI-42, NI-43 and NI-44 and RECORDED onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10 8.7	VERIFY the Power Tilt Ratio for each detector is LESS THAN OR EQUAL TO 1.02. • IF any power tilt ratio exceeds 1.02, THEN immediately notify the Shift Manager AND reference Section 5.2.
Standard:	DOCUMENTED 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 100% power.**
- **Rod Control is in AUTO with Control Bank D at 215 steps and all other rods at the FOP of 225 steps.**
- **The Reactor Makeup System is aligned for AUTO operation with VCT level stable at 58%.**
- **NIS Power Range Meters and Power Range Detector Current Meters currently read:**

Channel	Meter	Upper Detector (µA)	Lower Detector (µA)
NI-41	100.3%	163.67	167.30
NI-42	99.2%	191.36	182.35
NI-43	99.3%	158.84	157.25
NI-44	100.4%	182.05	179.11

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.**

QUADRANT POWER TILT RATIO DATA SHEET

8.3.1 UNIT: 1 CYCLE: 17 DATE: 06/09/14 TIME: 0800

8.3.2	N-41A %	N-42A %	N-43A %	N-44A %	8.3.4	AVERAGE %
POWER RANGE NIS	100.3	99.2	99.3	100.4		99.8

8.3.3 CONTROL ROD POSITION (steps)

SHUTDOWN BANKS: A1 225 B1 225 C 225 D 225 E 225
A2 225 B2 225

CONTROL BANKS: A1 225 B1 225 C1 225 D1 215
A2 225 B2 225 C2 225 D2 215

8.4 DATA SOURCE: [X] METERS
[ ] DVM - PERFORM Attachment 10.1

NIS POWER RANGE CHANNEL	8.5 ACTUAL DETECTOR CURRENT MICROAMPS		120% POWER NORMALIZED DETECTOR CURRENT MICROAMPS		8.6 CALIBRATED OUTPUT*	
	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
N-41B	163.67	167.30	178.47	181.01	0.917	0.924
N-42B	191.36	182.35	217.39	198.74	0.880	0.918
N-43B	158.84	157.25	179.29	176.12	0.886	0.893
N-44B	182.05	179.11	195.11	190.65	0.933	0.939
			8.6	SUM:	3.616	3.674
			8.6	AVERAGE:	0.904	0.9185

* CALIBRATED OUTPUT = ACTUAL CURRENT / 120% POWER NORMAL CURRENT

8.7

8.6 NIS POWER RANGE CHANNEL	ACTUAL POWER TILT RATIO**	POWER TILT RATIO LIMIT	ACCEPTANCE CRITERIA SATISFIED YES/NO	INITIALS
UPPER				
N-41B	1.014	1.02	YES	
N-42B	0.973	1.02	YES	
N-43B	0.980	1.02	YES	
N-44B	1.032	1.02	NO	
8.6 LOWER				
N-41B	1.006	1.02	YES	
N-42B	0.999	1.02	YES	
N-43B	0.972	1.02	YES	
N-44B	1.022	1.02	NO	

** ACTUAL POWER TILT = CALIBRATED OUTPUT / AVG. CALIBRATED OUTPUT

QUADRANT POWER TILT RATIO DATA SHEET

DISCREPANCIES/COMMENTS: NOTFIED the Shift Manager that NI-44 is UNSAT.

CORRECTIVE ACTIONS:

Performed By: _____ Date _____

Reviewed By: _____ Date _____

Unit Supervisor: _____ Date _____

Operations Management Review: _____ Date: _____

Facility: CPNPP JPM # NRC RA4 Task # RWT029D K/A # 2.3.12 3.2 / 3.7
Title: Determine Radiation Doses During System Aligment

Examinee (Print): _____

Testing Method:

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

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 high dose alignment is scheduled in the Safeguards Building.
- The general dose rate in the area is 50 mrem/hour but can be reduced to 5 mrem/hour if lead shielding is installed.
- It will take Nuclear Equipment Operators (NEOs) Alpha & Bravo 60 minutes to install the shielding.
- Independent of the shielding, it will take NEO Alpha four hours or NEOs Alpha & Bravo two and a half hours to perform the maintenance.

Initiating Cue: The Work Control Supervisor directs you to PERFORM the following:

- CALCULATE the dose received when performing the system alignment for each of the following conditions:
  - NEO Alpha **without** shielding. _____ mrem
  - NEOs Alpha & Bravo **without** shielding. _____ mrem
  - NEO Alpha **with** shielding (installed by NEOs Alpha and Bravo). _____ mrem
  - NEOs Alpha & Bravo **with** shielding (installed by NEOs Alpha and Bravo). _____ mrem

Task Standard: Utilizing STA-657, calculated the dose received when performing a system alignment.

Required Materials: STA-657, ALARA Job Planning/Debriefing, Rev. 17-1.

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **STA-657, ALARA Job Planning/Debriefing.**

√ - Check Mark Denotes Critical Step

START TIME:	

Perform Step: 1√	Determine total dose to NEO Alpha <u>without</u> shielding.
Standard:	DETERMINED total dose to NEO Alpha <u>without</u> shielding as follows: • 50 mrem/hr x 4 hours = **200 mrem total dose.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Determine total combined dose to NEOs Alpha & Bravo <u>without</u> shielding.
Standard:	DETERMINED total combined dose to NEOs Alpha & Bravo <u>without</u> shielding as follows: • 50 mrem/hr x 2.5 hours/NEO x 2 NEOs = **250 mrem total dose.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	Determine total dose to <u>install</u> shielding.
Standard:	DETERMINED total dose to <u>install</u> shielding as follows: • 50 mrem/hr x 1.0 hours/NEO x 2 NEOs = **100 mrem to install.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Determine total dose to NEO Alpha <u>with</u> shielding.
Standard:	DETERMINED total dose to NEO Alpha <u>with</u> shielding as follows: • 5 mrem/hr x 4 hours + 100 mrem = **120 mrem total dose.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√	Determine total combined dose to NEOs Alpha & Bravo <u>with</u> shielding.
Standard:	DETERMINED total combined dose to NEOs Alpha & Bravo <u>with</u> shielding as follows: • 5 mrem/hr x 2.5 hours/NEO x 2 NEOs + 100 mrem = **125 mrem total dose.**
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **A high dose alignment is scheduled in the Safeguards Building.**
- **The general dose rate in the area is 50 mrem/hour but can be reduced to 5 mrem/hour if lead shielding is installed.**
- **It will take Nuclear Equipment Operators (NEOs) Alpha & Bravo 60 minutes to install the shielding.**
- **Independent of the shielding, it will take NEO Alpha four hours or NEOs Alpha & Bravo two and a half hours to perform the maintenance.**

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

- **CALCULATE the dose received when performing the system alignment for each of the following conditions:**
  - **NEO Alpha without shielding. _____ mrem**
  - **NEOs Alpha & Bravo without shielding. _____ mrem**
  - **NEO Alpha with shielding (installed by NEOs Alpha and Bravo). _____ mrem**
  - **NEOs Alpha & Bravo with shielding (installed by NEOs Alpha and Bravo). _____ mrem**

Facility: CPNPP JPM # NRC SA1 Task # SO1005D 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:	
Time Critical:			

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 2 is in MODE 1 when a fault occurs on XST1.
- All plant systems responded as required.
- ABN-602, Response to a 6900/480V System Malfunction has been completed.

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

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

Task Standard: Utilizing STA-501 and CPNPP Technical Specifications, determined Technical Specifications impacted and Reportability Requirements for loss of Preferred Offsite Power and valid actuation of Auxiliary Feedwater.

Required Materials: STA-501, Non-Routine Reporting, Rev. 18.
CPNPP Technical Specifications - Unit 1 and 2 through Amendment 161.

Validation Time: 10 minutes 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:** |

Examiner Note:	**The following steps are from Technical Specification LCO 3.8.1.**
Perform Step: 1√	Determine Technical Specification LCO and CONDITION.
Standard:	RECOGNIZED loss of Preferred Offsite Power impacted and DETERMINED the following: • Technical Specification LCO 3.8.1, AC Sources – Operating, CONDITION A, One required offsite circuit inoperable
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Determine Technical Specification LCO 3.8.1.A REQUIRED ACTION and COMPLETION TIME.
Standard:	DETERMINED REQUIRED ACTION and COMPLETION TIME: • LCO 3.8.1.A.1 – Perform SR 3.8.1.1 for required OPERABLE offsite circuit within 1 hour AND Once per 8 hours thereafter. AND • LCO 3.8.1.A.2 – Declare required feature(s) with no offsite power available inoperable when it's redundant required feature(s) is inoperable within 24 hours from discovery of no offsite power to one train concurrent within inoperability of redundant required feature(s). AND • LCO 3.8.1.A.3 – Restore required offsite circuit to OPERABLE status within 72 hours OR 14 days for two one-time outages on XST1 to complete a plant modification to be completed by March 31, 2014.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following step is from STA-501, Attachment 8.B.**
Examiner Note:	**Only the bold item is required for Critical Step acceptance.**
Perform Step: 3√	Determine oral notification Reporting Requirements per STA-501, Attachment 8.B.
Standard:	DETERMINED Oral Reporting Requirements (page 21 of 196) is for the following: Notification of certain events, conditions and releases described in 10CFR50.72(b)(3). • Any event or condition that results in valid actuation of any of the systems listed below, except when the actuation results from and is part of a preplanned sequence during testing or reactor operation: • PWR auxiliary or emergency feedwater system. • **Oral Report within 8 hours** of occurrence via Emergency Notification System.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following step is from STA-501, Attachment 8.D.**
Examiner Note:	**Only the bold item is required for Critical Step acceptance.**
Perform Step: 4√	Determine written notification Reporting Requirements per STA-501, Attachment 8.D.
Standard:	DETERMINED Written Reporting Requirements (page 108 of 196) is for the following: 10CFR50.73(a)(2)(iv)(A/B) The completion of any nuclear plant shutdown required by the plant's Technical Specifications. • **Written Report within 60 days** (LER).
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **Unit 2 is in MODE 1 when a fault occurs on XST1.**
- **All plant systems responded as required.**
- **ABN-602, Response to a 6900/480V System Malfunction has been completed.**

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

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources -- Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System;

b. Two diesel generators (DGs) capable of supplying the onsite Class 1E power distribution subsystem(s); and

c. Automatic load sequencers for Train A and Train B.

APPLICABILITY: MODES 1, 2, 3, and 4

----------NOTE----------
One DG may be synchronized with the offsite power source under administrative controls for the purpose of surveillance testing.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to DGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for required OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND	
	A.2 ----------NOTE---------- In MODES 1, 2 and 3, the TDAFW pump is considered a required redundant feature. ---------- Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)
	AND	
	A.3 Restore required offsite circuit to OPERABLE status.	72 hours OR 14 days for two one-time outages on XST1 to complete a plant modification to be completed by March 31, 2014.

Facility: CPNPP JPM # NRC SA3 Task # SO1202C K/A # 2.2.12 3.7 / 4.1

Title: Perform a Manual Quadrant Power Tilt Ratio Calculation & Evaluate Technical Specifications

Examinee (Print): _____

Testing Method:

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

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 100% power.
- Rod Control is in AUTO with Control Bank D at 215 steps and all other rods at the FOP of 225 steps.
- The Reactor Makeup System is aligned for AUTO operation with VCT level stable at 58%.
- NIS Power Range Meters and Power Range Detector Current Meters currently read:

Channel	Meter	Upper Detector (μA)	Lower Detector (μA)
NI-41	100.3%	163.67	167.30
NI-42	99.2%	191.36	182.35
NI-43	99.3%	158.84	157.25
NI-44	100.4%	182.05	179.11

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.
- If required, IDENTIFY any Technical Specification LCO CONDITION, REQUIRED ACTION, and COMPLETION TIME required within 12 hours and RECORD in Comments Section of surveillance.

Task Standard: Utilizing OPT-302 and OPT-302-1, performed a Manual Quadrant Power Tilt Ratio Calculation and identified SAT Acceptance Criteria for NI-41, NI-42, NI-43 and identified UNSAT Acceptance Criteria for NI-44.

Utilizing Technical Specifications, recorded Technical Specification LCO 3.2.4 CONDITION, REQUIRED ACTION, and COMPLETION TIME in the Comments Section.

Required Materials: OPT-302, Calculating Power Tilt Ratio, Rev. 11-1.
OPT-302-1, Quadrant Power Tilt Ratio Data Sheet, Rev 8.
NUC-203-8, Normalized Power Range Excore Detector Currents for Cycle 17.
CPNPP Technical Specifications - Unit 1 and 2 through Amendment 160.

Validation Time: 25 minutes 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 for Cycle 17.**
- **Calculator.**

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

Examiner Note:	**The following steps are from OPT-302, Section 8.0.**
NOTE: • RECORD all data on OPT-302-1. • Power Tilt Ratio calculations may be performed by or reviewed by a Reactor Operator or Core Performance Engineering.	
Perform Step: 1 8.1	VERIFY Prerequisites in 6.0 are satisfied.
Standard:	DETERMINED Prerequisites in 6.0 are satisfied.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2 8.2	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.
Standard:	DETERMINED all Power Range Channels OPERABLE.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3 8.3 & 8.3.1	RECORD the following information onto Form OPT-302-1: • Unit, Cycle, Date, and Time,
Standard:	DETERMINED Unit, Cycle, Date, and Time already recorded.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 8.3 & 8.3.2	RECORD the following information onto Form OPT-302-1: • Power Range NIS power level for each channel (use one minute computer point averages (N6049A01, N6050A01, N6051A01, N6052A01) or NIS Panel).
Standard:	RECORDED indication for NI-41, NI-42, NI-43, and NI-44 onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5 8.3 & 8.3.3	RECORD the following information onto Form OPT-302-1: • Control rod bank positions from the step counters.
Standard:	RECORDED Control rod bank positions from the Step Counters onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6 8.3 & 8.3.4	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:	CALCULATED average of operable NIS channels and RECORDED onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7 8.4	RECORD detector currents from DETECTOR A&B DETECTOR CURRENT for each of the power range channels, N-41 through N-44.
Standard:	RECORDED 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 for Cycle 17 is included in the handout.**
Perform Step: 8 8.5	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:	RECORDED 120% Power Normalized Excore Upper (Top) and Lower (Bottom) Detector Currents from NUC-203-8 for Cycle 17 onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9√ 8.6 & 1st bullet	DETERMINE the Actual Power Tilt Ratios by one of the following methods: • Manual calculations per QUADRANT POWER TILT RATIO DATA SHEET OPT-302-1.
Standard:	PERFORMED manual calculations for NI-41, NI-42, NI-43 and NI-44 and RECORDED onto Form OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10 8.7	VERIFY the Power Tilt Ratio for each detector is LESS THAN OR EQUAL TO 1.02. • IF any power tilt ratio exceeds 1.02, THEN immediately notify the Shift Manager AND reference Section 5.2.
Standard:	DOCUMENTED notification of the Shift Manager in the Comments Section of OPT-302-1.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following is from Technical Specification LCO 3.2.4.**
Perform Step: 11√	RECORD any required Technical Specification CONDITION, REQUIRED ACTION, and COMPLETION TIME within 12 hours in the Comments Section of the Surveillance.
Standard:	DETERMINED entry into Technical Specification **LCO 3.2.4, Quadrant Power Tilt Ratio (QPTR)** and RECORDED in the Comments Section of the Surveillance: • **CONDITION A – QPTR not within limits;** • **REQUIRED ACTION A.1 – Reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00.** • **COMPLETION TIME – 2 hours after each QPTR determination AND** • **REQUIRED ACTION A.2 – Determine QPTR.** • **COMPLETION TIME – Once per 12 hours.**
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 100% power.**
- **Rod Control is in AUTO with Control Bank D at 215 steps and all other rods at the FOP of 225 steps.**
- **The Reactor Makeup System is aligned for AUTO operation with VCT level stable at 58%.**
- **NIS Power Range Meters and Power Range Detector Current Meters currently read:**

Channel	Meter	Upper Detector (µA)	Lower Detector (µA)
NI-41	100.3%	163.67	167.30
NI-42	99.2%	191.36	182.35
NI-43	99.3%	158.84	157.25
NI-44	100.4%	182.05	179.11

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.**
- **If required, IDENTIFY any Technical Specification LCO CONDITION, REQUIRED ACTION, and COMPLETION TIME required within 12 hours and RECORD in Comments Section of surveillance.**

QUADRANT POWER TILT RATIO DATA SHEET

8.3.1 UNIT: 1 CYCLE: 17 DATE: 06/09/14 TIME: 0800

8.3.2	N-41A %	N-42A %	N-43A %	N-44A %	8.3.4	AVERAGE %
POWER RANGE NIS	100.3	99.2	99.3	100.4		99.8

8.3.3 CONTROL ROD POSITION (steps)

SHUTDOWN BANKS: A1 225 B1 225 C 225 D 225 E 225
A2 225 B2 225

CONTROL BANKS: A1 225 B1 225 C1 225 D1 215
A2 225 B2 225 C2 225 D2 215

8.4 DATA SOURCE: [X] METERS
[ ] DVM - PERFORM Attachment 10.1

NIS POWER RANGE CHANNEL	8.5 ACTUAL DETECTOR CURRENT MICROAMPS		120% POWER NORMALIZED DETECTOR CURRENT MICROAMPS		8.6 CALIBRATED OUTPUT*	
	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
N-41B	163.67	167.30	178.47	181.01	0.917	0.924
N-42B	191.36	182.35	217.39	198.74	0.880	0.918
N-43B	158.84	157.25	179.29	176.12	0.886	0.893
N-44B	182.05	179.11	195.11	190.65	0.933	0.939
			8.6	SUM:	3.616	3.674
			8.6	AVERAGE:	0.904	0.9185

* CALIBRATED OUTPUT = ACTUAL CURRENT / 120% POWER NORMAL CURRENT

8.7

8.6	NIS POWER RANGE CHANNEL	ACTUAL POWER TILT RATIO**	POWER TILT RATIO LIMIT	ACCEPTANCE CRITERIA SATISFIED YES/NO	INITIALS
	UPPER				
	N-41B	1.014	1.02	YES	
	N-42B	0.973	1.02	YES	
	N-43B	0.980	1.02	YES	
	N-44B	1.032	1.02	NO	
8.6	LOWER				
	N-41B	1.006	1.02	YES	
	N-42B	0.999	1.02	YES	
	N-43B	0.972	1.02	YES	
	N-44B	1.022	1.02	NO	

** ACTUAL POWER TILT = CALIBRATED OUTPUT / AVG. CALIBRATED OUTPUT

QUADRANT POWER TILT RATIO DATA SHEET

DISCREPANCIES/COMMENTS:

NOTFIED the Shift Manager that NI-44 is UNSAT.

LCO 3.2.4, Quadrant Power Tilt Ratio (QPTR)

CONDITION A - QPTR not within limits.

REQUIRED ACTION A.1 - Reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00

COMPLETION TIME – 2 hours after each QPTR determination, AND

REQUIRED ACTION A.2 – Determine QPTR.

COMPLETION TIME – Once per 12 hours.

CORRECTIVE ACTIONS:

Performed By: _____ Date _____

Reviewed By: _____ Date _____

Unit Supervisor: _____ Date _____

Operations Management Review: _____ Date: _____

Facility: CPNPP JPM # NRC SA4 Task # SO1039C K/A # 2.3.6 2.0 / 3.8

Title: Review a Gaseous Waste Release Permit

Examinee (Print): _____

Testing Method:

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

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 with Unit 1 in MODE 5:

- A Plant Cooldown is in progress for Refueling.
- Both Trains of Residual Heat Removal are in service.
- XRE-5570A (PVF-684), Plant Vent Wide Range Gas Release Rate Monitor is out of service.
- XRE-5701, Auxiliary Building Exhaust Monitor is out of service.
- The Gas Decay Tanks are running out of space and a release of Gas Decay Tank X-02 is required to accommodate more gas.
- Chemistry has just brought the Release Permit to the Control Room.

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

- REVIEW the Gas Decay Tank Release Permit.
- INDICATE and CIRCLE if Permit is Acceptable:
  - Permit is Acceptable? YES / NO
  - If NO, then LIST reasons:

_____

_____

_____

_____

_____

_____

Task Standard: Locate and correctly perform Critical Steps of STA-603.

Required Materials: STA-603, Control of Station Radioactive Effluents, Rev. 21-1.
STA-603-11, Gas Decay Tank Radioactive Effluent Release Data Sheet, Rev. 18.
CLI-744-4, Gas Decay Tank Release DRMS Setpoint Data Sheet, Rev. 1.

Validation Time: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

PROVIDE the examinee with a copy of:

- **STA-603, Control of Station Radioactive Effluents.**
  - **INITIALED STA-603-11 up to Release Data section.**
  - **CLI-744, Attachment 4, Gas Decay Tank Release DRMS Setpoint Data Sheet COMPLETE except for setpoint restoration.**

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

Perform Step: 1√	Review STA-603-11, Gas Decay Tank Radioactive Effluent Release Data Sheet, Pre-Release Data.
Standard:	REVIEW STA-603-11, Gas Decay Tank Radioactive Effluent Release Data Sheet, Pre-Release Data and IDENTIFY the following: • DETERMINED XRE-5570A (PVF-684), Plant Vent Wide Range Gas Release Rate Monitor is out of service with no documented LCOAR.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√	Review STA-603-11, Gas Decay Tank Radioactive Effluent Release Data Sheet, Pre-Release Data.
Standard:	REVIEW STA-603-11, Gas Decay Tank Radioactive Effluent Release Data Sheet, Pre-Release Data and IDENTIFY the following: • DETERMINED XRE-5570A (PVF-684), Plant Vent Wide Range Gas Release Rate Monitor and XRE-5701 (AVB-089) are out of service with no documented STA-603-13, Batch Radioactive Effluent Release Verification Sheet.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√	Review STA-603-11, Gas Decay Tank Radioactive Effluent Release Data Sheet, Pre-Release Data.
Standard:	REVIEW STA-603-11, Gas Decay Tank Radioactive Effluent Release Data Sheet, Pre-Release Data and IDENTIFY the following: • DETERMINED at least two independent samples shall be collected and analyzed with the plant vent stack and Auxiliary Building vent duct radiation monitors inoperable and only one sample was taken.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4√	Determine if Gas Decay Tank Release Permit is acceptable.
Standard:	DETERMINE Gas Decay Tank Release Permit is NOT acceptable and CIRCLE **NO** on JPM Cue Sheet.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

INITIAL CONDITIONS: **Given the following conditions with Unit 1 in MODE 5:**

- **A Plant Cooldown is in progress for Refueling.**
- **Both Trains of Residual Heat Removal are in service.**
- **XRE-5570A (PVF-684), Plant Vent Wide Range Gas Release Rate Monitor is out of service.**
- **XRE-5701, Auxiliary Building Exhaust Monitor is out of service.**
- **The Gas Decay Tanks are running out of space and a release of Gas Decay Tank X-02 is required to accommodate more gas.**
- **Chemistry has just brought the Release Permit to the Control Room.**

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

- **REVIEW the Gas Decay Tank Release Permit.**
- **INDICATE and CIRCLE if Permit is Acceptable:**
  - **Permit is Acceptable? YES / NO**
  - **If NO, then LIST reasons:**

_____

_____

_____

_____

_____

_____

Facility: CPNPP JPM # NRC SA5 Task # SO1136G K/A # 2.4.41 2.9 / 4.6
Title: Classify an Emergency Plan Event

Examinee (Print): _____

Testing Method:

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

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:

- ABN-907, Acts of Nature, Section 5.0, Severe Weather was implemented 1 hour ago.
- A tornado has touched down in the Owner Controlled Area and passed through the Protected Area with winds in excess of 180 mph.
- Unit 1 has tripped and is in MODE 3.
- Both Unit 1 Emergency Diesel Generators are running and loaded.
- Unit 2 is in MODE 5 at 120°F and rising.
- Unit 2 Protected Train A Emergency Diesel Generator is running and loaded.
- All Offsite Power sources are inoperable.
- Unit 2 Station Service Water Pumps are tripped and damage has been reported to the Service Water Intake Structure.

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

- DETERMINE the Emergency Action Level Group / Category, Subcategory, and Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation.
  - EAL Classification _____

Task Standard: Utilizing EPP-201, determined the Event Category and Event Classification using the Emergency Action Level Hot, Common, and Cold Classification Charts.

Required Materials: EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation, Rev. 12.
EPP-201, Emergency Action Level Technical Bases Document, Rev. 0.
CPNPP Emergency Action Level Hot, Common, and Cold Classification Charts, Rev. 12.

Validation Time: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP

EXAMINER:

MAKE the following available in the classroom:

- **EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation.**
- **EPP-201, Emergency Action Level Technical Bases Document.**
- **CPNPP Emergency Action Level Hot, Common, & Cold Classification Charts.**

√ - Check Mark Denotes Critical Step

START TIME:	

Examiner Note:	**The following steps are from CPNPP Emergency Action Levels Common.**
Perform Step: 1	DETERMINE the Event Category.
Standard:	REFERRED to CPNPP Emergency Action Levels Hot, Common, and Cold and DETERMINED the following chart is applicable: • **CPNPP EAL Common Conditions**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2	MATCH plant conditions in the EAL Group / Category.
Standard:	IDENTIFIED EAL Group / Category as **Hazards (H)**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3	MATCH plant conditions in the selected EAL Subcategory.
Standard:	IDENTIFIED EAL Subcategory as **Natural or Destructive Phenomena (1)**.
Comment:	**SAT ☐ UNSAT ☐**

EAL Identifier

XXX.X

Category (R, H, E, S, F, C)

Emergency classification (G, S, A, U)

Sequential number within subcategory/classification

Subcategory number (1 if no subcategory)

Perform Step: 4√	Classify the event.
Standard:	CLASSIFIED the event as an **ALERT (HA1.2).**
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **ABN-907, Acts of Nature, Section 5.0, Severe Weather was implemented 1 hour ago.**
- **A tornado has touched down in the Owner Controlled Area and passed through the Protected Area with winds in excess of 180 mph.**
- **Unit 1 has tripped and is in MODE 3.**
- **Both Unit 1 Emergency Diesel Generators are running and loaded.**
- **Unit 2 is in MODE 5 at 120°F and rising.**
- **Unit 2 Protected Train A Emergency Diesel Generator is running and loaded.**
- **All Offsite Power sources are inoperable.**
- **Unit 2 Station Service Water Pumps are tripped and damage has been reported to the Service Water Intake Structure.**

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

- **DETERMINE the Emergency Action Level Group / Category, Subcategory, and Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation.**
  - **EAL Classification** _____

Facility: CPNPP JPM # NRC P-1 Unit 1 Task # RO4217D K/A # G 2.4.35 3.8 / 4.0 SF-4S

Title: Align Main Generator Vent and Purge

Examinee (Print): _____

Testing Method:

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

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 Loss of Onsite and Offsite Power has occurred on Unit 1.
- ABN-601, Response to a 138/345 KV System Malfunction is in progress.

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

- ALIGN Unit 1 Main Generator Vent and Purge per ABN-601, Response to a 138/345 KV System Malfunction, Attachment 11, Main Generator Hydrogen Vent and Argon Purge.

Task Standard: Utilizing ABN-601, aligned Unit 1 Main Generator Hydrogen Vent and Argon Purge and lowered hydrogen pressure to less than 1.5 psig.

Required Materials: ABN-601, Response to a 138/345 KV System Malfunction, Rev. 12-8.

Validation Time: 8 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

EXAMINER:

PROVIDE the applicant with a copy of:

- **ABN-601, Response to a 138/345 KV System Malfunction.**
  - **Attachment 11, Main Generator Hydrogen Vent and Argon Purge.**

EXAMINER NOTE:

This JPM MUST be performed on Unit 1.

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

Examiner Note:	**The following steps are from ABN-601, Attachment 11.**
Examiner Note:	**Valves are located in the Turbine Building, Elev. 778', Room 1-005.**
Examiner Cue:	**1-ST11S523, is the Hydrogen Pressure Reducer Regulator in service.**
Perform Step: 1√ 1, 1.a, & 1st bullet	Close the hydrogen pressure reducer valves that are open. u-ST11N523, Uu MN GEN GAS VLV RK H_2 PRESS CTRL VLV: • 1-ST11S538 U1 MN GEN GAS SYS H_2 GAS PRESS CTRL VLV 523 OUT ISOL VLV [TB 778 Rm 1-005]
Standard:	ROTATED 1-ST11S538, U1 MN GEN SYS H_2 GAS PRESS CTRL VLV 523 OUT ISOL VLV handle 90° in COUNTERCLOCKWISE direction until STOPPED.
Examiner Cue:	**If valve handle is turned CLOCKWISE, REPORT valve handle does not move.**
Examiner Cue:	**If valve handle is turned COUNTERCLOCKWISE, REPORT valve handle stops after 90°.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√ 1, 1.a, & 2nd bullet	Close the hydrogen pressure reducer valves that are open. u-ST11N523, Uu MN GEN GAS VLV RK H_2 PRESS CTRL VLV: • 1-ST11S531 U1 MN GEN GAS SYS H_2 GAS PCV 523 IN ISOL VLV [TB 778 Rm 1-005]
Standard:	ROTATED 1-ST11S531, U1 MN GEN GAS SYS H_2 GAS PCV 523 IN ISOL VLV handle 90° in CLOCKWISE direction until STOPPED.
Examiner Cue:	**If valve handle is turned COUNTERCLOCKWISE, REPORT valve handle does not move.**
Examiner Cue:	**If valve handle is turned CLOCKWISE, REPORT valve handle stops after 90°.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3 1, 1.b, & 1st bullet	Close the hydrogen pressure reducer valves that are open. u-ST11N524, Uu MN GEN GAS VLV RK H_2 PRESS CTRL VLV: • 1-ST11S539 U1 MN GEN GAS SYS H_2 PRESS CTRL 524 OUT ISOL VLV [TB 778 Rm 1-005]
Standard:	DETERMINED 1-ST11S539, U1 MN GEN GAS SYS H_2 PRESS CTRL 524 OUT ISOL VLV NOT in service and N/A'd step.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 1, 1.b, & 2nd bullet	Close the hydrogen pressure reducer valves that are open. u-ST11N524, Uu MN GEN GAS VLV RK H_2 PRESS CTRL VLV: • 1-ST11S532 U1 MN GEN GAS SYS H_2 GAS PRESS CTRL VLV 524 IN ISOL VLV [TB 778 Rm 1-005]
Standard:	DETERMINED 1-ST11S532, U1 MN GEN GAS SYS H_2 GAS PRESS CTRL VLV 524 IN ISOL VLV NOT in service and N/A'd step.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**1-ST11S520 red pointer is POINTING UP, parallel with pipe.**
Perform Step: 5√ 3 & 1st bullet	Place 3-way valve u-ST11S520 to valve handle in the HORIZONTAL position. (VALVE IS CLOSED): • 1-ST11S520 U1 MN GEN RK ARGON 3-WAY ISOL CHNG OVR VLV 02 [TB 778 Rm 1-005]
Standard:	ROTATED 1-ST11S520 U1 MN GEN RK ARGON 3-WAY ISOL CHNG OVR VLV 02 handle 90° in COUNTERCLOCKWISE direction and STOPPED handle in HORIZONTAL position.
Examiner Cue:	**If valve handle is turned CLOCKWISE, REPORT valve handle does not move.**
Examiner Cue:	**If valve handle is turned COUNTERCLOCKWISE, REPORT valve handle stops after 90°.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**1-ST11S516 red pointer is perpendicular with pipe. Valve handle is HORIZONTAL.**
Perform Step: 6√ 3 & 1st bullet	ENSURE 3-way valve u-ST11S516 is in the valve handle UP position. • 1-ST11S516 U1 MN GEN RK ARGON 3-WAY ISOL CHNG OVR VLV 01 [TB 778 Rm 1-005]
Standard:	ROTATED 1-ST11S516 U1 MN GEN RK ARGON 3-WAY ISOL CHNG OVR VLV 01 handle 90° in COUNTERCLOCKWISE direction and STOPPED handle in VERTICAL or UP position.
Examiner Cue:	**If valve handle is turned CLOCKWISE, REPORT valve handle does not move.**
Examiner Cue:	**If valve handle is turned COUNTERCLOCKWISE, REPORT valve handle stops after 90°.**
Comment:	**SAT ☐ UNSAT ☐**

NOTE: Main Generator pressure may be monitored at 1-ST11P505, U1 MAIN GENERATOR GAS SYSTEM GENERATOR CASING PRESSURE INDICATOR 505 OR 2-ST11P505, U2 MAIN GENERATOR CASING HYDROGEN PRESSURE INDICATOR, on the Generator Gas Valve Rack AND at P2800A GEN H2 PRESS in the Control Room.

Perform Step: 7√ 3 & 1ST bullet	Lower hydrogen pressure to approximately 1.5 psig by performing the following for the affected unit: • UNLOCK AND OPEN 1-ST11S600, UNIT 1 MAIN GEN HYDROGEN RACK GENERATOR DRAIN PIPE ISOL VALVE (U2 TB 778 - H_2 RACK)
Standard:	PERFORMED the following: • CUT and REMOVED green locking tab. • ROTATED 1-ST11S600, UNIT 1 MAIN GEN HYDROGEN RACK GENERATOR DRAIN PIPE ISOL VALVE in COUNTERCLOCKWISE direction until STOPPED and handle is PARALLEL with pipe. • OBSERVED 1-ST11P505, U1 MAIN GENERATOR GAS SYSTEM GENERATOR CASING PRESSURE INDICATOR 505 pressure LOWERING.
Examiner Cue:	**Valve handle is parallel with pipe.** **When located, REPORT Indicator 505 is reading 1.5 psig.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8 4 & 1st bullet	WHEN hydrogen pressure reaches approximately 1.5 psig, THEN perform the following for the affected unit: • CLOSE AND LOCK 1-ST11S600, UNIT 1 MAIN GEN HYDROGEN RACK GENERATOR DRAIN PIPE ISOL VALVE
Standard:	PERFORMED the following: • OBSERVED 1-ST11P505, U1 MAIN GENERATOR GAS SYSTEM GENERATOR CASING PRESSURE INDICATOR 505 pressure LESS THAN 1.5 psig. • ROTATED 1-ST11S600, UNIT 1 MAIN GEN HYDROGEN RACK GENERATOR DRAIN PIPE ISOL VALVE in CLOCKWISE direction until STOPPED and handle is PERPENDICULAR with pipe.
Terminating Cue:	**Valve handle is in horizontal position. Green locking tab will be installed by another operator. This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **A Loss of Onsite and Offsite Power has occurred on Unit 1.**
- **ABN-601, Response to a 138/345 KV System Malfunction is in progress.**

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

- **ALIGN Unit 1 Main Generator Vent and Purge per ABN-601, Response to a 138/345 KV System Malfunction, Attachment 11, Main Generator Hydrogen Vent and Argon Purge.**

Facility: CPNPP JPM # NRC P-2 Task # RO2119A K/A # 069.AA1.01 3.5 / 3.7 SF-5

Title: Perform Containment Phase A Local Isolation

Examinee (Print): _____

Testing Method:

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

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 experienced a Reactor Trip and Safety Injection.
- During performance of EOP-0.0A, Reactor Trip or Safety Injection, Attachment 2, the following valve indications were not correct for the current plant conditions:
  - 1-MLB-1A2/2.1 – 1-HV-4166, PRZR LIQ SPACE SMPL LINE IRC ISO VLV.
  - 1-MLB-1A2/3.2 – 1-HV-4173, ACCUM 3 LIQ SPACE SMPL LINE IRC ISO VLV.
  - CB-08 – 1-HV-2407, STM GEN 3 SMPL LINE ORC ISO VLV.

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

- CLOSE 1-HV-4166, 1-HV-4173, and 1-HV-2407 locally using EOP-0.0A, Reactor Trip or Safety Injection, Attachment 4, Phase A Isolation.

Task Standard: Utilizing EOP-0.0A Attachment 4, Phase A Isolation CLOSED 1-HV-4166, 1-HV-4173, and 1-HV-2407.

Required Materials: EOP-0.0A, Reactor Trip or Safety Injection, Rev. 8-9.

Validation Time: 4 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

EXAMINER:

PROVIDE the applicant with the following:

- **EOP-0.0A, Reactor Trip or Safety Injection.**
  - **Attachment 4, Phase A Isolation.**

√ - Check Mark Denotes Critical Step

START TIME:	

Examiner Note:	**The following steps are from EOP-0.0A, Attachment 4 and may be performed in any order.**
Examiner Note:	**All valves are located at LV-08, Sample Valve Control Panel, in the Safeguards Building, Elev. 810' near the Penetration Rooms.**
Examiner Cue:	**1-HS-4166 red light is LIT and green light is DARK.**
Perform Step: 1√ Page 4, Item 1	CLOSE 1-HS-4166 PRZR LIQ SPACE SMPL LINE IRC ISO VLV.
Standard:	PLACED 1-HS-4166 PRZR LIQ SPACE SMPL LINE IRC ISO VLV in the CLOSE position.
Examiner Cue:	**1-HS-4166 red light is DARK and green light is LIT.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**1-HS-4173 red light is LIT and green light is DARK.**
Perform Step: 2√ Page 4, Item 7	CLOSE 1-HS-4173 ACCUM 3 LIQ SPACE SMPL LINE IRC ISO VLV.
Standard:	PLACED 1-HS-4173 ACCUM 3 LIQ SPACE SMPL LINE IRC ISO VLV in the CLOSE position.
Examiner Cue:	**1-HS-4173 red light is DARK and green light is LIT.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**1-HS-2407 red light is LIT and green light is DARK.**
Perform Step: 3√ Page 6, Item 11	CLOSE 1-HS-2407 STM GEN 3 SMPL LINE ORC ISO VLV.
Standard:	PLACED 1-HS-2407 STM GEN 3 SMPL LINE ORC ISO VLV in the CLOSE position.
Terminating Cue:	**1-HS-2407 red light is DARK and green light is LIT.** **This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **Unit 1 has experienced a Reactor Trip and Safety Injection.**
- **During performance of EOP-0.0A, Reactor Trip or Safety Injection, Attachment 2, the following valve indications were not correct for the current plant conditions:**
  - **1-MLB-1A2/2.1 – 1-HV-4166, PRZR LIQ SPACE SMPL LINE IRC ISO VLV.**
  - **1-MLB-1A2/3.2 – 1-HV-4173, ACCUM 3 LIQ SPACE SMPL LINE IRC ISO VLV.**
  - **CB-08 – 1-HV-2407, STM GEN 3 SMPL LINE ORC ISO VLV.**

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

- **CLOSE 1-HV-4166, 1-HV-4173 and 1-HV-2407 locally using EOP-0.0A, Reactor Trip or Safety Injection, Attachment 4, Phase A Isolation.**

Facility: CPNPP JPM # NRC P-3 Task # RO4006 K/A # 060.AA2.06 3.6 / 3.8 SF-9

Title: Terminate Release of Radioactive Gas

Examinee (Print): _____

Testing Method:

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

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 Gaseous Decay Tank X-01 release is in progress to the Ventilation System.

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

- TERMINATE the release in accordance with RWS-201, Gaseous Waste Processing System, Section 5.4.5, Gas Decay Tank X-01 Discharge to the Ventilation System.
- When tank pressure is less than 5 psig, PERFORM Step 5.4.5.N.

Task Standard: Utilizing RWS-201, repositioned Waste Gas Discharge Pressure Controller to 0%, closed the Waste Gas Discharge Control Valve, and closed Plant Ventilation Exhaust Plenum Supply to terminate Gaseous Decay Tank X-01 release.

Required Materials: RWS-201, Gaseous Waste Processing System, Rev. 19-7.

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

EXAMINER:

PROVIDE the applicant with a copy of:

- **RWS-201, Gaseous Waste Processing System.**
  - **Section 5.4.5, Gas Decay Tank X-01 Discharge to the Ventilation System.**
  - **INITIALED and N/A'd to Step 5.4.5.N.**

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

Examiner Note:	**The following steps are from RWS-201, Step 5.4.5.N.**
Examiner Note:	**Pressure gauge and Controller are located in the Auxiliary Building, Elev. 862', Room X-243 on the Waste Gas Process Panel.**
Examiner Cue:	**When X-01 pressure gauge is located, REPORT gauge is in Mode A, Low Range reading 5 psig.**
Perform Step: 1√ 5.4.5.N & 5.4.5.N.1)	WHEN the pressure in the GDT being discharged reaches the pressure specified in the release permit, THEN terminate the release as follows: • Set X-HC-0014, GWPS WASTE GAS DISCHARGE PRESSURE CONTROLLER to 0%.
Standard:	OBSERVED X-PIS-1036, GWPS Gas Decay Tank X-01 Pressure Indicating Switch at 5 psig and ROTATED knob on X-HC-0014, GWPS WASTE GAS DISCHARGE PRESSURE CONTROLLER in COUNTERCLOCKWISE direction to 0% position.
Examiner Cue:	**Controller indicates 0%.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Valve handswitch is located on the Waste Gas Process Panel.**
Perform Step: 2√ 5.4.5.N & 5.4.5.N.2)	WHEN the pressure in the GDT being discharged reaches the pressure specified in the release permit, THEN terminate the release as follows: • CLOSE X-HS-0014, WASTE GAS DISCHARGE CONTROL VALVE.
Standard:	PERFORMED the following: • PLACED X-HS-0014, WASTE GAS DISCHARGE CONTROL VALVE in CLOSE (**critical**). • OBSERVED green CLOSE light LIT (**NOT critical**).
Examiner Cue:	**The green light is LIT and the red light is DARK.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Remote operator is located in Rm. X-243 on floor against wall to the right of Waste Gas Process Panel (behind X-RE-5250, Radiation Monitor).**
Examiner Cue:	**When white cover is removed, REPORT pin is at top of indicator.**
Perform Step: 3√ 5.4.5.N & 5.4.5.N.3)	WHEN the pressure in the GDT being discharged reaches the pressure specified in the release permit, THEN terminate the release as follows: • CLOSE XGH-7898-RO, GWPS H2/N2 TO PLT VENT EXH PLNM SPLY DNSTR ISOL VLV RMT OPER
Standard:	REMOVED white cover and INSTALLED reach rod and ROTATED XGH-7898-RO, GWPS H2/N2 TO PLT VENT EXH PLNM SPLY DNSTR ISOL VLV RMT OPER in CLOCKWISE direction until STOPPED.
Examiner Cue:	**REPORT that remote operator has stopped turning and position indicator is all the way down.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 5.4.5.N & 5.4.5.N.4)	WHEN the pressure in the GDT being discharged reaches the pressure specified in the release permit, THEN terminate the release as follows: • Inform the Control Room AND Radiation Protection that the release is completed.
Standard:	INFORMED the Control Room **AND** Radiation Protection that the Gaseous Waste Release has been terminated.
Terminating Cue:	**The Control Room and Radiation Protection have been notified. This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **A Gaseous Decay Tank X-01 release is in progress to the Ventilation System.**

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

- **TERMINATE the release in accordance with RWS-201, Gaseous Waste Processing System, Section 5.4.5, Gas Decay Tank X-01 Discharge to the Ventilation System.**
- **When tank pressure is less than 5 psig, PERFORM Step 5.4.5.N.**

Facility: CPNPP JPM # NRC S-1 Task # RO1026A K/A # 001.A2.11 4.4 / 4.7 SF-1

Title: Respond to Reactor Startup Continuous Control Rod Insertion

Examinee (Print): _____

Testing Method:

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

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 Startup from Hot Standby is in progress in accordance with IPO-002A, Plant Startup from Hot Standby.
- Unit 1 Reactor power is at $1x10^{-8}$ amps.
- Control Bank D is at 100 steps.

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

- RAISE Reactor Power to approximately 2% per IPO-002A, Plant Startup from Hot Standby, Section 5.4, Increasing Reactor Power to Approximately 2% Following Reactor Startup And Establishing Main Feedwater Flow to the SGs.

Task Standard: Utilizing IPO-002A, withdrew Control Rods, established a positive startup rate less than 1.0 dpm to raise Reactor power and responded per ABN-712 to a Continuous Rod Insertion whenever Control Rods were required to be inserted, then tripped the Reactor by deenergizing the Control Rod Drive Motor Generator sets per ABN-712 and EOP-0.0A.

Required Materials: IPO-002A, Plant Startup From Hot Standby, Rev. 20-24.

ABN-712, Rod Control System Malfunction, Rev. 10-14.

EOP-0.0A, Reactor Trip or Safety Injection, Rev. 8-9.

Validation Time: 12 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-8 or any low power Initial Condition and LOAD Scenario File "LC22 NRC JPM S1" or PERFORM the following:

- **EXECUTE the following malfunctions:**
  - **RP01, Automatic Reactor Trip Failure.**
  - **RP13C, Manual Reactor Trip Failure (CB07 & CB10 switches).**
  - **RD02D, Control Bank D Continuous Rod Insertion (Conditional: When 1/1-FLRM, CONTROL ROD MOTION CTRL is placed in the IN position following rod withdrawal to raise power).**
- **PLACE GTGC MODE 2 on front Plant Computer Screen.**

EXAMINER:

PROVIDE the applicant with a copy of:

- **IPO-002, Plant Startup From Hot Standby.**
  - **Section 5.4, Increasing Reactor Power to Approximately 2% Following Reactor Startup And Establishing Main Feedwater Flow to the SGs.**

When referenced, PROVIDE the applicant with a copy of:

- **ABN-712, Rod Control System Malfunction.**

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

Examiner Note:	**The following steps are from IPO-002A, Step 5.4.1.**

CAUTION:

- The preferred methods to maintain Reactor Power and temperature prior to Turbine Generator synchronization are use of Steam Dumps and SG Blowdown Flow. Steam Dump operation and Main Steam Line Drain flow affect LP Turbine casing ΔT, which should be monitored prior to synchronization.
- If LP Turbine casing ΔT approaches limits prior to synchronization, a reduction in Steam Dump operation may be required, and Main Steam Line drain flow should also be limited.
- The preferred method, to reduce Steam Dump Operation and Main Steam Line drain flow, is maintaining maximum SG Blowdown flow.
- SG Atmospherics should not be routinely used to minimize Steam Dump operation.

NOTE:

- The verification of Power Range response and reaching the point of adding heat can be used to ensure proper Nuclear Instrumentation response.
- Intermediate Range should be monitored and/or trended to provide alternate indication of how power is trending. At low power, Power Range Instruments may not give an accurate trend of actual power.

Perform Step: 1 5.4.1.A	IF the Main Steam Isolation Valves are closed, THEN perform the following:
Standard:	DETERMINED Main Steam Isolation Valves are OPEN and N/A'd Step 5.4.1.A.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2√ 5.4.1.B	Establish a startup rate of approximately 0.5 dpm to increase Reactor power to approximately 2%.
Standard:	PLACED 1/1-FLRM, Control Rod Motion Control Switch to the OUT position and WITHDREW Control Bank D rods to establish positive startup rate of less than 1.0 dpm.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**When Control Rods are inserted to establish a 0.2 dpm startup rate or any Rod insertion using 1/1-FLRM, Control Rod Motion Control Switch will result in a Continuous Rod Insertion.**
Perform Step: 3√ 5.4.1.C	Gradually reduce startup rate to attain approximately 0.2 dpm as the Intermediate Range channels approach $3x10^{-6}$ amps.
Standard:	PLACED 1/1-FLRM, Control Rod Motion Control Switch to the IN position and DROVE Control Bank D rods to establish a 0.2 dpm startup rate.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Entry into ABN-712, Rod Control System Malfunction, or EOP-0.0A, Reactor Trip or Safety Injection, should be implemented.**
Examiner Note:	**The following steps are from ABN-712, Step 2.3.1.**

CAUTION:
- Proper bank overlap, Rod Insertion Limits, and proper rod alignment (±12 steps) shall be maintained.
- After inadvertent rod stepping ensure sufficient data for control system stability has been reviewed prior to placing rods back in AUTO.
- After inadvertent rod stepping evaluate the need for an Operational Decision Making meeting prior to placing rods back in AUTO.

Perform Step: 4 2.3.1 & bullets	Verify Turbine Runback OR Load Rejection – NOT IN PROGRESS. • TG Display • GEN MEGAWATTS • GEN MEGAVARS
Standard:	VERIFIED Turbine Runback OR Load Rejection is NOT in progress.
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

NOTE: Step 2 is a Continuous Action step.

Perform Step: 5 2.3.2	Verify Rod Motion - NORMAL • Rod direction • Rod speed • Rod demand • Rod sequencing • Bank overlap • Rod alignment (±12 steps)
Standard:	DETERMINED Rod Motion is NOT NORMAL.
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 6 2.3.2 RNO a.	Ensure 1/u-RBSS, CONTROL ROD BANK SELECT - NOT IN AUTO
Standard:	VERIFIED 1/1-RBSS, CONTROL ROD BANK SELECT in MANUAL.
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Examiner Note:	**The following steps represent the Alternate Path for this JPM.**
Examiner Note:	**The following steps are from EOP-0.0A and are performed from memory.**
Perform Step: 7 2.3.2 RNO b.	IF any of following occurs, THEN trip Reactor AND GO TO EOP-0.0A/B while other operators continue this procedure: • Rod motion with NO demand.
Standard:	At CB-07, PLACED 1/1-RTC, RX TRIP BKR Switch in TRIP and DETERMINED Reactor is NOT tripped.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8 2.3.2 RNO b.	IF any of following occurs, THEN trip Reactor AND GO TO EOP-0.0A/B while other operators continue this procedure: • Rod motion with NO demand.
Standard:	At CB-10, PLACED 1/1-RT, RX TRIP Switch in TRIP and DETERMINED Reactor is NOT tripped.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9√ 2.3.2 RNO b.	IF any of following occurs, THEN trip Reactor AND GO TO EOP-0.0A/B while other operators continue this procedure: • Rod motion with NO demand.
Standard:	PERFORMED the following: • OPENED CS-1B3-1, INCOMING BREAKER 1B3-1 **and** CS-1B4-1, INCOMING BREAKER 1B4-1 (**critical).** • OBSERVED green TRIP lights LIT (**NOT critical)**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10 2.3.2 RNO b.	IF any of following occurs, THEN trip Reactor AND GO TO EOP-0.0A/B while other operators continue this procedure: • Rod motion with NO demand.
Standard:	PERFORMED the following: • CLOSED CS-1B3-1, INCOMING BREAKER 1B3-1 **and** CS-1B4-1, INCOMING BREAKER 1B4-1 (**critical).** • OBSERVED red CLOSE lights LIT (**NOT critical)**.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11 1, 1.a, & 1st bullet	Verify Reactor Trip: • Verify the following: Reactor trip breakers - AT LEAST ONE OPEN
Standard:	OBSERVED 1/1-RTBAL & 1/1-RTBBL, RX TRIP BKR red CLOSED lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12 1, 1.a, & 2nd bullet	Verify Reactor Trip: • Verify the following: Neutron flux - DECREASING
Standard:	OBSERVED 1-NI-35B, IR CURRENT CHAN I and 1-NI-36B, IR CURRENT CHAN II are lowering.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13 1 & 1.b	Verify Reactor Trip: • All control rod position rod bottom lights - ON
Standard:	OBSERVED all Control Rods INSERTED on CTRL ROD POSN bezel.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **A Plant Startup from Hot Standby is in progress in accordance with IPO-002A, Plant Startup from Hot Standby.**
- **Unit 1 Reactor power is at $1x10^{-8}$ amps.**
- **Control Bank D is at 100 steps.**

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

- **RAISE Reactor Power to approximately 2% per IPO-002A, Plant Startup from Hot Standby, Section 5.4, Increasing Reactor Power to Approximately 2% Following Reactor Startup And Establishing Main Feedwater Flow to the SGs.**

Facility: CPNPP JPM # NRC S-2 Task # RO1309A K/A # 004.A2.19 3.1 / 2.8 SF-2

Title: Lower Letdown Flow and Adjust Charging Flow

Examinee (Print): _____

Testing Method:

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

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.
- Letdown flow is 120 gpm.
- Radiation Protection and Chemistry have both been notified of a Letdown flow change.

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

- LOWER Letdown flow from 120 gpm to 75 gpm per SOP-103A, Chemical and Volume Control System, Section 5.2.4, Lowering/Securing Letdown Flow.
- ADJUST Charging flow as required per SOP-103A, Chemical and Volume Control System, Section 5.2.2, Raising/Lowering Charging with a CCP in Operation.

Task Standard: Utilizing SOP-103A, lowered Letdown flow from 130 gpm to 80 gpm and adjusted Charging flow to maintain Pressurizer Level of 60%.

Required Materials: SOP-103A, Chemical and Volume Control System, Rev. 18-4.

Validation Time: 8 minutes 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 and LOAD Scenario File "LC22 NRC JPM S2 & S7" and PERFORM the following:

- **VERIFY Letdown flow is 130 gpm (as read).**

EXAMINER:

PROVIDE the applicant with a copy of:

- **SOP-103A, Chemical and Volume Control System.**
  - **Section 5.2.4, Lowering/Securing Letdown Flow.**
  - **Section 5.2.2, Raising/Lowering Charging with a CCP in Operation.**

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

Examiner Note:	**The following steps are from SOP-103A, Section 5.2.4.**

CAUTION:
- When letdown is in service, charging flow must be maintained high enough to avoid flashing and water hammer in the Regenerative Heat Exchanger. To accomplish this, maintain 1-TI-0127, REGEN HX LTDN OUT TEMP, less than saturation temperature for current letdown pressure (1-PI-0131).
- Cycling Pressurizer B/U heaters will minimize RCS transients while shifting letdown.

Perform Step: 1 5.2.4.A	NOTIFY Radiation Protection of letdown flow change.
Standard:	DETERMINED Radiation Protection has been NOTIFIED per Initial Conditions.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2 5.2.4.B	NOTIFY Chemistry of letdown flow change so Chemistry can ensure the sample flow to the RCS on-line dissolved oxygen and hydrogen analyzer is adjusted to avoid damaging the instrument or the associated components.
Standard:	DETERMINED Chemistry has been NOTIFIED per Initial Conditions.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3 5.2.4.C	CYCLE Pressurizer Heaters as needed prior to or during subsequent steps to maintain desired RCS pressure.
Standard:	DETERMINED Pressurizer Heaters will be CYCLED as required.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 5.2.4.D	ENSURE 1-PK-131, LTDN HX OUT PRESS CTRL in AUTO.
Standard:	VERIFIED 1-PK-131, LTDN HX OUT PRESS CTRL white AUTO light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5√ 5.2.4.E & 1st bullet	CLOSE the desired orifice valve(s) to lower letdown flow. • 1/1-8149A, LTDN ORIFICE ISOL VLV (45 gpm)
Standard:	PERFORMED the following: • CLOSED 1/1-8149A, LTDN ORIFICE ISOL VLV (45 gpm) (**critical**). • OBSERVED green CLOSE light LIT and Letdown flow LOWERED to approximately 80 gpm on 1-FI-132, LTDN FLO (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The candidate may take manual control of 1-PK-131 and then return to AUTO.**
Perform Step: 6 5.2.4.F	ENSURE 1-PK-131, LTDN HX OUT PRESS CTRL, is restoring pressure to approximately 310 psig on 1-PI-131, LTDN HX OUT PRESS.
Standard:	VERIFIED 1-PK-131, LTDN HX OUT PRESS CTRL, is restoring pressure to approximately 310 psig on 1-PI-131, LTDN HX OUT PRESS.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7 5.2.4.G	ENSURE 1-TK-130, LTDN HX OUT TEMP CTRL, is maintaining approximately 95°F on 1-TI-130, LTDN HX OUT TEMP.
Standard:	VERIFIED 1-TK-130, LTDN HX OUT TEMP CTRL, is maintaining approximately 95°F on 1-TI-130, LTDN HX OUT TEMP
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8 5.2.4.H	ADJUST charging as required per Section 5.2.1 or 5.2.2.
Standard:	REFERRED to SOP-103A, Section 5.2.2, Raising/Lowering Charging with a CCP in operation.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps are from SOP-103A, Section 5.2.2.**

NOTE:
- Charging flow through the Regenerative Heat Exchanger is limited to 300 gpm.
- When letdown is in service, charging flow must be maintained high enough to avoid flashing and water hammer in the Regenerative Heat Exchanger. To accomplish this, maintain 1-TI-0127, REGEN HX LTDN OUT TEMP, less than saturation temperature for current letdown pressure (1-PI-0131).
- To avoid thermal shock of the reactor coolant piping when operating at elevated temperature, charging flow should first be preheated in the regenerative heat exchanger. Letdown flow should not be stopped without also reducing charging flow to maintain RCP seal injection only when RCS cold leg temperature is > 350°F.

Examiner Note:	**Step 5.2.2.A can be performed in <u>either</u> of the 2 ways listed.**
Perform Step: 9a√ 5.2.2.A & 1st bullet	<u>IF</u> necessary, PLACE the following controller(s) in MANUAL <u>AND</u> RAISE or LOWER to achieve the desired flow on 1-FI-121A, CHRG FLO. • 1-FK-121, CCP CHRG FLO CTRL
Standard:	PLACED 1-FK-121, CCP FLO CTRL in MANUAL and LOWERED to MATCH 1-FI-121A, CHRG FLO with 1-FI-132, LTDN FLO.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9b√ 5.2.2.A & 2nd bullet	<u>IF</u> necessary, PLACE the following controller(s) in MANUAL <u>AND</u> RAISE or LOWER to achieve the desired flow on 1-FI-121A, CHRG FLO. • 1-LK-459, PRZR LVL CTRL
Standard:	PLACED 1-LK-459, PRZR LVL CTRL in MANUAL and LOWERED to MATCH 1-FI-121A, CHRG FLO with 1-FI-132, LTDN FLO.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10√ 5.2.2.B	ADJUST 1-HC-182, RCP SEAL WTR PRESS CTRL, as needed to maintain 8 gpm seal injection flow to each RCP No. 1 seal as charging flow is changed.
Standard:	ADJUSTED 1-HC-182, RCP SEAL WTR PRESS CTRL and MAINTAINED 8 gpm seal injection flow to each RCP No. 1 seal.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: 1-LK-459, PRZR LVL CTRL has a long time constant. For this reason, 1-LK-459, PRZR LVL CTRL is usually raised in order to increase charging flow, and then immediately returned to AUTO. Pressurizer level will NOT be at programmed level.

Examiner Note:	**Step 5.2.2.C can be performed in either of the 2 ways listed.**
Perform Step: 11a 5.2.2.C & 1st bullet	IF placed in manual in step 5.2.2.A, THEN PERFORM the following for the selected controller: • WHEN pressurizer program level is established, THEN PLACE 1-FK-121, CCP CHRG FLO CTRL, in AUTO.
Standard:	When Pressurizer level is approximately 60%, PLACED 1-FK-121, CCP FLO CTRL in AUTO and OBSERVED white AUTO light LIT.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11b 5.2.2.C & 2nd bullet	IF placed in manual in step 5.2.2.A, THEN PERFORM the following for the selected controller: • WHEN pressurizer program level is established, THEN PLACE 1-LK-459, PRZR LVL CTRL, in AUTO.
Standard:	When Pressurizer level is approximately 60%, PLACED 1-LK-459, PRZR LVL CTRL in AUTO and OBSERVED white AUTO light LIT.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **Unit 1 is at 100% power.**
- **Letdown flow is 120 gpm.**
- **Radiation Protection and Chemistry have both been notified of a Letdown flow change.**

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

- **LOWER Letdown flow from 120 gpm to 75 gpm per SOP-103A, Chemical and Volume Control System, Section 5.2.4, Lowering/Securing Letdown Flow.**
- **ADJUST Charging flow as required per SOP-103A, Chemical and Volume Control System, Section 5.2.2, Raising/Lowering Charging with a CCP in Operation.**

Facility: CPNPP JPM # NRC S-3 Task # RO1222 K/A # 010.A2.02 3.9 / 3.9 SF-3

Title: Respond to Pressurizer Spray Valve Failure

Examinee (Print): _____

Testing Method:

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

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 in MODE 1 at 100% power.
- 1-PCV-455C, Loop 4 Pressurizer Spray Valve has failed partially open.

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

- PERFORM actions of ABN-705, Pressurizer Pressure Malfunction, Section 3.0, Pressurizer Spray Valve Failure.

Task Standard: Utilizing ABN-705, performed actions for a failed open Pressurizer Spray Valve, tripped the Reactor when the valve fails to close, and stopped Reactor Coolant Pump 1-04.

Required Materials: ABN-705, Pressurizer Pressure Malfunction, Rev. 12-2.

Validation Time: 5 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-32 or any at power Initial Condition and LOAD Scenario File "LC22 NRC JPM S3" or PERFORM the following:

- **ADJUST all RCP Seal Injection flows to ~ 10 gpm to preclude CHG FLO HI / LO alarm.**
- **EXECUTE malfunction RX15B, Pressurizer Spray Valve [PCV-455C] failure to 60% open.**
- **FREEZE the Simulator.**

EXAMINER:

PROVIDE the applicant with a copy of:

- **ABN-705, Pressurizer Pressure Malfunction.**
  - **Section 3.0, Pressurizer Spray Valve Failure.**

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

Booth Operator:	**When examinee is ready to begin, PLACE the Simulator in RUN.**
Examiner Note:	**The following steps are from ABN-705, Section 3.0.**
Perform Step: 1√ 3.3.1 & 2nd bullet	CLOSE Pressurizer Spray Valve(s). • 1-PK-455C, RC LOOP 4 PRZR SPR VLV CTRL
Standard:	DEPRESSED 1-PK-455C, RC LOOP 4 PRZR SPR VLV CTRL amber MAN pushbutton and green OUTPUT (▼) pushbutton to CLOSE valve and DETERMINED Loop 1 Pressurizer Spray Valve is OPEN.
Examiner Note:	**Examinee may energize Group D Pressurizer Heaters.**
Comment: Step	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps represent the Alternate Path of this JPM.**
Perform Step: 2 3.3.1.a RNO	IF Pressurizer pressure is decreasing in an uncontrolled manner, THEN perform the following:
Standard:	OBSERVED RCS pressure indications 1-PI-455A (456/457/458), PRZR PRESS CHAN I (II/III/IV) **AND/OR** 1-PR-455, PRZR PRESS and DETERMINED Pressurizer pressure is decreasing in an uncontrolled manner.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3√ 3.3.1.a RNO & 3.3.1.a.1) RNO	IF Pressurizer pressure is decreasing in an uncontrolled manner, THEN perform the following: • Trip the Reactor.
Standard:	PERFORMED the following: • PLACED 1/1-RTC, RX TRIP BKR switch in TRIP (**critical**). • OBSERVED 1/1-RTBAL, RX TRIP BKR green light LIT. (**NOT critical**). • OBSERVED 1/1-RTBAL, RX TRIP BKR green light LIT. (**NOT critical**).
Examiner Cue:	**Another operator will perform immediate actions of EOP-0.0A, Reactor Trip or Safety Injection; CONTINUE with ABN-705 actions.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Reactor Coolant Pumps 1 and 4 may both be tripped.**
Perform Step: 4√ 3.3.1.a RNO & 3.3.1.a.2) RNO	IF Pressurizer pressure is decreasing in an uncontrolled manner, THEN perform the following: • STOP RCP(s) as necessary to stop spray flow.
Standard:	PERFORMED the following: • PLACED 1/1-PCPX4, RCP 4 in STOP (**critical**). • OBSERVED green STOP light LIT (**NOT critical**).
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **Unit 1 is in MODE 1 at 100% power.**
- **1-PCV-455C, Loop 4 Pressurizer Spray Valve has failed partially open.**

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

- **PERFORM actions of ABN-705, Pressurizer Pressure Malfunction, Section 3.0, Pressurizer Spray Valve Failure.**

Facility: CPNPP JPM # NRC S-4 Task # RO1413C K/A # 005.A4.01 3.6 / 3.4 SF-4P

Title: Recognize and Respond to Residual Heat Removal Pump Cavitation

Examinee (Print): _____

Testing Method:

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

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 in MODE 5 with the RCS NOT Filled.
- Train A Residual Heat Removal System was in service.
- Train A Residual Heat Removal Pump has just tripped.
- Train B Residual Heat Removal System is aligned for standby per SOP-102A, Residual Heat Removal System, Section 5.3.

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

- RESPOND to a loss of the Residual Heat Removal System per ABN-104, Residual Heat Removal System Malfunction, Section 7.0, Mode 5 or 6 Erratic RHR Pump Parameters/Loss of Flow Control/RHR Pump Trip-RCS NOT Filled.

Task Standard: Utilizing ABN-104, aligned and started Train B Residual Heat Removal (RHR) Pump, throttled open Train B Heat Exchanger Flow Control Valve, and aligned RHR Heat Exchanger Component Cooling Water flow.

Required Materials: ABN-104, Residual Heat Removal System Malfunction, Rev. 9.

Validation Time: 15 minutes Completion Time: _____minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-35 and PERFORM the following:

- **EXECUTE the following malfunction:**
  - **RH01A, RHR PUMP 1-01 in TRIP.**
- **ALIGN the following valve:**
  - **1-HS-4573, Train B RHR Heat Exchanger Return Valve to CLOSE.**
- **HANG yellow CAUTION tags on the following valves:**
  - **1/1-8701B, RHR HL Suction ISO VLV Power Source.**
  - **1/1-8702A, RHR HL Suction ISO VLV Power Source.**
- **REMOVE Job Aid Tags (white rings) on the following valves:**
  - **1/1-8701A, RHR HL Suction ISO VLV Power Source**
  - **1/1-8701B, RHR HL Suction ISO VLV Power Source.**
  - **1/1-8702A, RHR HL Suction ISO VLV Power Source.**
  - **1/1-8702B, RHR HL Suction ISO VLV Power Source.**
- **PLACE RHR screen on RO Desk Monitor.**
- **FREEZE the Simulator.**
- **When examinee is ready to begin, PLACE Simulator in RUN.**

EXAMINER:

PROVIDE the applicant with a copy of:

- **ABN-104, Residual Heat Removal System Malfunction.**
  - **Section 7.0, Mode 5 or 6 Erratic RHR Pump Parameters/Loss of Flow Control/RHR Pump Trip-RCS NOT Filled.**
  - **Attachment 18, Standby RHR Train Startup Instruction.**
  - **Attachment 4, RHR Maximum Flow Limit.**

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

Examiner Note:	**The following steps are from ABN-104, Section 7.0.**
CAUTION: Any RHR train that had operated with erratic parameters should be considered affected and should be vented and restarted per Attachment 7.	
Perform Step: 1 7.3.1, 1st & 2nd bullets	Verify BOTH hot leg RECIRC valves on operating RHR pump(s) - FULL OPEN: • 1/u-8701A, RHRP 1 HL RECIRC ISOL VLV • 1/u-8702A, RHRP 1 HL RECIRC ISOL VLV
Standard:	DETERMINED 1/1-8701A, RHRP 1 HL RECIRC ISOL VLV red OPEN light LIT and 1/1-8702A, RHRP 1 HL RECIRC ISOL VLV red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: An RHR pump that has NOT had erratic parameters may be restarted per Attachment 18. (For example: momentary loss of bus, inadvertent breaker trip, etc.)	
Perform Step: 2 7.3.2	Verify at least one RHR pump running.
Standard:	DETERMINED Train A RHR Pump tripped and REFERRED to RNO column.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps represent the Alternate Path of this JPM.**
Perform Step: 3 7.3.2 RNO 1)	Start up the standby RHR train per Attachment 18.
Standard:	REFERRED to Attachment 18, Standby RHR Train Startup Instruction.
Examiner Note:	**Provide examinee with a copy of ABN-104, Attachment 18.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps are from ABN-104, Attachment 18.**

NOTE: IF the standby train is needed immediately, THEN Step 1 does not have to be completed prior to proceeding.

Perform Step: 4 1 & 2nd bullet	Dispatch personnel to vent the seal cooler for the standby pump and check motor bearing oil levels: • uRH-0022, RHR PMP u-02 SEAL CLR VNT VLV, (SFGD u-052 TRN B RHRP Rm)
Standard:	DISPATCHED NEO to vent the seal cooler for RHR Pump 2 and check motor bearing oil levels.
Examiner Cue:	**NEO has been dispatched.**
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 5 2.b & 1st bullet	Ensure the following valves are in the correct position for the standby RHR Pump: • 1/u-8809B, RHR TO CL 3 & 4 INJ ISOL VLV OPEN
Standard:	DETERMINED 1/1-8809B, RHR TO CL 3 & 4 INJ ISOL VLV in OPEN and OBSERVED red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 6 2.b & 2nd bullet	Ensure the following valves are in the correct position for the standby RHR Pump: • 1/u-8701B, RHRP 2 HL RECIRC ISOL VLV OPEN
Standard:	VERIFIED 1/1-8701B, RHRP 2 HL RECIRC ISOL VLV is Caution tagged OPEN.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 7 2.b & 3rd bullet	Ensure the following valves are in the correct position for the standby RHR Pump: • 1/u-8702B, RHRP 2 HL RECIRC ISOL VLV OPEN
Standard:	DETERMINED 1/1-8702B, RHRP 2 HL RECIRC ISOL VLV in OPEN and OBSERVED red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8 2.b & 4th bullet	Ensure the following valves are in the correct position for the standby RHR Pump: • 1/u-8716B, RHRP XTIE VLV CLOSED
Standard:	VERIFIED 1/1-8716B, RHRP 2 XTIE VLV green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9 2.b & 5th bullet	Ensure the following valves are in the correct position for the standby RHR Pump: • u-HC-607, RHR HX 2 FLO CTRL CLOSED (0%)
Standard:	VERIFIED 1-HC-607, RHR HX 2 FLO CTRL in CLOSE at zero (0%) indicated position.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10 2.b & 6th bullet	Ensure the following valves are in the correct position for the standby RHR Pump: • u-FK-619, RHR HX 2 BYP FLO CTRL CLOSED (0%)
Standard:	VERIFIED 1-FK-619, RHR HX 2 BYP FLO CTRL indicates zero (0%) in CLOSE position.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11√ 2.b & 7th bullet	Ensure the following valves are in the correct position for the standby RHR Pump: • u-HC-128, RHR LTDN FLO CTRL CLOSED (0%)
Standard:	ROTATED 1-HC-128, RHR LTDN FLO CTRL to CLOSE at zero (0%) indicated position.
Comment:	**SAT ☐ UNSAT ☐**

CAUTION: In the event that an RHR Pump becomes inoperable while operating in reduced RCS inventory MODE, start of the RHR standby pump should not be attempted until adequate RCS level is verified.

Perform Step: 12 3	Verify RCS level adequate for RHR pump start.
Standard:	DETERMINED Reduced Inventory Condition does NOT exist and RCS level is adequate for RHR Pump start.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Provide examinee with a copy of ABN-104, Attachment 4.**
Perform Step: 13 4	Determine the maximum allowable flow from Attachment 4.
Standard:	REFERRED to Attachment 4 and DETERMINED maximum flow allowed based on current level is 4800 gpm.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14√ 5 & 2nd bullet	Start the standby RHR pump. • 1/u-APRH 2, RHRP 2
Standard:	PERFORMED the following: • PLACED 1/1-APRH 2, RHRP 2 in START (**critical**). • OBSERVED red PUMP and FAN lights LIT and proper amps on 1-II-APRH2, RHRP 2 MOT CURRENT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**The Unit Supervisor directs you to establish 3800 gpm flow.**
Perform Step: 15√ 6 & 2nd bullet	Slowly throttle open the heat exchanger flow control valve to establish flow below limit determined in Step 4 above. • u-HC-607, RHR HX 2 FLO CTRL
Standard:	PLACED 1-HC-607, RHR HX 2 FLO CTRL to OPEN and ROTATED potentiometer until approximately 3800 gpm of flow is established as READ on 1-FI-619, RHR TO CL 3 & 4 INJ FLO.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The examinee may close down on RHR HX 1 CCW Return Valve during the performance of this step.**
Perform Step: 16√ 7 & 2nd bullet	Open RHR Heat Exchanger CCW Return Valve as necessary to control RCS temperature: • u-HS-4573, RHR HX 2 CCW RET VLV
Standard:	PERFORMED the following: • PLACED 1-HS-4573, RHR HX 2 CCW RET VLV in OPEN and RAISED flow to stabilize RCS temperature (**critical**). • OBSERVED red OPEN and green CLOSE lights LIT (**NOT critical**).
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **Unit 1 is in MODE 5 with the RCS NOT Filled.**
- **Train A Residual Heat Removal System was in service.**
- **Train A Residual Heat Removal Pump has just tripped.**
- **Train B Residual Heat Removal System is aligned for standby per SOP-102A, Residual Heat Removal System, Section 5.3.**

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

- **RESPOND to a loss of the Residual Heat Removal System per ABN-104, Residual Heat Removal System Malfunction, Section 7.0, Mode 5 or 6 Erratic RHR Pump Parameters/Loss of Flow Control/RHR Pump Trip-RCS NOT Filled.**

Facility: CPNPP JPM # NRC S-5 Task # RO3516A K/A # 061.A2.07 3.4 / 3.5 SF-4S

Title: Respond to Inadvertent Start of Turbine Driven Auxiliary Feedwater Pump

Examinee (Print): _____

Testing Method:

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

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.
- Nuclear Instrument NI-43 has failed high.
- ABN-703, Power Range Instrument Malfunction, has been performed and troubleshooting is in progress.
- No Switchyard activities are in progress.
- No other inoperabilities exist.

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

- RESPOND to any alarms.

Task Standard: Utilizing ALM-0082A and ABN-305

Required Materials: ALM-0082A, 1-ALB-8B, Window 4.5 – TD AFWP STM SPLY VLV LEAKING HV-2452-1/2, Rev. 8-14.
ABN-305, Auxiliary Feedwater System Malfunction, Rev. 7-6.

Validation Time: 9 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-33 or any at power Initial Condition and LOAD Scenario File "LC22 NRC JPM S5" or PERFORM the following:

- **When directed, EXECUTE malfunction FW13B, 1-HS-2452-2, AFWPT STM SPLY VLV - MSL 1 to OPEN.**

BOOTH OPERATOR NOTE:

- **After each JPM, VERIFY Alarm Procedure 1-ALB-8B, Window 4.5 – TD AFWP STM SPLY VLV LEAKING HV-2452-1/2, is WIPED CLEAN.**

EXAMINER:

When requested, PROVIDE the applicant with a copy of:

- **ABN-305, Auxiliary Feedwater System Malfunction.**
  - **Section 6.0, Inadvertent Turbine Driven AFW Pump Start (Steam Supply Valve Fails Open).**

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

Booth Operator:	**When directed, EXECUTE malfunction FW13B, 1-HS-2452-2, Turbine Driven AFW Pump Steam Supply Valve fails OPEN.**
Examiner Note:	**The candidate may immediately place Control Rods in AUTO and perform a 50 MW load reduction in response to the start of the Auxiliary Feedwater Pump. Those steps are addressed at JPM Perform Steps 7 and 8.**
Examiner Note:	**The following steps are from 1-ALB-8B, Window 4.5.**
Perform Step: 1 1 & 1st bullet	IF not performing AFWPT startup, THEN ensure 1-HS-2452-1, AFWPT STM SPLY VLV - MSL 4 and 1-HS-2452-2, AFWPT STM SPLY VLV - MSL 1 are closed. IF NOT closed, THEN place affected steam supply valve handswitch in PULL OUT • 1-HS-2452-1, AFWPT STM SPLY VLV - MSL 4
Standard:	DETERMINED 1-HS-2452-1, AFWPT STM SPLY VLV MSL 4 in CLOSE and OBSERVED green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2 1 & 2nd bullet	IF not performing AFWPT startup, THEN ensure 1-HS-2452-1, AFWPT STM SPLY VLV - MSL 4 and 1-HS-2452-2, AFWPT STM SPLY VLV - MSL 1 are closed. IF NOT closed, THEN place affected steam supply valve handswitch in PULL OUT • 1-HS-2452-2, AFWPT STM SPLY VLV - MSL 1
Standard:	PLACED 1-HS-2452-2, AFWPT STM SPLY VLV MSL 1 in CLOSE and OBSERVED red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

CAUTION: The turbine driven auxiliary feed pump turbine supply lines should not remain pressurized during normal plant operation due to Environmental Qualification and High Energy Line Break design constraints.

Perform Step: 3 2 & 2.A	Monitor 1-SI-2452A, AFWPT SPD. • IF inadvertent start of the Turbine Driven AFW Pump has occurred, THEN go to ABN-305, “AFW System Malfunction” while continuing with this procedure.
Standard:	DETERMINED 1-SI-2452A, AFWPT SPD is at ~4075 rpm.
Examiner Cue:	**The Unit Supervisor directs you to implement ABN-305.**
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps are from ABN-305, Section 6.0.**

NOTE: If the Turbine Driven AFW Pump Steam Supply Valve(s) (u-HS-2452-2 or u-HS-2452-1) are open due to a BOS actuation, the actions of ABN-601 are applicable for addressing the open steam supply valve(s).

Perform Step: 4 6.3.1 & 1st bullet	Close affected steam supply valves by placing handswitch in – PULL OUT • u-HS-2452-2, AFWPT STM SPLY VLV – MSL1
Standard:	PLACED 1-HS-2452-2, AFWPT STM SPLY VLV MSL1 in PULL-OUT and OBSERVED red OPEN light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps represent the Alternate Path of this JPM.**
Perform Step: 5 6.3.1 & 6.3.1 RNO	IF affected steam supply valve is closed, THEN go to Step 5. • Continue with Step 2.
Standard:	DETERMINED 1-HS-2452-2, AFWPT STM SPLY VLV MSL1 is NOT CLOSED and REFERRED to Step 2.
Comment:	**SAT ☐ UNSAT ☐**

CAUTION: A loss of efficiency due to steam supply to the TD AFWP, and flow initiation to the SGs could cause Rx Power to exceed 100% (if at or near 100% RTP).

NOTE: Step 2 is a continuous action step.

Perform Step: 6 6.3.2	Verify Reactor Power less than or equal to 100%.
Standard:	OBSERVED 1-JI-041B/042B/044B, PR POWER CHAN I (II, IV) and DETERMINED Reactor Power greater than 100%.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**Bulleted steps may be performed in any order.**
Perform Step: 7√ 6.3.2 RNO 1st bullet	Perform the following: • Ensure 1/u-RBSS, CONTROL ROD BANK SELECT in AUTO.
Standard:	PLACED 1/1-RBSS, CONTROL ROD BANK SELECT in AUTO.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 8√ 6.3.2 RNO 2nd bullet	Perform the following • Initiate a 50 MW Turbine Load reduction.
Standard:	INITIATED a 50 MW Turbine Load reduction as follows: • DEPRESSED 50 MWe Manual Runback button. • CLICKED on "0/1" button. • CLICKED on "EXECUTE" and VERIFIED Runback in progress.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**If asked, REMIND candidate to review Initial Conditions.**
Perform Step: 9 6.3.3 and all bullets	Verify AFW System Safety Function Status • Verify BOTH MD AFW pumps OPERABLE, AND • Verify BOTH MD AFW pumps support functions OPERABLE, AND • Verify BOTH DGs OPERABLE, AND • Verify NO Switchyard Activities in-progress impactive to off-site power or Unit generation
Standard:	VERIFIED AFW System Safety Function Status per Initial Conditions.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10√ 6.3.4	Trip the TDAFW Pump • u-HS-2452-F, AFWPT TRIP
Standard:	DEPRESSED 1-HS-2452-F, AFWPT TRIP pushbutton and observed 1-HS-2452G, AFWPT TRIP & THROTTLE VLV green VLV light LIT.
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **Unit 1 is at 100% power.**
- **Nuclear Instrument NI-43 has failed high.**
- **ABN-703, Power Range Instrument Malfunction, has been performed and troubleshooting is in progress.**
- **No Switchyard activities are in progress.**
- **No other inoperabilities exist.**

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

- **RESPOND to any alarms.**

Facility: CPNPP JPM # NRC S-6 Task # RO4215B K/A # 064.A4.07 3.4 / 3.4 SF-6
Title: Restore Safeguards Bus 1EA1 to Offsite Power

Examinee (Print): _____

Testing Method:

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

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 in MODE 1.
- Emergency Diesel Generator (EDG) 1-01 is supplying the 6.9 kV Safeguards Bus 1EA1 due to post-work testing of the EDG.
- Power from Transformer XST1 is available to the 6.9 kV Safeguards Bus 1EA1.
- Transformer XST2 is NOT available.

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

- RESTORE Offsite Power to 6.9 kV Safeguards Bus 1EA1 from Transformer XST1 per SOP-609A, Diesel Generator System, Section 5.7, Transferring From DG Supplying Alone to Normal or Alternate Supply.

Task Standard: Utilizing SOP-609A, restored Offsite Power to 6.9 kV Safeguards Bus 1EA1 from Transformer XST1 and opened the Train A EDG Output Breaker when an overload condition occurred.

Required Materials: SOP-609A, Diesel Generator System, Rev. 21-4.

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC #34 or any at power Initial Condition and LOAD Scenario File "LC22 NRC JPM S6" or PERFORM the following:

- **LOAD the EDG per SOP-609A, Section 5.6, Supplying 6.9 KV SFGD Busses with DG Alone.**
- **EXECUTE remote function EDR13, 480 VAC MCC Undervoltage Load Shedding Fuses to REMOVE (if Step 5.7.I is reached, the fuses will be reinstalled).**
- **OPEN both Offsite Power Breakers CS-1EA1-1 and CS-1EA1-2 for Bus 1EA1.**
- **PLACE CS-1EA1-1, Incoming Breaker 1EA1 in PULLOUT and HANG a Red Tag.**
- **ENSURE EDG and Safeguards Bus voltages are NOT matched prior to SNAP of IC.**
- **When the 1EA1-2 Feeder Breaker is CLOSED at Step 5.7.E, EXECUTE malfunction ED09, Grid Frequency Disturbance at 58.2 Hertz and 90 second ramp {DIED1EA12.iivPanel=3} IMF ED09 f:58.2 r:90.**

BOOTH OPERATOR NOTE:

- **After each JPM, VERIFY the Synchroscope Key Switch is moved to a different position.**

EXAMINER:

PROVIDE the applicant with a copy of:

- **SOP-609A, Diesel Generator System.**
  - **Section 5.7, Transferring From DG Supplying Alone to Normal or Alternate Supply.**

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

Examiner Note:	**The following steps are from SOP-609A, Section 5.7.**
Perform Step: 1√ 5.7.A & 2nd bullet	TURN the synchroscope for the selected breaker ON. • SS-1EA1-2 BKR 1EA1-2 SYNCHROSCOPE
Standard:	PLACED SS-1EA1-2, BKR 1EA1-2 SYNCHROSCOPE to ON and OBSERVED the synchroscope move approximately to the 12 o'clock position.
Comment:	**SAT** ☐ **UNSAT** ☐

NOTE: DG VOLT should be maintained less than 7150V per Technical Specifications. With the AVR TRIP light ON (on at 7185V), the DG is to be considered inoperable until the AVR TRIP light is reset. REFERENCE Attachment 5 to reset AVR TRIP signal.

Perform Step: 2√ 5.7.B	Using the DG VOLT CTRL, ADJUST running voltage to match incoming voltage.
Standard:	ADJUSTED 90-1EG1, DG 1 VOLT CTRL to RAISE or LOWER DG Output Voltage to MATCH Running Volts (V-RUN) with Incoming Volts (V-IN) and OBSERVED Running Volts MATCHED with Incoming Volts.
Comment:	**SAT** ☐ **UNSAT** ☐

Examiner Note:	**Synchroscope speed is not considered critical, however, it must be moving in the SLOW direction.**

NOTE: Adjusting DG speed so that the synchroscope is moving slowly in the slow direction (2 to 4 RPM) will ensure positive load on the Diesel when the feeder breaker is CLOSED.

Perform Step: 3√ 5.7.C	Using DG SPD CTRL, ADJUST the speed so that the synchroscope is moving 2 to 4 RPM in the SLOW direction.
Standard:	ADJUSTED 65-1EG1, DG 1 SPD CTRL to RAISE or LOWER Diesel Generator speed so that synchroscope is moving 2 to 4 RPM in the SLOW direction.
Comment:	**SAT** ☐ **UNSAT** ☐

NOTE: **"Continuous Action Step"** This step is a compensatory action for the possibility of excessive loading on the DG due to Offsite Power degradation. (SMF 2002-2566) The DG Output Breaker should be opened if,

- DG MW's exceed 7 MW in an unexpected manner.
- DG Frequency falls below 58.8 Hz due to grid instability.
- DG Voltage falls below 6480 Volts due to grid instability.

Perform Step: 4 5.7.D & 1st bullet	IF Grid induced load, voltage, OR frequency fluctuations occur while the DG is synchronized to the bus, THEN OPEN the DG Output Breaker: • CS-1EG1, DG 1 BKR 1EG1
Standard:	OBSERVED Note before Step 5.7.D.
Comment:	**SAT** ☐ **UNSAT** ☐

CAUTION: IF DG load is less than 0.5 MW, THEN following Feeder Breaker closure, load should be raised promptly to prevent Reverse Power Trip. The DG will trip if the Generator is motorized with >34.5 KW in for greater than 8 seconds.

Perform Step: 5√ 5.7.E & 2nd bullet	CLOSE the feeder breaker when the synchroscope is slightly before the 12 o'clock position AND moving 2 to 4 RPM in the SLOW direction. • CS-1EA1-2 INCOMING BKR 1EA1-2
Standard:	PERFORMED the following: • PLACED CS-1EA1-2, INCOMING BKR 1EA1-2, in CLOSE when synchroscope is at 12 o'clock (**critical**). • OBSERVED red CLOSE light LIT (**NOT critical**).
Comment:	**SAT** ☐ **UNSAT** ☐

Examiner Note:	**The following steps represent the Alternate Path of this JPM.**
Booth Operator:	**VERIFY malfunction ED09, Grid Frequency Fluctuation at 58.2 Hz over 90 seconds has initiated.**
Perform Step: 6	Acknowledge annunciator alarm 1-ALB-10B, Window 3.5 – 6.9 KV BUS 1EA1 / 1EA2 PARALLELED.
Standard:	ACKNOWLEDGED annunciator alarm 1-ALB-10B, Window 3.5 – 6.9 KV BUS 1EA1 / 1EA2 PARALLELED.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 7 5.7.F	RAISE DG load to 0.5 MW as necessary, to prevent a reverse power trip using DG SPD CTRL handswitch.
Standard:	OBSERVED load on W-1EG1, DG 1 MEGAWATTS at approximately 1 MWe.
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 8 5.7.G	TURN OFF the synchroscope for the selected breaker.
Standard:	PLACED SS-1EA1-2, BKR 1EA1-2 SYNCHROSCOPE in OFF.
Comment:	**SAT** ☐ **UNSAT** ☐

Examiner Note:	**This step may be performed if frequency degradation has not yet been identified.**
Perform Step: 9 5.7.H	MAINTAIN 0-500 KVAR out by adjusting the selected DG VOLT CTRL handswitch.
Standard:	ADJUSTED 90-1EG1, DG 1 VOLT CTRL to RAISE or LOWER DG Output Voltage to MAINTAIN 0-500 KVAR.
Comment:	**SAT** ☐ **UNSAT** ☐

Examiner Note:	**This is Continuous Action Step 5.7.D to avoid excessive loading.**
Perform Step: 10√ 5.7.D NOTE	OBSERVE Emergency Diesel Generator 1-01 MWe frequency lowering uncontrollably and OPEN the output breaker.
Standard:	PERFORMED the following: • OPENED CS-1EG1, DG 1 BKR 1EG1 (**critical**). • OBSERVED green TRIP light LIT (**NOT critical**).
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT** ☐ **UNSAT** ☐

STOP TIME:	

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

- **Unit 1 is in MODE 1.**
- **Emergency Diesel Generator (EDG) 1-01 is supplying the 6.9 kV Safeguards Bus 1EA1 due to post-work testing of the EDG.**
- **Power from Transformer XST1 is available to the 6.9 kV Safeguards Bus 1EA1.**
- **Transformer XST2 is NOT available.**

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

- **RESTORE Offsite Power to 6.9 kV Safeguards Bus 1EA1 from Transformer XST1 per SOP-609A, Diesel Generator System, Section 5.7, Transferring From DG Supplying Alone to Normal or Alternate Supply.**

Facility: CPNPP JPM # NRC S-7 Task # RO1833 K/A # 059.A2.11 3.0 / 3.3 SF-7

Title: Respond to Feedwater Flow Instrument Failure

Examinee (Print): _____

Testing Method:

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

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 MAINTAIN Steam Generator levels 67 ± 5%.

Task Standard: Utilizing 1-ALB-8A-2.8 and/or ABN-708, established control of Steam Generator water level following Feedwater Flow instrument FT-520 failure, aligned the Alternate Channel, and restored level control to AUTO.

Required Materials: ALM-0081A, 1-ALB-8A, Window 2.8 – SG 2 STM & FW FLO MISMATCH, Rev. 8-3.
ABN-708, Feedwater Flow Instrument Malfunction, Rev. 6-5.

Validation Time: 6 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☐ UNSAT ☐

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

BOOTH OPERATOR:

INITIALIZE to IC-18 or any full power Initial Condition and LOAD Scenario File "LC22 NRC JPM S2 & S7" or PERFORM the following:

- **ENSURE FT-520B is aligned as the in-service Feed Flow Transmitter on SG 1-02.**

When directed by the Examiner, PERFORM the following:

- **INSERT malfunction RX01C (Key 1), SG 1-02 Feed Flow Transmitter (FT-520) fails to 0%.**

BOOTH OPERATOR NOTE:

- **When the JPM is completed, PERFORM THE FOLLOWING:**
  - **VERIFY the blue Control Channel Tag on the Feed Flow Instrument is moved in front of 1-FI-520A prior to next performance.**
  - **ENSURE 1-ALB-8A, Window 2.8 - SG 2 STM & FW FLO MISMATCH blue annunciator book is clean.**

EXAMINER:

When requested, PROVIDE the applicant with a copy of:

- **ABN-708, Feedwater Flow Instrument Malfunction.**

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

Examiner Note:	**Entry into either 1-ALB-8A or directly into ABN-708 is acceptable.**
Examiner Note:	**The candidate 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 12.**
Booth Operator:	**When directed, EXECUTE malfunction RX01C (Key 1), SG 1-02 Feed Flow Transmitter (FT-520) failure to 0%.**
Perform Step: 1	Evaluate alarms and select appropriate response procedure.
Standard:	SELECTED 1-ALB-8A, Window 2.8 - SG 2 STM & FW FLO MISMATCH.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**The following steps are from 1-ALB-8A, Window 2.8.**
Perform Step: 2 1, 1.A, & bullets	Monitor steam generator water level: • 1-LI-528, SG 2 LVL (NR) CHAN III • 1-LI-527, SG 2 LVL (NR) CHAN IV • 1-LI-529, SG 2 LVL (NR) CHAN I • 1-LI-552, SG 2 LVL (NR) CHAN II If one channel is indicating > 5% difference between remaining operable channels, go to ABN-710.
Standard:	MONITORED Steam Generator water level instruments: • 1-LI-528, SG 2 LVL (NR) CHAN III • 1-LI-527, SG 2 LVL (NR) CHAN IV • 1-LI-529, SG 2 LVL (NR) CHAN I • 1-LI-552, SG 2 LVL (NR) CHAN II
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 3√ 1.B	If level is NOT maintained at approximately 67%, transfer Steam Generator Water Level Control to manual and maintain level. • 1-FK-520, SG 2 FW FLO CTRL
Standard:	DEPRESSED 1-FK-520, SG 2 FW FLO CTRL amber MANUAL pushbutton to TRANSFER Steam Generator Water Level Control and DEPRESSED 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, Window 2.8 or transition to ABN-708, Feedwater Flow Instrument Malfunction. ABN-708 actions begin at JPM Step 12.**
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 4 2	Stop all secondary system power changes.
Standard:	DETERMINED no secondary system power changes are in progress.
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 5 3 & bullets	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:	VERIFIED both Main Feedwater Pumps are in service and OBSERVED 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 ☐ N/A ☐**

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 4	Verify 1-PI-507, MS HDR PRESS and 1-PI-508, FWP DISCH HDR PRESS differential pressure is maintained on program.
Standard:	OBSERVED 1-PI-507, MS HDR PRESS and 1-PI-508, FWP DISCH HDR PRESS and DETERMINED differential pressure is on program.
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 7 5, 5.A, & bullets	Monitor main steam line pressure: • 1-PI-525A, MSL 2 PRESS CHAN II • 1-PI-524A, MSL 2 PRESS CHAN I • 1-PI-526A, MSL 2 PRESS CHAN IV • 1-PI-2326, MSL 2 PRESS If one channel is indicating > 60 psig difference between remaining operable channels, go to ABN-709 for Steam Line Pressure Instrument Malfunction.
Standard:	MONITORED main steam line pressures and DETERMINED all channels are in agreement: • 1-PI-525A, MSL 2 PRESS CHAN II • 1-PI-524A, MSL 2 PRESS CHAN I • 1-PI-526A, MSL 2 PRESS CHAN IV • 1-PI-2326, MSL 2 PRESS
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 8 5 & 5.B	Monitor main steam line pressure: • If pressure is < 1125 psig, ensure 1-ZL-2326, SG 2 ATMOS RLF VLV is closed.
Standard:	DETERMINED pressure is less than 1125 psig and VERIFIED 1-ZL-2326, SG 2 ATMOS RLF VLV is CLOSED.
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 9 6 & 6.A	Monitor 1-FI-522A, SG 2 STM FLO and 1-FI-523A, SG 2 STM FLO. • If one steam line flow indicates higher or lower than the other, go to ABN-707.
Standard:	VERIFIED 1-FI-522A, SG 2 STM FLO **AND** 1-FI-523A, SG 2 STM FLO are indicating normally.
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 10 7 & 7.A	Monitor 1-FI-520A, SG 2 FW FLO and 1-FI-521A, SG 2 FW FLO. • If one feed line flow indicates higher or lower than the other, go to ABN-708.
Standard:	DETERMINED 1-FI-520A, SG 2 FW FLO has failed low and TRANSITIONED to ABN-708, Feedwater Flow Instrument Malfunction.
Examiner Note:	**The Alarm Response directs examinee to ABN-708.**
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Examiner Note:	**The following steps are from ABN-708, Section 2.0.**
Perform Step: 11 2.3.1	Verify controlling channel – FAILED.
Standard:	DETERMINED controlling Feed Flow Channel FT-520 has FAILED.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note:	**This action may have already been performed at JPM Step 3.**
Perform Step: 12√ 2.3.2	Manually control affected FCV to maintain SG level at program. • u-FK-520, SG 2 FW FLO CTRL
Standard:	DEPRESSED 1-FK-520, SG 2 FW FLO CTRL amber MANUAL pushbutton to TRANSFER Steam Generator Water Level Control and DEPRESSED the red RAISE (▲) or green LOWER (▼) pushbuttons to MAINTAIN level at approximately 67%.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13 2.3.3 & 2.3.3.a	Verify automatic SG level control – DESIRED. • Alternate feedwater flow control channel responding normally.
Standard:	OBSERVED 1-FI-521A, SG 2 FW FLO and DETERMINED alternate Feedwater Flow Control Channel responding normally.
Comment:	**SAT ☐ UNSAT ☐**

Examiner Cue:	**The Unit Supervisor desires automatic level control for SG 1-02.**
Perform Step: 14 2.3.3 & 2.3.3.b	Verify automatic SG level control – DESIRED. • Automatic level control desired, as determined by Unit Supervisor.
Standard:	DETERMINED the Unit Supervisor desires automatic level control.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 15√ 2.3.4 & 2nd bullet	Select an alternate channel: • u-FS-520C, SG 2 FW FLO CHAN SELECT
Standard:	PLACED 1-FS-520C, SG 2 FW FLO CHAN SELECT in FY-521B position.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 16 2.3.5 & 1st bullet	Verify affected SG conditions for auto level control. • Feedwater and steam flows matched.
Standard:	DEPRESSED 1-FK-520, SG 2 FW FLO CTRL red RAISE (▲) or green LOWER (▼) pushbuttons as required to manually CONTROL feedwater flow to restore Steam Generator level.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 17 2.3.5 & 2nd bullet	Verify affected SG conditions for auto level control. • SG level stable at program.
Standard:	VERIFIED Steam Generator 1-02 level stable on program.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 18√ 2.3.6	Place Feedwater Flow Control Valve in automatic AND ensure proper control.
Standard:	DEPRESSED 1-FK-520, SG 2 FW FLO CTRL controller AUTO pushbutton and DETERMINED white AUTO light LIT with controller in AUTO.
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 MAINTAIN Steam Generator levels 67 ± 5%.**

Facility: CPNPP JPM # NRC S-8 Task # RO4406C K/A # 068.AK3.12 4.1 / 4.5 SF-8

Title: Respond to a Fire in the Control Room

Examinee (Print): _____

Testing Method:

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

Initial Conditions: Given the following conditions:

- A fire has started in the Control Room.

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

- INITIATE actions for a Control Room Fire per ABN-803A, Respond to a Fire in the Control Room or Cable Spreading Room, Attachment 1, Reactor Operator Actions to Achieve Hot Shutdown.

Task Standard: Utilizing ABN-803A, Attachment 1, manually tripped Reactor and Turbine, isolated Main Steam Lines, isolated Letdown, stopped Reactor Coolant Pumps, secured Charging flow, disabled Residual Heat Removal (RHR) Pumps, and isolated suction to the RHR Pumps from the Refueling Water Storage Tank.

Required Materials: ABN-803A, Respond to a Fire in the Control Room or Cable Spreading Room, Rev. 11-1.

Validation Time: 10 minutes 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 and PERFORM the following:

- **VERIFY Charging Pump suction is aligned to the VCT.**
- **ENSURE 1/1-8149A, LTDN ORIFICE ISOL VLV AND 1/1-8149B, LTDN ORIFICE ISOL VLV in service.**

EXAMINER:

PROVIDE the applicant with a copy of:

- **ABN-803A, Respond to a Fire in the Control Room or Cable Spreading Room.**
  - **Attachment 1, Reactor Operator Actions to Achieve Hot Shutdown.**

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

Examiner Note:	**The following steps are from ABN-803A, Attachment 1.**
NOTE: Steps should be performed as rapidly as possible based on operator knowledge to ensure prompt transition to RSP.	
Perform Step: 1√ a & 1st bullet	Manually Trip Reactor and verify the following: • Reactor trip and bypass breakers – **OPEN**
Standard:	PERFORMED the following: • PLACED 1/1-RTC, RX TRIP BKR switch in TRIP (**critical**). • OBSERVED 1/1-RTBAL, RX TRIP BKR green light LIT. (**NOT critical**). • OBSERVED 1/1-RTBAL, RX TRIP BKR green light LIT. (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 2 a & 2nd bullet	Manually Trip Reactor and verify the following: • Neutron flux – **DECREASING**
Standard:	OBSERVED 1-NI-35B, IR CURRENT CHAN I and 1-NI-36B, IR CURRENT CHAN II lowering.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 3 a & 3rd bullet	Manually Trip Reactor and verify the following: • All DRPI RB lights – **ON**
Standard:	OBSERVED all Control Rods INSERTED on CTRL ROD POSN bezel.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 4 b	Ensure Turbine – **TRIPPED**
Standard:	DETERMINED HP Turbine Stop Valves CLOSED and OBSERVED; • 1-ZL2429A, HPT STOP VLV 1 green light LIT. • 1-ZL2431A, HPT STOP VLV 2 green light LIT. • 1-ZL2430A, HPT STOP VLV 3 green light LIT. • 1-ZL2428A, HPT STOP VLV 4 green light LIT.
Comment:	**SAT ☐ UNSAT ☐**

NOTE: The following actions should be performed prior to evacuating Control Room. Steps will be taken after Control Room evacuation to locally ensure required actions have been completed except for step e. which does not require local verification.

Perform Step: 5√ c	Ensure 1-HS-2452-F, AFWPT TRIP – **TRIPPED**
Standard:	PERFORMED the following: • DEPRESSED 1-HS-2452-F, AFWPT TRIP pushbutton (**critical**). • OBSERVED 1-HS-2452G, AFWPT TRIP & THROTTLE VLV green VLV light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Examiner Note	**Operation of <u>either</u> switch 1-HS-2337A <u>or</u> 1-HS-2337B will isolate the Main Steam Lines and satisfy <u>both</u> Critical JPM Steps 6 & 7.**
Perform Step: 6√ d & 1st bullet	Isolate Main Steam Lines. • 1-HS-2337A, MSL ISOL MAN ACT/RESET
Standard:	PERFORMED the following: • PLACED 1-HS-2337A, MSL ISOL MAN ACT/RESET in ACT position (**critical**). • OBSERVED 1-HS-2333A(2334A/2335A/2336A), MSIV 1(2/3/4), green CLOSE lights LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 7√ d & 2nd bullet	Isolate Main Steam Lines. • 1-HS-2337B, MSL ISOL MAN ACT/RESET
Standard:	PERFORMED the following: • PLACED 1-HS-2337B, MSL ISOL MAN ACT/RESET in ACT position (**critical**). • OBSERVED 1-HS-2333A(2334A/2335A/2336A), MSIV 1(2/3/4), green CLOSE lights LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐ N/A ☐**

Perform Step: 8 e	Ensure 1/1-8202A AND 1/1-8202B, VENT VLV – **CLOSED**.
Standard:	DETERMINED 1/1-8202A **AND** 1/1-8202B, VENT VLV in CLOSE and OBSERVED green CLOSE lights LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 9√ f & 1st bullet	**CLOSE** the following valves: • 1/1-8149A, LTDN ORIFICE ISOL VLV (45 GPM)
Standard:	PERFORMED the following: • PLACED 1/1-8149A, LTDN ORIFICE ISOL VLV in CLOSE (**critical**). • OBSERVED green CLOSE light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 10√ f & 2nd bullet	**CLOSE** the following valves: • 1/1-8149B, LTDN ORIFICE ISOL VLV (75 GPM)
Standard:	PERFORMED the following: • PLACED 1/1-8149B, LTDN ORIFICE ISOL VLV in CLOSE (**critical**). • OBSERVED green CLOSE light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 11 f & 3rd bullet	**CLOSE** the following valves: • 1/1-8149C, LTDN ORIFICE ISOL VLV (75 GPM)
Standard:	DETERMINED 1/1-8149C, LTDN ORIFICE ISOL VLV in CLOSE and OBSERVED green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 12 f & 4th bullet	**CLOSE** the following valves: • 1/1-8153, XS LTDN ISOL VLV
Standard:	DETERMINED 1/1-8153, XS LTDN ISOL VLV in CLOSE and OBSERVED green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 13 f & 5th bullet	**CLOSE** the following valves: • 1/1-8154, XS LTDN ISOL VLV
Standard:	DETERMINED 1/1-8154, XS LTDN ISOL VLV in CLOSE and OBSERVED green CLOSE light LIT.
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 14√ g & 1st bullet	Perform the following: • **OPEN** 1/1-LCV-112E, RWST TO CHRG PMP SUCT VLV.
Standard:	PERFORMED the following: • PLACED 1/1-LCV-112E, RWST TO CHRG PMP SUCT VLV in OPEN (**critical**). • OBSERVED red OPEN light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 15√ g & 2nd bullet	Perform the following: • **OPEN** 1/1-LCV-112D, RWST TO CHRG PMP SUCT VLV.
Standard:	PERFORMED the following: • PLACED 1/1-LCV-112D, RWST TO CHRG PMP SUCT VLV in OPEN (**critical**). • OBSERVED red OPEN light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 16√ g & 2nd bullet	Perform the following: • Place 1/1-APCH1, CCP 1 in **PULL-OUT**.
Standard:	PERFORMED the following: • PLACED 1/1-APCH1, CCP 1 in PULL-OUT (**critical**). • OBSERVED green TRIP light DARK and red FAN light LIT. (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 17√ h & 1st bullet	**STOP** Reactor Coolant Pumps. • 1/1-PCPX1, RCP 1
Standard:	PERFORMED the following: • PLACED 1/1-PCPX1, RCP 1 in STOP (**critical**). • OBSERVED green STOP light LIT (**NOT critical**).
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 18√ h & 2nd bullet	**STOP** Reactor Coolant Pumps. • 1/1-PCPX2, RCP 2
Standard:	PERFORMED the following: • PLACED 1/1-PCPX2, RCP 2 in STOP (**critical**). • OBSERVED green STOP light LIT (**NOT critical**).
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 19√ h & 3rd bullet	**STOP** Reactor Coolant Pumps. • 1/1-PCPX3, RCP 3
Standard:	PERFORMED the following: • PLACED 1/1-PCPX3, RCP 3 in STOP (**critical**). • OBSERVED green STOP light LIT (**NOT critical**).
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 20√ h & 4th bullet	**STOP** Reactor Coolant Pumps. • 1/1-PCPX4, RCP 4
Standard:	PERFORMED the following: • PLACED 1/1-PCPX4, RCP 4 in STOP (**critical**). • OBSERVED green STOP light LIT (**NOT critical**).
Comment:	**SAT** ☐ **UNSAT** ☐

Perform Step: 21√ i & 1st bullet	Place BOTH RHR pumps – **PULL-OUT**. • 1/1-APRH1, RHRP 1
Standard:	PERFORMED the following: • PLACED 1/1-APRH1, RHRP 1 in PULL-OUT (**critical**). • OBSERVED green PUMP light DARK (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 22√ i & 2nd bullet	Place BOTH RHR pumps – **PULL-OUT**. • 1/1-APRH2, RHRP 2
Standard:	PERFORMED the following: • PLACED 1/1-APRH2, RHRP 2 in PULL-OUT (**critical**). • OBSERVED green PUMP light DARK (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 23√ j & 1st bullet	**CLOSE** following valves: • 1/1-8812A, RWST TO RHRP 1 SUCT VLV
Standard:	PERFORMED the following: • PLACED 1/1-8812A, RWST TO RHRP 1 SUCT VLV in CLOSE (**critical**). • OBSERVED green CLOSE light LIT (**NOT critical**).
Comment:	**SAT ☐ UNSAT ☐**

Perform Step: 24√ j & 2nd bullet	**CLOSE** following valves • 1/1-8812B, RWST TO RHRP 2 SUCT VLV
Standard:	PERFORMED the following: • PLACED 1/1-8812B, RWST TO RHRP 2 SUCT VLV in CLOSE (**critical**). • OBSERVED green CLOSE light LIT (**NOT critical**).
Terminating Cue:	**This JPM is complete.**
Comment:	**SAT ☐ UNSAT ☐**

STOP TIME:	

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

- **A fire has started in the Control Room.**

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

- **INITIATE actions for a Control Room Evacuation per ABN-803A, Respond to a Fire in the Control Room or Cable Spreading Room, Attachment 1, Reactor Operator Actions to Achieve Hot Shutdown.**

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.:	1	Op Test No.:	June 2014 NRC
Examiners:		Operators:			
Initial Conditions:	100% power MOL - RCS Boron is 924 ppm (by sample).				
Turnover:	Maintain steady-state power conditions. Tornado Warning from the National Weather Service. Pressurizer Steam Space Sample is in progress by Chemistry.				
Critical Tasks:	• Emergency Stop Train B Diesel Generator within 15 minutes of Breaker Failure in accordance with ECA-0.0A, Loss of All AC Power. (Event 6) • Isolate Reactor Coolant System Leakage Paths in accordance with ECA-0.0A, Loss of All AC Power. (Event 7) • Initiate an Operator Induced Cooldown in accordance with ECA-0.0A, Loss of All AC Power. (Event 8)				

Event No.	Malf. No.	Event Type*	Event Description
1 +10 min	RP05D	I (RO, SRO) TS (SRO)	Reactor Coolant System Loop (1-04) Narrow Range Cold Leg Temperature Instrument (TI-441A) Fails High.
2 +20 min	RP03J	I (BOP, SRO) TS (SRO)	Main Steam Line (1-04) Pressure Transmitter (PT-544) Channel I Fails Low.
3 +30 min	RX05A	I (RO, SRO) TS (SRO)	Pressurizer Level Channel (LT-459A) Fails Low.
4 +45 min	FW14B TC09I	R (RO) N (BOP, SRO) TS (SRO)	Heater Drain Pump (1-02) Trip. Automatic Turbine Runback Failure.
5 +50 min	ED01	M (RO, BOP, SRO)	Loss of All AC Power Due to Loss of Offsite Power.
6 +50 min	EG06A EG16B	C (BOP)	Emergency Diesel Generator (1-01) Air Start Failure. Emergency Diesel Generator (1-02) Output Breaker Failure.
7 +55 min	WDR04	C (RO)	Pressurizer Steam Space Sample Valves (1/1-4165A & 1/1-4176A) Fail to Auto Close. Manual Closure of 1-HV-4165A Required.
8 +75 min	MS13A	I (BOP)	Atmospheric Relief Valve (1-01) Fails Closed due to Steam Pressure Instrument (PT-2325) Failure.

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

Actual	Target Quantitative Attributes
9	Total malfunctions (5-8)
4	Malfunctions after EOP entry (1-2)
4	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
1	EOP contingencies requiring substantive actions (0-2)
3	Critical tasks (2-3)

SCENARIO SUMMARY NRC 1

The crew will assume the watch at 100% power with no scheduled activities per IPO-003A, Power Operations. A Tornado Warning from the National Weather Service is in progress. ABN-907, Acts of Nature, Section 5.0, Severe Weather, has been performed and includes placing the High Flux at Shutdown switches in BLOCK and realigning Control Room Ventilation to the Emergency Recirculation Mode. A Pressurizer Steam Space sample is in progress.

In the first event a Reactor Coolant System (RCS) Loop 4 T_{COLD} Instrument will fail high. The crew enters ABN-704, T_C/N-16 Instrumentation Malfunction, Section 2.0, places Rod Control in MANUAL and defeats the affected channel. The SRO will refer to Technical Specifications.

The next event is a Main Steam Line 1-04 Channel I Pressure Transmitter failing low. Operator actions are per ABN-709, Steam Line Pressure Instrument Malfunction, Section 2.0, and require taking MANUAL control of the Feedwater Flow Control Valve, transferring to an Alternate Channel, and restoring Feedwater Flow Control to AUTO. The SRO will refer to Technical Specifications.

When plant conditions are stable a low failure of Pressurizer Level Channel, LT-459A, will occur. Operator actions are per ABN-706, Pressurizer Level Instrument Malfunction, Section 2.0. The crew must manually control either the Charging Flow Controller or the Pressurizer Level Controller, transfer to an Alternate Channel, and restore Reactor Coolant System (RCS) Letdown flow. The SRO will refer to Technical Specifications.

The next event is a trip of a Heater Drain Pump with an automatic Turbine Runback failure. The crew responds per ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, Section 4.0. When it is determined that automatic plant response has not activated, Control Rods are placed in AUTO and a manual Turbine Runback will be initiated. The crew will stabilize load at 700 MWe. During this event, Control Rod position may drop below the Rod Insertion Limit (RIL) and when informed, the SRO will refer to Technical Specifications. Additionally, ABN-401, Main Turbine Malfunction, Section 8.0, must be entered to reset the Turbine Runback.

The major event is a Loss of Offsite Power with an air start failure of Train A Diesel Generator and a breaker failure of Train B Diesel Generator resulting in a Total Loss of All AC Power. The crew enters either EOP-0.0A, Reactor Trip or Safety Injection and then exits to ECA-0.0A, Loss of All AC Power, or enters ECA-0.0A directly. While in ECA-0.0A, Reactor Coolant System leakage paths are isolated and a cooldown is initiated to 270°F. When the cooldown is commenced the crew will restore power to the Train B Safeguards Bus.

The event is complicated by failure of a Pressurizer Steam Space Sample Valve to automatically close and an Atmospheric Relief Valve that must be manually opened in order to facilitate Reactor Coolant System cooldown. This scenario is terminated when power is restored to the Train B Safeguards Bus and transition to ECA-0.0A, Step 26, Stabilize Steam Generator Pressures is performed.

Risk Significance:

- Failure of risk important system prior to trip: Turbine Runback Failure
- Risk significant core damage sequence: Loss of All AC Power
- Risk significant operator actions: Stop Train B Diesel Generator
  Isolate RCS Leakage Paths
  Initiate RCS Cooldown
  Restore Safeguards Bus Power

Scenario Event Description
NRC Scenario 1

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

INITIALIZE to IC-30 and LOAD LC22 NRC Scenario 1.

EVENT	REM. FUNC.	MALF.	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
SETUP		EG06A	Diesel Generator (1-01) Air Start Failure	FAIL	K0
		EG16B	Diesel Generator (1-02) Breaker Failure	FAIL	K0
		WDR04	PRZR Steam Space Sample Valves (1/1-4165A & 1/1-4176A) Failure	OPEN	K0
		MS13A	ARV (1-01) Fails Closed due to Steam Pressure Instrument (PT-2325) Failure	0 psig	RTB Opens
		OVRDE	EDG 1-02 Breaker Override	OPEN	K0
		TC09I	Automatic Turbine Runback Failure	FAIL	K0
1		RP05D	RCS Loop 1 T_{COLD} Instrument TI-441A Failure	630°F	K1
2		RP03J	MSL Pressure Transmitter (PT-544) Failure	0 psig	K2
3		RX05A	Pressurizer Level Channel (LT-459) Failure	0%	K3
4		FW14B	Heater Drain Pump (1-02) Trip	TRIP	K4
4		TC09I	Automatic Turbine Runback Failure	FAIL	K0
5		ED01	Loss of Offsite Power	OFF	K5
6		EG06A	Diesel Generator (1-01) Air Start Failure	FAIL	K0
6		EG16B	Diesel Generator (1-02) Breaker Failure	FAIL	K0
		OVRDE	EDG 1-02 Breaker Override	OPEN	K0
7		WDR04	PRZR Steam Space Sample Valves (1/1-4165A & 1/1-4176A) Failure	OPEN	K0
8		MS13A	ARV (1-01) Fails Closed due to Steam Pressure Instrument (PT-2325) Failure	0 psig	RTB Opens

		DEL OVRDE	Removes Override on EDG 1-02 Output Breaker	AUTO	K7
		DMF EG16B	Delete Diesel Generator (1-02) Breaker Failure	AUTO	K7
		CCR10	1-HV-4709, Thermal Barrier Cooler Return Valve	CLOSE	K10
		CVR21	1/1-8100, RCP Seal Water Return Isolation Valve	CLOSE	K10
		CVR22	1CS-8369A, RCP Seal Injection Throttle Valve	CLOSE	K10
		CVR23	1CS-8369B, RCP Seal Injection Throttle Valve	CLOSE	K10
		CVR24	1CS-8369C, RCP Seal Injection Throttle Valve	CLOSE	K10
		CVR25	1CS-8369D, RCP Seal Injection Throttle Valve	CLOSE	K10
		FWR077	1-HV-2484, CST Discharge Valve	CLOSE	K11
		FWR078	1-HV-2485, CST Discharge Valve	CLOSE	K11
		FWR071	1-HV-2953, Auxiliary Condenser Vacuum Breaker Isolation Valve	OPEN	K12
		FWR072	1-HV-2954, Auxiliary Condenser Vacuum Breaker Isolation Valve	OPEN	K12
		FWR073	1-HV-2955, Main Condenser Vacuum Breaker Isolation Valve	OPEN	K12
		MSR15	MSIV Local Isolation	ISOL	K13

Scenario Event Description
NRC Scenario 1

Simulator Operator: INITIALIZE to IC-30 and LOAD LC22 NRC Scenario 1.
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE all Control Board Tags are removed.
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 60/90 buttons DEPRESSED on ASD.
ENSURE ASD speakers are ON to half volume.
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.
- COPY of ABN-907, Acts of Nature, Section 5.0, Severe Weather and Attachment 3, Severe Weather Preparations.
ENSURE Control Rods are in AUTO with Bank D at 215 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
6D-3.1 – SR SHTDN FLUX ALM BLK
13A-3.16 – DAMPER 25 IN EMERGENCY MODE
13A-4.16 – DAMPER 25 IN EMERGENCY MODE

Operating Test :	NRC	Scenario #	1	Event #	1	Page	6	of	33
Event Description:	Reactor Coolant Loop Cold Leg Temperature Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 1 (Key 1). - RP05D, Loop 4 T_{COLD} NR temperature instrument (TI-441A) fails high.		
Indications Available: **5C-1.5 – ANY N16 DEV HI / LO** **5C-2.5 – 1 OF 4 OT N16 HI** **5C-3.5 – ANY T_{AVE} DEV HI / LO** **6D-1.10 – AVE T_{AVE} T_{REF} DEV** **6D-2.10 – AVE T_{AVE} HI** **6D-3.14 – 1 OF 4 OT N16 ROD STOP & TURB RUNBACK** **1-TI-441A, CL 4 TEMP (NR) CHAN IV indication failed high** **1-TI-442, RC LOOP 4 T_{AVE} CHAN IV indication failed high**		
+30 secs	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE Control Rods inserting due to T_{COLD} failed high.
	US	DIRECT performance of ABN-704, Tc / N-16 Instrumentation Malfunction, Section 2.0.
NOTE: • If the failed channel was reading lower than the substituted channel, then AVE Tave will increase when the failed channel is defeated due to another channel being substituted for the failed signal to maintain accurate averaging. • Rod Control should remain in MANUAL until all channels are operable. This does not preclude placing rods in AUTO during rapidly changing transient conditions such as runbacks, etc. as long as rod control is returned to MANUAL when the plant is stabilized.		
	RO	PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in MANUAL. [Step 2.3.1]
	RO	SELECT LOOP 4 on 1-TS-412T, T_{AVE} Channel Defeat. [Step 2.3.2]
	RO/BOP	VERIFY Steam Dump System is NOT actuated and NOT armed. [Step 2.3.3]

Operating Test :	NRC	Scenario #	1	Event #	1	Page	7	of	33
Event Description:	Reactor Coolant Loop Cold Leg Temperature Failure								

Time	Position	Applicant's Actions or Behavior
Examiner Note: Crew will withdraw rods to 215 steps in 5 step increments to restore T_{AVE}.		
	RO	RESTORE T_{AVE} to within 1ºF of T_{REF}. [Step 2.3.4]
		• WITHDRAW Control Rods in ≤ 5 step increments until Control Bank D is at 215 steps.
	RO/BOP	SELECT LOOP 4 on 1/1-JS-411E, N16 Power Channel Defeat. [Step 2.3.5]
	RO	ENSURE a valid N16 channel supplying recorder on 1/1-TS-411E, 1-TR-411 CHAN SELECT. [Step 2.3.6]
	RO/BOP	VERIFY PCIP, Window 3.4 – TURB LOAD REJ STM DMP ARMED C-7, not ARMED (DARK). [Step 2.3.7]
	US/BOP	VERIFY Steam Dumps were NOT blocked. [Step 2.3.8]
	US	EVALUATE Technical Specifications. [Step 2.3.11]
		• LCO 3.3.1.E, Reactor Trip System Instrumentation (Function 6, Overtemperature N-16 & Function 7, Overpower N-16).
		• CONDITION E - One channel inoperable. • ACTION E.1 - Place channel in trip within 72 hours, OR • ACTION E.2 - Be in MODE 3 within 78 hours.
	US	INITIATE a work request per STA-606. [Step 2.3.12]
+10 min	US	INITIATE a SMART Form per STA-421. [Step 2.3.13]
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Event 2.		

Operating Test :	NRC	Scenario #	1	Event #	2	Page	8	of	33
Event Description:	Steam Line Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 2 (Key 2). - RP03J, Steam Line (1-04) Pressure Transmitter (PT-544) Channel I fails low.		
Indications Available: **8A-4.7 – MSL 4 1 OF 3 PRESS LO** **8A-4.8 – SG 4 STM & FW FLO MISMATCH** **8A-4.16 – SG 1 OF 3 PRESS RATE HI** **1-PI-544A, MSL 4 PRESS CHAN I indication fails low**		
+1 min	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Steam Line Pressure 1-PT-544 transmitter failure.
Examiner Note: Steam Line Channel failure low will cause Feedwater flow to lower and Feedwater Pumps to lower in speed.		
Examiner Note: The crew may initially enter ABN-707, Steam Flow Instrument Malfunction, but will be directed to ABN-709 based on diagnosis.		
	US	DIRECT performance of ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 2.0.
	BOP	IDENTIFY Main Steam Line 1-04 Pressure Transmitter (PT-544) – GREATER THAN 60 PSIG difference between remaining channels. [Step 2.3.1]
	BOP	VERIFY Steam Generator Atmospheric Relief Valves – CLOSED. [Step 2.3.2]
		• 1-ZL-2325, SG 1 ATMOS RLF VLV
		• 1-ZL-2326, SG 2 ATMOS RLF VLV
		• 1-ZL-2327, SG 3 ATMOS RLF VLV
		• 1-ZL-2328, SG 4 ATMOS RLF VLV

Operating Test :	NRC	Scenario #	1	Event #	2	Page	9	of	33
Event Description:	Steam Line Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	VERIFY following channels are indicating – NORMAL. [Step 2.3.2]
		• 1-PI-2325, MSL 1 PRESS
		• 1-PI-2326, MSL 2 PRESS
		• 1-PI-2327, MSL 3 PRESS
		• 1-PI-2328, MSL 4 PRESS
		NOTE: If a non-controlling channel has failed, steps 3 through 8 may not need to be performed. Refer to ABN-707, Attachment 1, STEAM FLOW WITH STEAM PRESSURE COMPENSATION TRANSMITTERS.
	BOP	PLACE 1-FK-540, SG 4 FW FLO CTRL in MANUAL and CONTROL Steam Generator 1-04 level. [Step 2.3.3]
	BOP	Manually CONTROL 1-SK-509A, FWPT MASTER SPD CTRL as necessary. [Step 2.3.4]
	BOP	SELECT Alternate Steam Flow Channel 1-FY-543B. [Step 2.3.5]
		• Loop 4, 1-FS-542C, SG 4 STM FLO CHAN SELECT. [Step 2.3.5.d]
	BOP	VERIFY Steam Generator 1-04 Level – STABLE AT PROGRAM LEVEL. [Step 2.3.6]
		• Steam flow and Feed flow – MATCHED.
	BOP	PLACE 1-FK-540, SG 4 FW FLO CTRL in AUTO and VERIFY controlling – IN NORMAL OPERATING RANGE. [Step 2.3.7]
	BOP	VERIFY 1-SK-509A, FWPT MASTER SPD CTRL in AUTO – CONTROLLING NORMALLY. [Step 2.3.8]
Examiner Note:		**Applicant may identify Technical Specification Table 3.3.2-1, Function 4.d.2, for tracking purposes as this Function is applicable only in MODE 3.**

Operating Test :	NRC	Scenario #	1	Event #	2	Page	10	of	33
Event Description:	Steam Line Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
	US	EVALUATE Technical Specifications. [Step 2.3.11]
		• LCO 3.3.2.D, ESFAS Instrumentation (Function 1.e, 4.d.1, & 4.d.2 – Steam Line Pressure Low).
		• CONDITION D – One channel inoperable. • ACTION D.1 – Place channel in trip within 72 hours, OR • ACTION D.2.1 – Be in MODE 3 within 78 hours, AND • ACTION D.2.2 – Be in MODE 4 within 84 hours.
	US	INITIATE a SMART Form per STA-421. [Step 2.3.12]
+10 min	US	INITIATE repairs per STA-606. [Step 2.3.13]
When control of Feedwater is restored, or at Lead Examiner discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	1	Event #	3	Page	11	of	33
Event Description:	Pressurizer Level Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 3 (Key 3). - RX05A, Pressurizer Level Transmitter (LT-459) fails low.		
Indications Available: **5B-1.4 – PRZR HTR GRP C CTRL TRBL** **5B-3.6 – PRZR LVL LO** **5C-1.2 – PRZR LVL DEV LO** **6A-3.8 – CVCS HELB PT-5358A** **6A-4.8 – CVCS HELB PT-5358** **1-LI-459A, PRZR LVL CHAN I indication failed low**		
+30 sec	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE PZR level lowering and REPORT Pressurizer Level Channel I (LT-459) failed low.
	US	DIRECT performance of ABN-706, Pressurizer Level Instrumentation Malfunction, Section 2.0.
CAUTION: To avoid thermal shock of the reactor coolant piping, the letdown flow should not be stopped without also stopping the charging flow when the reactor coolant temperature is greater than 350°F. NOTE: Channels 459 and 460 are normally the controlling channels.		
	RO	PLACE PZR Level Control **or** Charging Flow in MANUAL to maintain level on program using one of the following controllers: [Step 2.3.1]
		• 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. [Step 2.3.2]
	RO/BOP	TRANSFER 1/1-LS-459E, 1/1-LR-459 PZR Level Select to an OPERABLE channel. [Step 2.3.3]

Operating Test :	NRC	Scenario #	1	Event #	3	Page	12	of	33
Event Description:	Pressurizer Level Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
	RO	VERIFY Normal Letdown aligned. [Step 2.3.4]
Examiner Note: Letdown flow is re-established using ABN-706, Attachment 6, or the Letdown Restoration Job Aid.		
	RO	When Pressurizer level is greater than 17%, RESTORE Letdown per Attachment 6. [Step 2.3.4 RNO]
		• OPEN or VERIFY OPEN Letdown Isolation Valves 1/1-LCV-460 & 1/1-LCV 459. [Step 1]
		• Manually OPEN 1-PK-131, LTDN HX OUT PRESS CTRL to 30% (75 GPM) or 50% (120 GPM) DEMAND. [Step 2]
		• Manually OPEN 1-TK-130, LTDN HX OUT TEMP CTRL to 50% DEMAND. [Step 3]
		• ADJUST Charging to desired flow and MAINTAIN Seal Injection flow between 6 and 13 GPM. [Step 4]
		• OPEN selected Orifice Isolation Valves. [Step 5]
		• 1/1-8149A, LTDN ORIFICE ISOL VLV (45 GPM) • 1/1-8149B, LTDN ORIFICE ISOL VLV (75 GPM) • 1/1-8149C, LTDN ORIFICE ISOL VLV (75 GPM)
		• ADJUST 1-PK-131, LTDN HX OUT PRESS CTRL to ~310 psig on 1-PI-131, LTDN HX OUT PRESS then PLACE in AUTO. [Step 6]
		• ADJUST 1-TK-130, LTDN HX OUT TEMP CTRL to obtain ~95ºF on 1-TI-130, LTDN HX OUT TEMP, then PLACE in AUTO. [Step 7]
	RO	RESET PZR Control Heater Group C. [Step 2.3.5]
	RO	RESTORE PZR Level Control **or** Charging Flow Control to AUTO as desired. [Step 2.3.6]
	US/RO	VERIFY other instruments on common instrument line – NORMAL. [Step 2.3.7]
		• VERIFY Loop 1 Instrument PT-455 responding normally per Attachment 1.

Operating Test :	NRC	Scenario #	1	Event #	3	Page	13	of	33
Event Description:	Pressurizer Level Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
	US	EVALUATE Technical Specifications. [Step 2.3.10]
		• LCO 3.3.1.M, Reactor Trip System Instrumentation (Function 9 – Pressurizer Water Level - High).
		• CONDITION M – One channel inoperable. • ACTION M.1 – Place channel in trip within 72 hours, OR • ACTION M.2 – Reduce THERMAL POWER to < P-7 within 78 hours.
	US	INITIATE repairs per STA-606. [Step 2.3.11]
+10 min	US	INITIATE a SMART Form per STA-421. [Step 2.3.12]
When Letdown flow has been restored and Technical Specifications have been addressed, or at Lead Examiner discretion, PROCEED to Event 4.		

Operating Test :	NRC	Scenario #	1	Event #	4	Page	14	of	33
Event Description:	Heater Drain Pump Trip / Automatic Turbine Runback Failure								

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When directed, EXECUTE Event 4 (Key 4). **- FW14B, Heater Drain Pump (1-02) trip.** **- TC09I, Auto Turbine Runback failure.**
		Indications Available: **9A-1.2 – HDP 1/2 OVRLOAD / TRIP** **8B-2.8 – CNDS LP HTR BYP TRBL** **8B-3.8 – CNDS LP HTR BYP VLV OPEN PV-2286** **8B-4.8 – TURB GLND STM CNDSR CNDS FLO HI** **6D-1.9 – ANY TURB RUNBACK EFFECTIVE (when Manual Runback initiated)** **6D-1.10 – AVE T_{AVE}-T_{REF} DEV (when Manual Runback initiated)** **1-HS-2603, HDP 2 TRIP light LIT** **Steam Dump System Group 1 Valves OPEN** **Control Rods stepping IN**
+30 sec	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE trip of Heater Drain Pump 1-02 with no Automatic Turbine Runback.
	US	DIRECT performance of ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, Section 4.0.
		Examiner Note: Diamond steps (◊) are Initial Operator Actions.
		CAUTION: Using Load Target to reduce load without rods in AUTO can result in excessive TAVE-TREF mismatch before C-7 activates. This mismatch may cause an SI when steam dumps trip open. NOTE: • Diamond step 1 denotes Initial Operator Actions. • Automatic runback to 70% is approximately 812 MW.
	◊ RO/BOP ◊	VERIFY automatic plant response. [Step 4.3.1]
	◊ RO ◊	• VERIFY Control Rods in – AUTO.
	◊ BOP ◊	• VERIFY Turbine Runback – IN PROGRESS.

Operating Test :	NRC	Scenario #	1	Event #	4	Page	15	of	33
Event Description:	Heater Drain Pump Trip / Automatic Turbine Runback Failure								

Time	Position	Applicant's Actions or Behavior
	◊ RO/BOP ◊	• If Turbine Power is > approximately 800 MWe, PERFORM the following: [Step 4.3.1 RNO].
	◊ RO ◊	• PLACE 1/1-RBSS, CONTROL ROD BANK SELECT in AUTO. [Step 4.3.1.a RNO].
	◊ BOP ◊	• ENSURE Turbine Runback to 700 MWE initiated. [Step 4.3.1.b RNO]
		• DEPRESS "700 MWe" MANUAL RUNBACK button.
		• CLICK on "0/1" button.
		• CLICK on "Execute" then VERIFY Manual Runback in progress.
Simulator Operator: When contacted, REPORT an instantaneous ground overcurrent 50N relay on breaker for Heater Drain Pump 1-02		
	BOP	VERIFY Main Feed Flow to Steam Generators. [Step 4.3.2]
		• Main Feed Pump – AT LEAST ONE RUNNING. [Step 4.3.2.a]
		• Main Feedwater pump suction pressure – GREATER THAN 250 PSIG. [Step 4.3.2.b]
NOTE: Differential pressure between feedwater and steamline may decrease following a Turbine Runback. The following computer points may aid the operator: • U5002A FW-MS HDR DP • U5003A DELTA PROGRAM-ACTUAL DP • P5446A FW STM FLOW SETPOINT		
		• Feedwater header pressure – MAINTAINED GREATER THAN MAIN STEAM HEADER PRESSURE. [Step 4.3.2.c]
		• Main Feedwater – ALIGNED. [Step 4.3.2.d]
	BOP	VERIFY Steam Generator water level – STABLE OR TRENDING TO NORMAL OPERATING RANGE. [Step 4.3.3]

Operating Test :	NRC	Scenario #	1	Event #	4	Page	16	of	33
Event Description:	Heater Drain Pump Trip / Automatic Turbine Runback Failure								

Time	Position	Applicant's Actions or Behavior
		NOTE: Control Rod insertion should be allowed to continue even if ΔI is outside the band. Continued rod insertion is required to return Tave to Tref as soon as possible so that steam demand is reduced.
	BOP	VERIFY T_{AVE} – TRENDING TO T_{REF}. [Step 4.3.4]
		CAUTION: Reactor power must be established at a value within the capability of available feedwater. Auxiliary feedwater pumps can supply approximately 6% reactor power.
	RO/BOP	STABILIZE Reactor power using one or more of the following: [Step 4.3.5]
		• Control Rods / Steam Dumps / Boration / Turbine Load.
	BOP	VERIFY Steam Generator Feedwater Flow Control Valves – IN AUTO. [Step 4.3.6]
	RO	VERIFY the following: [Step 4.3.7]
		• Control Rods – ABOVE ROD INSERTION LIMIT. [Step 4.3.7.a]
		• VERIFY SDM or initiate boration to restore SDM within 1 hour and restore Rods above insertion limits with 2 hours per TS 3.1.6. [Step 4.3.7.a RNO]
		• Δ Flux – (AFD) WITHIN LIMITS. [Step 4.3.7.b]
Examiner Note:		**Events during this scenario will result in exceeding the Rod Insertion Limits (RIL). The RO should inform the SRO when ALB-6D, Window 2.7 – ANY CONTROL ROD BANK AT LO-LO LIMIT is LIT. Technical Specifications must be referenced.**
	US	EVALUATE Technical Specifications.
		• LCO 3.1.6.A, Control Bank Insertion Limits.

Time	Position	Applicant's Actions or Behavior
		• CONDITION A - Control bank insertion limits not met. • ACTION A.1.1 - Verify SDM to be within the limits provided in the COLR within one hour, OR • ACTION A.1.2 - Initiate Boration to restore SDM to within limit within one hour, AND • ACTION A.2 - Restore control bank(s) to within limits within 2 hours.
	BOP	WHEN steam dumps have closed, THEN reset steam dump arming signal (C-7 interlock). [Step 4.3.8]
		• 43/1-SD, STM DMP MODE SELECT.
Examiner Note: LP Feed Heater Bypass Valve closure is not performed due to time constraints.		
	BOP	VERIFY 1-HS-2286, Low Pressure Feedwater Heater Bypass Valve – CLOSED. [Step 4.3.9]
	US	NOTIFY QSE Generation Controller. [Step 4.3.10]
	US	INITIATE repairs per STA-606. [Step 4.3.11]
	US	CHECK Chemistry Sampling Requirement: [Step 4.3.12]
		• VERIFY SG Atmospheric Relief Valves – REMAINED CLOSED AND TDAFW Pump – REMAINED STOPPED. [Step 4.3.12.a]
		• VERIFY Reactor Power change – LESS THAN 15% RTP WITHIN ONE HOUR. [Step 4.3.12.b]
	US	• NOTIFY Chemistry to perform RCS Isotopic analysis for iodine between 2 and 6 hours after power change. [Step 4.3.12.b RNO]
Examiner Note: Reset of Turbine Runback is not performed due to time constraints.		
	US	RESET Turbine Runback per ABN-401. [Step 4.3.13]
When Chemistry has been notified, PROCEED to Events 5, 6, 7, and 8.		

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	18	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Events 5, 6, 7, and 8 (Key 5). **- ED01, Loss of Offsite Power.** **- EG06A, Train A Emergency Diesel Generator start failure.** **- EG16B, Train B Emergency Diesel Generator Output Breaker failure.** **- OVRDE, EDG 1-02 Output Breaker failure.** **- WDR04, Pressurizer Steam Space Sample Valves fail to Auto Close.** **- MS13A, PT-2325 fails low.**		
Indications Available: **Numerous Reactor Trip and Loss of Offsite Power Alarms.**		
+10 sec	RO/BOP	RECOGNIZE Reactor Trip due to Loss of Offsite Power.
Simulator Operator: When Unit 1 trips, ANNOUNCE Unit 2 Reactor Trip.		
Examiner Note: Crew may recognize a Loss of All AC Power event in progress and immediately enter ECA-0.0A as opposed to EOP-0.0A.		
Examiner Note: EOP-0.0A, Reactor Trip or Safety Injection steps begin here.		
	US	DIRECT performance of EOP-0.0A, Reactor Trip or Safety Injection or ECA-0.0A, Loss of All AC Power.
	RO	VERIFY Reactor Trip: [Step 1]
		• VERIFY Reactor Trip Breakers – OPEN. [Step 1.a]
		• VERIFY Neutron flux – DECREASING. [Step 1.a]
		• VERIFY all Control Rod Position Rod Bottom Lights – ON. [Step 1.b]
	BOP	VERIFY Turbine Trip: [Step 2]
		• VERIFY all HP Turbine Stop Valves – CLOSED. [Step 2]
	BOP	VERIFY Power to AC Safeguards Buses: [Step 3]
		• VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 3.a]

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	19	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
		• GO to ECA-0.0A, Loss of All AC Power, Step 1. [Step 3.b]
Examiner Note: ECA- 0.0A, Loss of All AC Power steps begin here.		
NOTE: CSF Status Trees should be monitored for information only. FRGs should not be implemented.		
	RO	VERIFY Reactor Trip: [Step 1]
		• VERIFY Reactor Trip Breakers – AT LEAST ONE OPEN. [Step 1]
		• VERIFY Neutron flux – DECREASING. [Step 1]
	BOP	VERIFY Turbine Trip: [Step 2]
		• VERIFY all HP Turbine Stop Valves – CLOSED. [Step 2]
CRITICAL TASK STATEMENT		**Isolate Reactor Coolant System Leakage Paths in accordance with ECA-0.0A, Loss of All AC Power.**
	RO	CHECK If RCS Is Isolated: [Step 3]
	RO	• CHECK Letdown Isolation Valves – CLOSED. [Step 3.a]
		• 1/1-LCV-459 and 1/1-LCV-460
Examiner Note: The Letdown Isolation Valves are interlocked with the Letdown Orifice Isolation Valves. The Letdown Isolation Valves cannot be closed until the Letdown Orifice Isolation Valves are closed.		
CRITICAL TASK	RO	• CLOSE Letdown Isolation Valves. [Step 3.a RNO]
		• PLACE 1/1-8149A AND 1/1-8149B, Letdown Orifice Isolation Valves in CLOSE.
		• PLACE 1/1-LCV-459 AND 1/1-LCV-460, Letdown Isolation Valves in CLOSE. [Step 3.a RNO]

Operating Test : NRC	Scenario # 1	Event # 5, 6, 7, & 8	Page 20 of 33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure		

Time	Position	Applicant's Actions or Behavior
	RO	• CHECK Pressurizer Power Operated Relief Valves – CLOSED. [Step 3.b]
	RO	• CHECK Excess Letdown Isolation Valves – CLOSED. [Step 3.c]
		• 1/1-8153 and 1/1-8154
	RO	• CHECK Primary Sample System Isolation Valves – CLOSED. [Step 3.d]
		• 1/1-4165A and 1/1-4167A
CRITICAL TASK	RO	• CLOSE Primary Sample System Isolation Valves. [Step 3.d RNO]
		• PLACE 1-HS-4165A, Primary Sample System Isolation Valve in CLOSE. [Step 3.d RNO]
		• PLACE 1-HS-4167A, Primary Sample System Isolation Valve in CLOSE. [Step 3.d RNO]
	RO/BOP	VERIFY AFW Flow – GREATER THAN 460 GPM. [Step 4]
<u>Examiner Note</u>: The Unit Supervisor can attempt to restore power to either train. Steps for Train B power restoration are listed first since that EDG is running.		
	BOP	RESTORE Power to Any AC Safeguards Bus: [Step 5]
		• ENERGIZE selected AC Safeguards Bus with Diesel Generator. [Step 5.a]
		• VERIFY Diesel Generator 1-02 – RUNNING. [Step 5.a.1)]
CRITICAL TASK STATEMENT		**Emergency Stop Train B Diesel Generator within 15 minutes of Breaker Failure in accordance with ECA-0.0A, Loss of All AC Power.**
		• CHECK Diesel Generator 1-02 Output Breaker – CLOSED. [Step 5.a.2)]
	BOP	• Manually CLOSE Diesel Generator 1-02 Output Breaker. [Step 5.a.2.A) RNO]
	BOP	• PLACE SS-1EG2, BKR 1EG2 Synchroscope ON.
	BOP	• PLACE CS-1EG2, DG 2 BKR 1EG2 to CLOSE.

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	21	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	• If Diesel Generator 1-02 Output Breaker NOT closed, PERFORM Emergency Start on Diesel Generator 1-02. [Step 5.a.2.B) RNO]
CRITICAL TASK	BOP	• If Train B Safeguards Bus NOT energized, PLACE Diesel Generator 1-02 EMER STOP/START switch in PULL-OUT and GO to Step 5b. [Step 5.a.2.C) RNO]
	BOP	• ENERGIZE remaining AC Safeguards Bus with Diesel Generator. [Step 5.b]
		• VERIFY Diesel Generator 1-01 – RUNNING. [Step 5.b.1)]
	BOP	• PERFORM Emergency Start on Diesel Generator 1-01. [Step 5.b.1.A) RNO]
	BOP	• PERFORM Normal Start on Diesel Generator 1-01. [Step 5.b.1.B) RNO]
	US	• DETERMINE Diesel Generator 1-01 – NOT RUNNING and GO to Step 5c. [Step 5.C) RNO]
Simulator Operator: When contacted, REPORT EDG 1-01 has an air start failure and EDG 1-02 has breaker failure indications. Field Support is investigating.		
Examiner Note: The BOP is directed to ABN-601, Response to a 138/345 KV System Malfunction, Section 6.0, Loss of All Offsite and Onsite AC Power. Those steps are located at the end of the scenario.		
	US	• VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 5.c]
		• ENERGIZE Safeguards Bus per ABN-601, Response to a 138/345 KV System Malfunction or ABN-602 Response to a 6900/480 V System Malfunction and continue with this procedure. [Step 5.c.1) RNO]
	US	• GO to Step 6 and OBSERVE CAUTIONS Prior to Step 6. [Step 5.c.2) RNO]

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	22	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
		CAUTION: A loss of all AC power will result in a loss of normal plant lighting, possible loss of security door card readers and possible increases in area temperatures. Review plant conditions prior to having operator perform local actions. Notify Plant Staff of intentions if time permits.
		CAUTION: A loss of all AC power will affect normal egress from the Containment Building. Attachment 9 of EOP-0.0A, REACTOR TRIP OR SAFETY INJECTION provides instruction to evacuate personnel from Containment during a Loss of All AC Power.
	US	When Power Is Restored to Any Safeguards Bus, CONTINUE Recovery Actions Starting with Step 26. [Step 6]
Examiner Note:		**At this point, Safety Injection (SI) will not be actuated. When SI actuates, the crew will return to Steps 7.b, c, & d and perform reset of SI and SI Sequencers.**
	RO	CHECK Safety Injection Signal Status: [Step 7]
		• VERIFY Safety Injection – ACTUATED. [Step 7.a]
		• CONTINUE with Step 8. [Step 7.a RNO]
		• When SI is actuated, PERFORM Steps 7.b, 7.c, & 7.d. [Step 7.a RNO]
	RO	• VERIFY Reactor Trip Breakers – OPEN. [Step 7.b]
	RO/BOP	• RESET Safety Injection. [Step 7.c]
		• DEPRESS 1/1-SIRA, TRAIN A SI RESET pushbutton.
		• DEPRESS 1/1-SIRB, TRAIN A SI RESET pushbutton.
	RO/BOP	• RESET Safety Injection Sequencers. [Step 7.d]
		• At SI Sequencer Train A Cabinet, DEPRESS SI SEQR RESET green pushbutton then PLACE ON/RESET toggle switch in RESET.
		• PLACE ON/RESET toggle switch in ON.

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	23	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
		• At SI Sequencer Train B Cabinet, DEPRESS SI SEQR RESET green pushbutton then PLACE ON/RESET toggle switch in RESET.
		• PLACE ON/RESET toggle switch in ON.
Simulator Operator: When contacted to locally break Condenser vacuum, EXECUTE remote functions FWR071, FWR072, & FWR073 to open Auxiliary and Main Condenser Vacuum Breaker Isolation Valves (Key 12).		
Simulator Operator: When contacted to Manually Isolate the MSIVs, EXECUTE remote functions MSR15 (Key 13).		
Examiner Note: When Safety Injection and the SI Sequencers are properly RESET, Annunciator 1-ALB-2B, Window 2.8 – SFGD SEQR TRN A/B AUTO TEST TRBL, will RESET.		
CAUTION: An SSW pump should be kept available to automatically load on its AC safeguards bus to provide diesel generator cooling.		
	RO/BOP	PLACE Following Equipment Switches in PULL-OUT: [Step 8]
		• Safety Injection Pumps
		• Containment Spray Pumps
		• Containment Spray Heat Exchanger Outlet Valves
		• Containment Fan Coolers
		• Component Cooling Water Pumps
		• Safety Chilled Water Recirc Pumps
		• Residual Heat Removal Pumps
		• Centrifugal Charging Pumps
		• Motor Driven Auxiliary Feedwater Pumps
		• Control Room Air Conditioning Units without power available
		• Ventilation Chilled Water Recirc Pumps without power available

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	24	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
	US	DISPATCH Personnel to Locally Restore AC power per ABN-601, Response to a 138/345 KV System Malfunction or ABN-602 Response to a 6900/480 V System Malfunction while continue with this procedure. [Step 9]
Simulator Operator: When contacted, EXECUTE remote functions CVR21 thru 25 to isolate RCP Seal Water flow and EXECUTE remote function CCR10 to isolate Thermal Barrier Cooler cooling water (Key 10).		
	US	DISPATCH Personnel to Locally Isolate RCP Seals. [Step 10]
		• 1/1-8100, RCP Seal Water Return Isolation Valve
		• 1CS-8369A, RCP Seal Injection Throttle Valve
		• 1CS-8369B, RCP Seal Injection Throttle Valve
		• 1CS-8369C, RCP Seal Injection Throttle Valve
		• 1CS-8369D, RCP Seal Injection Throttle Valve
		• 1-HV-4709, Thermal Barrier Cooler CW Return Isolation Valve
Simulator Operator: When contacted, EXECUTE remote functions FWR077 and FWR078 to CLOSE Condensate Storage Tank Discharge Valves (Key 11).		
	RO/BOP	VERIFY Condensate Storage Tank Isolated from Hotwell: [Step 11]
		• Locally ENSURE CST Discharge Valves – CLOSED.
		• 1-HV-2484 and 1-HV-2485
	RO/BOP	CHECK SG Status: [Step 12]
		• VERIFY Main Steam Isolation Valves – CLOSED. [Step 12.a]
		• VERIFY Main Feedwater Control and Bypass Valves – CLOSED. [Step 12.b]
		• VERIFY Blowdown and Sample Isolation Valves – CLOSED. [Step 12.c]
		• VERIFY Upstream Main Steam Drippot Isolation Valves – CLOSED. [Step 12.d]

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	25	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
		CAUTION: A faulted or ruptured SG that is isolated should remain isolated. Steam supply to the TDAFW pump must be maintained from at least one SG.
	RO/BOP	CHECK If Any SG Is Faulted: [Step 13]
		• CHECK any SG Pressure – DECREASING IN AN UNCONTROLLED MANNER. [Step 13.a]
		• CHECK any SG – COMPLETELY DEPRESSURIZED. [Step 13.a]
	US	• GO to Step 14. [Step 13 RNO]
	RO/BOP	CHECK if SG Tubes are Ruptured: [Step 14]
		• CHECK Steam Generator Level – INCREASING IN AN UNCONTROLLED MANNER. [Step 14]
	US	• CONTINUE with Step 15. OBSERVE CAUTION and NOTE Prior to Step 15. [Step 14 RNO]
		CAUTION: Damage to a Turbine Driven AFW Pump may result from continuous operation (more than 20 minutes) at flows less than 130 gpm.
		NOTE: The TDAFW pump flow control valve (1-HV-2459, 2460, 2461, and 2462) accumulators have only a thirty (30) minute air supply. These are fail open valves. If flow needs to be adjusted, then refer to Attachment 6 to attain local control.
	RO/BOP	CHECK Intact SG Levels: [Step 15]
		• SG Narrow Range Level – GREATER THAN 43% (50% for ADVERSE CONTAINMENT). [Step 15.a]

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	26	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
		• CONTROL AFW flow to maintain narrow range level between 43% (50% for ADVERSE CONTAINMENT) and 60%.[Step 15.b]
Examiner Note: ECA-0.0A, Attachment 2, DC Load Shedding is performed by Field Support.		
	RO/BOP	CHECK DC Bus Loads: [Step 16]
		• INITIATE Shedding of DC Loads per Attachment 2. [Step 16.a]
		• VERIFY voltage – GREATER THAN 110 VOLTS. [Step 16.a]
	RO/BOP	CHECK Condensate Storage Tank Level – GREATER THAN 10%. [Step 17]
CAUTION: SG pressures should not be decreased to less than 170 psig to prevent injection of accumulator nitrogen into the RCS.		
CAUTION: SG narrow range level should be maintained greater than 43% (50% FOR ADVERSE CONTAINMENT) in at least one intact SG. If level cannot be maintained, SG depressurization should be stopped until level is restored in at least one SG.		
NOTE: Depressurization of SGs will result in SI actuation. SI should be reset to permit manual loading of equipment on AC safeguards bus.		
NOTE: PRZR level may be lost and reactor vessel upper head voiding may occur due to depressurization of SGs. Depressurization should not be stopped to prevent these occurrences.		

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	27	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When the SG depressurization is underway, Field Support will contact the Control Room and report fuses inside the Train B Diesel Generator Output Breaker have been replaced and the Diesel Generator is ready to be started.		
Simulator Operator: When the SG depressurization is underway, REMOVE malfunction EG16B and REPORT as Field Support that EDG 1-02 is ready for starting (Key 7).		
CRITICAL TASK STATEMENT		**Initiate an Operator Induced Cooldown in accordance with ECA-0.0A, Loss of All AC Power.**
	RO/BOP	DEPRESSURIZE Intact SGs to 270 PSIG. [Step 18]
		• CHECK SG Narrow Range Level – GREATER THAN 43% (50% for ADVERSE CONTAINMENT) in at least one SG. [Step 18.a]
		• MAINTAIN cooldown rate in RCS cold legs – LESS THAN 100°F / HR. [Step 18.b]
CRITICAL TASK		• MANUALLY dump steam using SG atmospheric(s). [Step 18.c]
		• PLACE SG Atmospheric Relief Valve 1-01 in MANUAL and INCREASE demand.
		• PLACE SG Atmospheric Relief Valves 1-02, 1-03, & 1-04 in MANUAL and INCREASE demand.
		• CHECK SG pressures – LESS THAN 270 PSIG. [Step 18.d]
		• MANUALLY control SG atmospheric(s) to maintain SG pressures at 270 PSIG. [Step 18.e]
	BOP	PERFORM Emergency Start on Diesel Generator 1-02.
		• VERIFY Diesel Generator 1-02 – RUNNING.
		• CHECK Diesel Generator 1-02 Output Breaker – CLOSED
Examiner Note: When power is restored to the Train B Safeguards Bus a transition to ECA-0.0A, Step 26 should be made.		
	US	When Power Is Restored to Any Safeguards Bus, CONTINUE Recovery Actions Starting with Step 26. [CONTINUOUS ACTION STEP]

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	28	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
	RO/BOP	STABILIZE Steam Generator pressures: [Step 26]
		• Manually CONTROL SG atmospheric(s). [Step 26.a]
When Steam Generator pressures are stabilized, TERMINATE the scenario.		

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	29	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
		Examiner Note: The following steps are from ABN-601, Section 6.0. These steps are performed in preparation for restoring onsite and/or offsite power.
		CAUTION: Loads shall not be placed on offsite power without the TGM Transmission Grid Controller's concurrence.
		NOTE: Security card readers are equipped with a one hour battery pack. Entry into areas after this time may require use of hard keys which may be obtained from the Key Control Facility (KCF) located at PAP. In addition, loss of normal lighting and ventilation may require use of portable lighting or heat stress equipment while performing local actions.
	BOP	CHECK the unit in MODES 1, 2, 3, or 4. [Step 6.3.1]
		NOTE: • Immediately following shutdown, there is a delay of approximately 2 minutes before the DG will accept a Normal start. This time delay is associated with the DG pneumatic logic board and may be over-ridden with an Emergency Start. • Performance of an Emergency Start will allow the DG breaker to automatically close on a phase to ground bus fault (LOR 86-2/uEA1 or 86-2/uEA2). The DG breaker will not automatically close and can not be manually closed on a phase to phase bus fault (LOR 86-1/uEA1 or 86-1/uEA2). • When a fault exists on the 6.9 KV safeguard bus, the SSW pump will not be running to supply cooling water to the DG. The time this condition exists should be minimized (approximately 15 minutes) to prevent damage to the DG.
	BOP	RESTORE Power to Any 6.9 KV Safeguards Bus: [Step 6.3.2]
		• VERIFY at least one 6.9 KV Safeguards Bus – ENERGIZED. [Step 6.3.2.e]
		• INITIATE Attachment 15, Secondary System Shutdown Following a Loss of Power. [Step 6.3.2.e.2 RNO]
		• GO to Step 3. [Step 6.3.2.e.3 RNO]

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	30	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**The following steps are from ABN-601, Attachment 15. The BOP may pass off the entire Attachment to the Field Support team.**
	BOP	ENSURE Turbine – TRIPPED. [Step 1]
	BOP	CLOSE Main Steam Isolation Valves as follows: [Step 2]
		• CLOSE Main Steam Isolation Valves. [Step 2.a]
		• DISPATCH operator to locally isolate MSIVs air solenoids. [Step 2.b]
		• LOCALLY drain MSIV upstream drip pots. [Step 2.c]
		• VERIFY Feedwater Isolation Bypass Valves upstream manual isolations – CLOSED. [Step 2.d]
	BOP	VERIFY Emergency DC Seal Oil Pump – RUNNING. [Step 3]
Examiner Note:		**Additional actions in ABN-601, Attachment 15 will be performed by the Field Support team. ABN-601, Section 6.0 steps are continued here.**
		NOTE: • If CPNPP loses voltage on all switchyard buses AND incoming transmission lines, it must be assumed that there is a system wide blackout. Per the Black Start Plan, Transmission personnel should be dispatched to prepare the switchyard for re-energization. To ensure a timely response, the TGM Transmission Grid Controller will need an accurate status of the CPNPP switchyard, facilities, **AND** Emergency Diesel Generators. The Black Start Plan will normally energize the 138 KV transmission system first (See Attachment 18), **therefore actions necessary to assess XST1 status should be given highest priority.** • The Emergency Notification System is part of the site PBX system. On loss of power, the PBX system is backed up by a four hour battery power supply. There are also telephone circuits available which are powered from offsite (Somervell County) and radio communications with battery backup. Alternate or backup options for communications are specified in EPP-202 and/or Position Assistance Documents. Distribution Panel 1C1 supplies the Center Desk receptacles which provide power to the Fax machine, computers and copy machine. These items may not be available for emergency response.
	BOP	CHECK Switchyard Bus Status – ALL ENERGIZED. [Step 6.3.3]

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	31	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
		• V-E BUS, 345 KV E. BUS VOLT (CB-12) - BETWEEN 340 KV and 361 KV. [Step 6.3.3.a]
		• V-W BUS, 345 KV W. BUS VOLT (CB-12) - BETWEEN 340 KV and 361 KV. [Step 6.3.3.b]
		• V/ST1, START XFMR XST1 138 KV FDR VOLT (CB-12) - BETWEEN 135 KV and 144 KV [Step 6.3.3.c]
	BOP	VERIFY Main Turbine and Feedwater Pump Turbine Emergency DC Lube Oil Pumps – RUNNING. [Step 6.3.4]
	US/SM	REFER to EPP-201 and STA-501. [Step 6.3.5]
		CAUTION: Train A and B UPS A/C units are powered from common MCCs. Although a UPS A/C unit may have power available, a loss of CCW will result in a trip of the UPS A/C compressors due to a high condenser pressure. The UPS A/C units should be checked locally to verify the compressors are operating.
	BOP	DISPATCH operator to locally verify UPS room fan coil units – OPERATING. [Step 6.3.6]
		CAUTION: When power is available to any AC safeguards bus, recovery actions should continue starting with Step 20.
	BOP	PLACE breaker handswitches in PULL-OUT: [Step 6.3.7]
		• CS-1EA1-1, INCOMING BKR 1EA1-1
		• CS-1EA1-2, INCOMING BKR 1EA1-2
		• CS-1EG1, DG 1 BKR 1EG1
		• CS-1EA2-1, INCOMING BKR 1EA2-1
		• CS-1EA2-2, INCOMING BKR 1EA2-2
		• CS-1EG2, DG 2 BKR 1EG2

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	32	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
		NOTE: The Alternate Power Generators are limited to 3 MWs total power.
	BOP	INITIATE actions to restore power to at least one AC safeguards bus from any available source including the following attachments as needed: [Step 6.3.8]
		• Restoration of the Diesel Generator – Attachment 1
		• Restoration of XST1 – Attachment 2
		• Restoration of XST2 OR XST2A – Attachment 3
		• Restoration of the 345 KV Transformer Feeder Line – Attachment 4
		• Restoration from a 6.9 KV Safeguards Bus Fault – Attachment 5
		• SOP-614A/B Alternate Power Generator Operation (if connected)
	BOP	PLACE the following non-safeguards breaker handswitches in PULL-OUT: [Step 6.3.9]
		• CS-1A1-2 INCOMING BKR 1A1-2
		• CS-1A2-2 INCOMING BKR 1A2-2
		• CS-1A3-2 INCOMING BKR 1A3-2
		• CS-1A4-2 INCOMING BKR 1A4-2
	BOP	OPEN the following breakers: [Step 6.3.10]
		• CS-T1B1 XFMR BKR T1B1
		• CS-1B1-1 INCOMING BKR 1B1-1
		• CS-T1B2 XFMR BKR T1B2
		• CS-1B2-1 INCOMING BKR 1B2-1
		• CS-T1B3 XFMR BKR T1B3
		• CS-1B3-1 INCOMING BKR 1B3-1
		• CS-T1B4 XFMR BKR T1B4
		• CS-1B4-1 INCOMING BKR 1B4-1

Operating Test :	NRC	Scenario #	1	Event #	5, 6, 7, & 8	Page	33	of	33
Event Description:	Loss of Offsite Power / Train A Diesel Generator Start Failure / Train B Diesel Generator Output Breaker Failure / Pressurizer Steam Space Sample Valve Failure / Atmospheric Relief Valve Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	When off-site power is available to the 345 KV Switchyard, INITIATE actions to restore power to the AC non-safeguards buses from any available source. [Step 6.3.11]
		• Restoration of the 345 KV Transformer Feeder Line – Attachment 4
		• Restoration 1ST – Attachment 6
		• Restoration 2ST – Attachment 7
		• Restoration from a 6.9 KV Non-Safeguards Bus Fault – Attachment 8
Return to Procedure and step in effect.		

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.:	2	Op Test No.:	Feb 2014 NRC
Examiners:		Operators:			

Initial Conditions: 100% power MOL - RCS Boron is 924 ppm (by sample).

Turnover: Maintain steady-state power conditions.

Critical Tasks:
- Trip Reactor Coolant Pumps within 10 minutes upon a Loss of Subcooling per EOP-0.0A, Reactor Trip or Safety Injection or EOP-1.0A, Loss of Reactor or Secondary Coolant, Foldout Pages. (Event 5)
- Initiate Cooldown of Reactor Coolant System Prior to Exiting EOS-1.2A, Post LOCA Cooldown and Depressurization. (Event 6)
- Manually Initiate Train A and Train B Safety Injection Signal Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection. (Event 7)

Event No.	Malf. No.	Event Type*	Event Description
1 +5 min	RX12	C (BOP, SRO)	Main Steam Header Pressure Transmitter (PT-507) Fails Low.
2 +15 min	RX08A	I (RO, SRO) TS (SRO)	Pressurizer Pressure Channel (PT-455) Fails High.
3 +25 min	RX04C	I (BOP, SRO) TS (SRO)	Steam Generator (1-03) Level Transmitter (LT-553) Fails High.
4 +40 min	AFP 13_89	N (RO, SRO) TS (SRO)	Fire in Auxiliary Building Fire Area AC. Centrifugal Charging Pump (1-02) Manual Start Required.
5 +45 min	RX16A RX16B	C (RO)	Power Operated Relief Valves (PCV-455A/456) Fail Open. Reactor Trip Required.
6 +50 min	RCR23	M (RO, BOP, SRO)	Power Operated Relief Valve Block Valve (1/1-8000A) Fails Open upon Breaker Trip.
7 +55 min	RP07A RP07B	C (RO)	Train A Safety Injection Fails to Automatically Actuate. Train B Safety Injection Fails to Automatically Actuate.
8 +55 min	RH01D	C (BOP)	Residual Heat Removal Pump (1-02) Safety Injection Sequencer Start Failure.

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

Actual	Target Quantitative Attributes
8	Total malfunctions (5-8)
2	Malfunctions after EOP entry (1-2)
4	Abnormal events (2-4)
1	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
0	EOP contingencies requiring substantive actions (0-2)
3	Critical tasks (2-3)

SCENARIO SUMMARY NRC 2

The crew will assume the watch at 100% power with no scheduled activities per IPO-003A, Power Operations.

The first event is a low failure of Main Steam Header Pressure Transmitter (PT-507). The crew enters ABN-709, Steam Header Pressure Instrument Malfunction, Section 3.0, and places the Main Feedwater Pump Master Speed Control in MANUAL and restore required Steam Generator levels. The controller will remain in MANUAL and may require adjustment when the Steam Generator Level Transmitter fails later in the scenario.

The next event is a high failure of a Pressurizer Pressure Channel. Operator actions are per ABN-705, Pressurizer Pressure Malfunction, Section 2.0, and require closing the Power Operated Relief Valve (PORV) and its associated Block Valve, placing the Pressurizer Master Pressure Controller in MANUAL, selecting an alternate controlling Channel, and restoring Pressurizer pressure to normal. The SRO will refer to Technical Specifications.

When plant conditions are stable a high failure of a Steam Generator (1-03) Level Transmitter will occur. Crew actions are per ABN-710, Steam Generator Level Instrumentation Malfunction, Section 2.0, and include placing Steam Generator (SG) Level Control in MANUAL, stabilizing the plant, aligning an Alternate Channel, and transferring SG Level Control back to AUTO. The SRO will refer to Technical Specifications.

When plant parameters are restored to normal, a fire alarm in Auxiliary Building Fire Area AC will be initiated. The crew enters ABN-805A, Response to Fire in the Auxiliary Building or the Fuel Building, Section 3.0. Actions include placing the Train B Centrifugal Charging Pump in service. The fire will continue to spread in the Auxiliary Building resulting in the inadvertent opening of both Power Operated Relief Valves (PORVs) as addressed in ABN-805A, Section 7.0, and will require a manual Reactor Trip.

The crew will enter and perform actions of EOP-0.0A, Reactor Trip or Safety Injection. The Power Operated Relief Valves will fail to close and one PORV Block Valve breaker will trip before the valve closes resulting in a Small Break Loss of Coolant Accident. The crew will then transition from EOP-0.0A to EOP-1.0A, Loss of Reactor or Secondary Coolant, in preparation for an eventual cooldown and depressurization.

The scenario includes a failure of both trains of Safety Injection to automatically actuate along with a Train B Residual Heat Removal Pump that fails to start upon initiation of the Safety Injection Sequencer.

This scenario is terminated when a cooldown is commenced via the Steam Dump Valves in EOS-1.2A, Post LOCA Cooldown and Depressurization.

Risk Significance:

- Failure of risk important system prior to trip: Train A Centrifugal Charging Pump
- Risk significant core damage sequence: Small Break LOCA
- Risk significant operator actions: Manually Initiate Safety Injection
  Trip Reactor Coolant Pumps
  Manually Start Train B RHR Pump
  Initiate RCS Cooldown

Scenario Event Description
NRC Scenario 2

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

INITIALIZE to IC-18 and LOAD LC22 NRC Scenario 2.

EVENT	REM. FUNC.	MALF.	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
SETUP		RP07A	Train A Safety Injection Auto Actuation Failure	FAIL	K0
		RP07B	Train B Safety Injection Auto Actuation Failure	FAIL	K0
		RH01D	RHR Pump (1-02) SI Sequencer Start Failure	FAIL	K0
1		RX12	Main Steam Header (PT-507) Failure	200 psig	K1
2		RX08A	Pressurizer Pressure Channel (PT-455) Failure	2500 psig	K2
3		RX04C	SG (1-03) Level Transmitter (LT-553) Failure	100%	K3
4	AFP 13_89		Fire in Auxiliary Building Fire Area AC	ALARM	K4
4	CVR16A		CCP 1-01 Local Breaker Trip	TRIP**	K5
4	CVR16		CCP 1-01 Pump Breaker Trip	TRIP**	K5
****NOTE: EXECUTE remote function CVR16A first, <u>THEN</u> remote function CVR16.**					
4	CVR05		CCP (1-01) Auxiliary Lube Oil Pump	OFF	K6
4	CVR06		CCP (1-02) Auxiliary Lube Oil Pump	AUTO	K8
5		RX16A	PORV (PCV-455A) Failure	100%	K7
5		RX16B	PORV (PCV-456) Failure	100%	K7
6		RCR23	PORV Block Valve (1/1-8000A) Breaker Failure	OPEN	K7
6	A10B_78		1-ALB-10B, Window 2.20 – SFGD BLDG MCC 1EB-1/1EB-3 ANY MOV OVRLOAD	ALARM	K7
7		RP07A	Train A Safety Injection Auto Actuation Failure	FAIL	K0
7		RP07B	Train B Safety Injection Auto Actuation Failure	FAIL	K0
8		RH01D	RHR Pump (1-02) SI Sequencer Start Failure	FAIL	K0

Scenario Event Description
NRC Scenario 2

Simulator Operator: INITIALIZE to IC-18 and LOAD LC22 NRC Scenario 2.
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE all Control Board Tags are removed.
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 60/90 buttons DEPRESSED on ASD.
ENSURE ASD speakers are ON at half volume.
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 with Bank D at 215 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 #	2	Event #	1	Page	5	of	33
Event Description:	Main Steam Header Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 1 (Key 1). - RX12, Steam Header Pressure Transmitter (PT-507) fails low.		
Indications Available: 8A-1.8 / 2.8 / 3.8 / 4.8 – SG 1 / 2 / 3 / 4 STEAM & FW FLO MISMATCH (may or may not alarm) 1-PI-507 – MS HDR PRESS indication fails low		
+30 secs	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	REPORT PT-507, Steam Header Pressure Channel has failed low.
	US	DIRECT implementation of ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 3.0.
	BOP	CHECK 1-PI-507, MS HDR PRESS indicating LOWER than Main Steam Line Pressure. [Step 3.3.1]
NOTE: Computer point P5446A, FW STM FLOW SETPOINT may aid the operator.		
	BOP	MANUALLY CONTROL Feedwater Pumps. [Step 3.3.2]
		• PLACE 1-SK-509A, FWPT MASTER SPD CTRL in MANUAL. [Step 3.3.2.a]
		• ADJUST 1-SK-509A to maintain Feedwater Header pressure GREATER THAN Main Steam Line pressure. [Step 3.3.2.b]
	BOP	MONITOR Steam Generator Levels: [Step 3.3.3]
		• VERIFY SG levels – STABLE AT OR TRENDING TO NORMAL PROGRAM. [Step 3.3.3.a]
		• VERIFY Feedwater Control Valves – RESPONDING TO DEMAND SIGNAL. [Step 3.3.3.b]
	US	DETERMINE Required Operational Mode of Steam Dumps: [Step 3.3.4]
		• CHECK 43/1-SD, STM DMP MODE SELECT Switch in – T_{AVE}. [Step 3.3.4.a]
		• VERIFY T_{AVE} AND steam pressure – STABLE. [Step 3.3.4.b]

Operating Test :	NRC	Scenario #	2	Event #	1	Page	6	of	33
Event Description:	Main Steam Header Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
Examiner Note: Time constraints will prevent repairs to PT-507. 1-SK-509A, FWPT MASTER SPD CTRL will remain in MANUAL for the duration of the scenario.		
	US	MANUALLY CONTROL 1-SK-509A, FWPT MASTER SPD CTRL to MAINTAIN differential pressure (ramp from 80 psid @ 20% power to 181 psid @ 100% power. [Step 3.3.5]
	US	INITIATE a SMART Form per STA-421. [Step 3.3.6]
+10 min	US	INITIATE repairs per STA-606. [Step 3.3.7]
When plant conditions are stable, or at Lead Evaluator's discretion, PROCEED to Event 2.		

Operating Test :	NRC	Scenario #	2	Event #	2	Page	7	of	33
Event Description:	Pressurizer Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 2 (Key 2). - RX08A, Pressurizer Pressure Channel (PT-455) fails high.		
Indications Available: **5B-1.6 – PRZR LO PRESS PORV 456 BLK** **5B-2.6 – PRZR LO PRESS PORV 455A BLK** **5B-3.1 – PRZR PORV OUT TEMP HI** **5B-4.1 – PRZR ANY SFTY RLF VLV OUT TEMP HI** **5C-1.4 – PORV 455A / 456 NOT CLOSE** **5C-2.1 – PRZR PRESS HI** **5C-3.1 – PRZR 1 OF 4 PRESS HI** **5C-3.3 – PRZR PRESS LO BACKUP HTRS ON** **1-PI-455A, PRZR PRESS CHAN I indication failed high**		
+1 min	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE PRZR pressure lowering.
	US	DIRECT performance of ABN-705, Pressurizer Pressure Malfunction, Section 2.0.
Examiner Note: Diamond steps (◊) are Initial Operator Actions.		
NOTE: • Diamond steps denote initial action. • A PORV is not considered INOPERABLE when its actuation instrumentation is not functioning. • Power should NOT be removed from a block valve closed in accordance with this procedure section.		
	◊ RO ◊	VERIFY PORV – CLOSED. [Step 2.3.1]
	◊ RO ◊	• PLACE 1/1-PCV-455A, PRZR PORV in CLOSE. [Step 2.3.1 RNO]
	◊ RO ◊	• PLACE 1/1-8000A, PRZR PORV BLK VLV in CLOSE. [Step 2.3.1 RNO]
	◊ RO ◊	PLACE 1-PK-455A, PRZR MASTER PRESS CTRL in MANUAL. [Step 2.3.2]
	◊ RO ◊	ADJUST 1-PK-455A for current RCS pressure. [Step 2.3.3]

Operating Test :	NRC	Scenario #	2	Event #	2	Page	8	of	33
Event Description:	Pressurizer Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
	RO	TRANSFER 1/1-PS-455F, PRZR PRESS CTRL CHAN SELECT to an Alternate Controlling Channel. [Step 2.3.4]
	RO	PLACE 1-PK-455A, PRZR MASTER PRESS CTRL in AUTO. [Step 2.3.5]
	RO	VERIFY automatic control restoring Pressurizer pressure to 2235 PSIG. [Step 2.3.6]
	RO	ENSURE valid channel to recorder 1/1-PS-455G, 1-PR-455 PRZR PRESS SELECT. [Step 2.3.7]
	RO	IF necessary, RETURN PORV closed in Step 1 RNO to AUTO and ENSURE it remains CLOSED. [Step 2.3.8]
		• PLACE 1/1-PCV-455A, PRZR PORV in AUTO.
	RO	PLACE 1/1-8000A, PRZR PORV BLK VLV in OPEN. [Step 2.3.9]
	US/RO	Within one hour, VERIFY PCIP Window 2.6 - PRZR PRESS SI BLK PERM P-11 – DARK. [Step 2.3.10]
	US/RO	VERIFY other instruments on common instrument line – NORMAL. [Step 2.3.11]
		• VERIFY Loop 1 Instruments LT-459 responding normally per Attachment 1.
		NOTE: • If the failed channel temperature was reading lower than the substituted channel, then AVE Tave will increase when the channel is defeated due to another channel being substituted for the defeated signal to maintain accurate averaging. • Rod Control is not required to be placed in MANUAL until a Tave loop is defeated using u-TS-412T. As long as a Tave loop is defeated, Rod Control should remain in MANUAL. This does not preclude placing rods in AUTO during rapidly changing transient conditions such as runbacks, etc. as long as rod control is returned to MANUAL when the plant is stabilized. The affected Tave loop does not need to be defeated until just prior to tripping bistables (tripping bistables will cause the N16 and Tave loop to fail low).

Operating Test :	NRC	Scenario #	2	Event #	2	Page	9	of	33
Event Description:	Pressurizer Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
+10 min	US	EVALUATE Technical Specifications. [Step 2.3.14]
		• LCO 3.3.1.E, Reactor Trip System Instrumentation. (Functions 6, Overtemperature N-16 & 8.b, Pressurizer Pressure High)
		• CONDITION E - One channel inoperable. • ACTION E.1 - Place channel in trip within 72 hours, OR • ACTION E.2 - Be in MODE 3 within 78 hours.
		• LCO 3.3.1.M, Reactor Trip System Instrumentation. (Function 8.a, Pressurizer Pressure Low)
		• CONDITION M - One channel inoperable. • ACTION M.1 - Place channel in trip within 72 hours, OR • ACTION M.2 – Reduce THERMAL POWER to < P-7 within 78 hours.
		• LCO 3.3.2.D, ESFAS Instrumentation. (Function 1.d, Pressurizer Pressure Low)
		• CONDITION D - One channel inoperable. • ACTION D.1 - Place channel in trip within 72 hours, OR • ACTION D.2.1 - Be in MODE 3 within 78 hours, AND • ACTION D.2.2 - Be in MODE 4 within 84 hours.
		• LCO 3.3.2.L, ESFAS Instrumentation. (Function 8.b, Pressurizer Pressure P-11)
		• CONDITION L - One or more required channel(s) inoperable. • ACTION L.1 - Verify interlock is in required state for existing unit condition within one hour, OR • ACTION L.2.1 - Be in MODE 3 within 7 hours, AND • ACTION L.2.2 - Be in MODE 4 within 13 hours.
	US	INITIATE a work request per STA-606. [Step 2.3.15]

Operating Test :	NRC	Scenario #	2	Event #	2	Page	10	of	33
Event Description:	Pressurizer Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
+10 min	US	INITIATE a SMART Form per STA-421. [Step 2.3.16]
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	2	Event #	3	Page	11	of	33
Event Description:	Steam Generator Level Channel Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 3 (Key 3). - RX04C, Steam Generator 1-03 Level Channel (LT-553) fails high.		
Indications Available: **8A-3.8 – SG 3 STM & FW FLO MISMATCH** **8A-3.12 – SG 3 LVL DEV** **1-LI-553, SG 3 LVL (NR) CHAN II indication failed high**		
+30 sec	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Steam Generator 1-03 level lowering.
Examiner Note: Steam Generator (SG) Level Channel II failing HIGH will cause the Feedwater Control Valve to CLOSE, thereby lowering SG level. Unit 1 LOW LEVEL REACTOR TRIP is at 38%.		
	US	DIRECT performance of ABN-710, Steam Generator Level Instrumentation Malfunction, Section 2.0.
	BOP	RECOGNIZE Steam Generator 1-03 Level Channel (LT-553) failed high AND VERIFY controlling level channel – FAILED. [Step 2.3.1]
	BOP	PLACE 1-FK-530, SG 3 FW FLO CTRL in MANUAL and CONTROL level. [Step 2.3.2]
	BOP	VERIFY instruments on common instrument line – NORMAL. [Step 2.3.3]
		• VERIFY Loop 3 Instrument FT-533 responding normally per Attachment 1.
		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. [C] • IF preferred level control channel has failed (551, 552, 553, or 554) AND automatic steam generator water level control is restored using alternate level control channel, THEN Step 9 must be completed within 72 hours for required channel protection coincidence.

Operating Test :	NRC	Scenario #	2	Event #	3	Page	12	of	33
Event Description:	Steam Generator Level Channel Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	VERIFY all HI-HI level bistable windows on TSLB-3 for SG 1-03 – DARK. [Step 2.3.4]
		• OBSERVE TSLB-3, Window 1.4 – SG 3 LVL HI-HI LB-539A is DARK.
		• OBSERVE TSLB-3, Window 3.4 – SG 3 LVL HI-HI LB-538A is DARK.
		• OBSERVE TSLB-3, Window 4.4 – SG 3 LVL HI-HI LB-537A is DARK.
		NOTE: Preferred level control channel switch positions are LQY-551, 552, 553, and 554. Alternate level control channel switch positions are LY-519, 529, 539, and 549. IF an alternate level control channel that is selected for control has failed, THEN the preferred level control channel may be substituted for "alternate" in the following steps.
	BOP	VERIFY automatic SG level control – DESIRED: [Step 2.3.5]
		• OBSERVE alternate level control channel 1-LI-539A indication NORMAL. [Step 2.3.5.a]
		• DETERMINE automatic level control desired by Unit Supervisor. [Step 2.3.5.b]
	BOP	SELECT Alternate Channel: [Step 2.3.6]
		• PLACE 1-LS-539C, SG 3 LVL CHAN SELECT to the LY-539 position.
	BOP	VERIFY affected SG level is stable at program level: [Step 2.3.7]
		• OBSERVE Feedwater and Steam flows – MATCHED.
		• OBSERVE Steam Generator Level – STABLE AT PROGRAM.
		NOTE: There is a 15-20 sec lag for input from the alternate channel to be seen by the level control circuit. The level deviation alarm should clear or the operator should wait 15-20 seconds before placing the control valves in automatic after selecting the alternate channel.
	BOP	PLACE 1-FK-530, SG 3 FW FLO CTRL in AUTO and MONITOR operation. [Step 2.3.8]

Operating Test :	NRC	Scenario #	2	Event #	3	Page	13	of	33
Event Description:	Steam Generator Level Channel Failure								

Time	Position	Applicant's Actions or Behavior
	US	EVALUATE Technical Specifications. [Step 2.3.11]
		• LCO 3.3.1.E, Reactor Trip System Instrumentation. (Function 14, Steam Generator Water Level Low-Low)
		• CONDITION E - One channel inoperable. • ACTION E.1 - Place channel in trip within 72 hours, OR • ACTION E.2 – Be in MODE 3 within 78 hours.
		• LCO 3.3.2.D, ESFAS Instrumentation. (Function 6.c, Steam Generator Water Level Low-Low)
		• CONDITION D - One channel inoperable. • ACTION D.1 - Place channel in trip within 72 hours, OR • ACTION D.2.1 - Be in MODE 3 within 78 hours, AND • ACTION D.2.2 - Be in MODE 4 within 84 hours.
		• LCO 3.3.2.I, ESFAS Instrumentation. (Function 5.b, SG Water Level High-High P-14)
		• CONDITION I - One channel inoperable. • ACTION I.1 - Place channel in trip within 72 hours, OR • ACTION I.2 – Be in MODE 3 within 78 hours.
	US	INITIATE a work request per STA-606. [Step 2.3.12]
+10 min	US	INITIATE a SMART Form per STA-421. [Step 2.3.13]
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Event 4.		

Operating Test :	NRC	Scenario #	2	Event #	4	Page	14	of	33
Event Description:	Fire in Auxiliary Building								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Event 4 (Key 4). - AFP13_89, Fire in Auxiliary Building Fire Area AC.		
Indications Available: **Fire Detection Main Control Panel Auxiliary Building Array Auxiliary Building Window 5.8 – UNIT 1 CCP ROOM TRN A**		
+30 secs	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	REPORT fire alarm in the Unit 1 Train A Centrifugal Charging Pump Room.
Simulator Operator: When contacted, REPORT light layer of smoke in the Unit 1 Train A CCP Room. Also REPORT no visible flames or light.		
Examiner Note: The Unit Supervisor may enter ABN-901, Fire Protection System Alarms or Malfunctions prior to entering ABN-805A. ABN-901 provides direction to the specific 800 series ABN.		
	US	DIRECT implementation of ABN-805A, Response to Fire in the Auxiliary Building or the Fuel Building, Section 3.0.
CAUTION: Use of this procedure may result in abnormal configuration. Management review of steps performed is necessary to ensure configuration tracking and restoration.		
	US	VERIFY Reactor Trip – NOT IN PROGRESS. [Step 3.3.1]
	US	REFER to appropriate Fire Preplan Instruction. [Step 3.3.2]
NOTE: IF assessment by the Shift Manager of severity of the fire and the need for plant shutdown concludes this procedure should not be performed, THEN actions should be taken as necessary to place unit in safe condition. Actions should be performed in conjunction with appropriate plant procedures.		
Simulator Operator: When contacted, REPORT as Shift Manager to continue in ABN-805A.		

Time	Position	Applicant's Actions or Behavior
	US	CONSULT with Shift Manager to determine if performance of procedure is necessary based on fire assessment and current plant conditions. [Step 3.3.3]
Simulator Operator: When contacted, REPORT that Shift Manager will address Emergency Plan.		
	US	REFER to EPP-201. [Step 3.3.4]
	US	If required, PERFORM an EMERGENCY START on Diesel Generator 1-01. [Step 3.3.5]
NOTE: • ABN-301 gives guidance in manually controlling functions needed for plant shutdown such as RCS charging flow, Auxiliary Feedwater flow, and RHR cooldown. • Step 6 is a continuous action step.		
	US	If erratic equipment operation occurs, PERFORM ABN-301, Instrument Air System Malfunction, while continuing with this procedure. [Step 3.3.6]
NOTE: STA-124 FPE is NOT required for breaker operations.		
Examiner Note: When it is determined that Train A Centrifugal Charging Pump (CCP) 1-01 must be tripped, the crew should start Train B CCP 1-02.		
Simulator Operator: When contacted, EXECUTE remote function CVR06 (Key 8) for Centrifugal Charging Pump 1-02 Auxiliary Lube Oil Pump.		
Simulator Operator: When contacted, EXECUTE remote functions CVR16A, CCP 1-01 Local Breaker Trip (Key 5) THEN CVR16, CCP 1-01 Pump Breaker Trip (Key 5).		
	RO/BOP	DISPATCH NEO to Train A Switchgear Room to MANUALLY TRIP CCP 1-01 motor breaker AND REMOVE control power fuses. [Step 3.3.7]

Operating Test : NRC	Scenario # 2	Event # 4	Page 16 of 33
Event Description: Fire in Auxiliary Building			

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When contacted, EXECUTE remote function CVR05 (Key 6) for Centrifugal Charging Pump 1-01 Auxiliary Lube Oil Pump.		
	US	EVALUATE Technical Specifications. [Step 3.3.8]
		• 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 next event, opening of both PORVs, is a result of the fire spreading through the Auxiliary Building.		
	US	INITIATE a Condition Report per STA-421. [Step 3.3.9]
When Technical Specifications have been addressed or at Lead Evaluator's discretion, PROCEED to Events 5, 6, 7, and 8.		

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	17	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
Simulator Operator: When directed, EXECUTE Events 5, 6, 7, and 8 (Key 7). **- RX16A, Power Operated Relief Valve (PCV-455A) fails open.** **- RX16B, Power Operated Relief Valve (PCV-456) fails open.** **- RCR23, Power Operated Relief Valve Block Valve (1/1-8000A) fails open.** **- RP07A, Automatic Train A Safety Injection Signal failure.** **- RP07B, Automatic Train B Safety Injection Signal failure.** **- RH01D, Train B RHR Pump Safety Injection Sequencer start failure.**		
Indications Available: **5B-1.6 – PRZR LO PRESS PORV 456 BLK** **5B-2.6 – PRZR LO PRESS PORV 455A BLK** **5B-3.1 – PRZR PORV OUT TEMP HI** **5B-4.1 – PRZR ANY SFTY RLF VLV OUT TEMP HI** **5C-1.4 – PORV 455A / 456 NOT CLOSE**		
+30 secs	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE PRZR pressure LOWERING with heaters OFF and PRZR Spray Valves CLOSED.
	RO	DETERMINE 1/1-PCV-455A and 1/1-PCV-456, PRZR PORVs NOT closed; CLOSE both PORVs.
	RO	DETERMINE 1/1-PCV-455A and 1/1-PCV-456, PRZR PORVs will NOT CLOSE.
	RO	CLOSE 1/1-8000A and 1/1-8000B, PRZR PORV BLK VLVs.
	RO	DETERMINE 1/1-8000A, PRZR PORV BLK VLV will NOT CLOSE.
	RO/BOP	DETERMINE Reactor Trip required and manually TRIP Reactor.
	RO	Manually INITIATE a Reactor Trip.
		• PLACE 1/1-RTC, RX TRIP Switch in TRIP.
	US	DIRECT performance of EOP-0.0A, Reactor Trip or Safety Injection.

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	18	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
Examiner Note: The following steps are from EOP-0.0A, Reactor Trip or Safety Injection.		
	RO	VERIFY Reactor Trip: [Step 1]
		• VERIFY Reactor Trip Breakers – OPEN. [Step 1.a]
		• VERIFY Neutron flux – DECREASING. [Step 1.a]
		• VERIFY all Control Rod Position Rod Bottom Lights – ON. [Step 1.b]
	BOP	VERIFY Turbine Trip: [Step 2]
		• VERIFY all HP Turbine Stop Valves – CLOSED. [Step 2]
	BOP	VERIFY Power to AC Safeguards Buses: [Step 3]
		• VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 3.a]
		• VERIFY both AC Safeguards Buses – ENERGIZED. [Step 3.b]
	RO	CHECK SI status: [Step 4]
	RO	• CHECK if SI is actuated. [Step 4.a]
	RO	• CHECK if SI is required. [Step 4.a RNO]
		• VERIFY Steam Line Pressure < 610 PSIG. [Step 4.a RNO]
		• VERIFY Pressurizer Pressure < 1820 PSIG. [Step 4.a RNO]
		• VERIFY Containment Pressure > 3.0 PSIG. [Step 4.a RNO]
CRITICAL TASK STATEMENT		**Manually Initiate Safety Injection due to Failure to Automatically Actuate Prior to Exiting EOP-0.0A. Reactor Trip or Safety Injection.**
	RO	Manually INITIATE both Trains of Safety Injection. [Step 4.a RNO]
CRITICAL TASK		• PLACE 1/1-SIA2, SI MAN ACT Switch to ACT position at CB-07 and DETERMINE SI has actuated.
		• VERIFY Both Trains SI Actuated: [Step 4.b]
		• SI Actuated blue status light – ON NOT FLASHING.

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	19	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
Examiner Note: EOP-0.0A, Attachment 2 steps performed by BOP are identified later in the scenario. The RCPs may be tripped if subcooling is observed to be < 25ºF.		
CAUTION: A Safety Injection actuation will affect normal egress from the Containment Building. Attachment 9 of this procedure provides instructions to evacuate personnel from the Containment during a Safety Injection actuation.		
NOTE: Attachment 2 is required to be completed before FRGs are implemented.		
CRITICAL TASK STATEMENT		**Trip Reactor Coolant Pumps within 10 minutes upon a Loss of Subcooling per EOP-0.0A, Reactor Trip or Safety Injection, or EOP-1.0A, Loss of Reactor or Secondary Coolant, Foldout Pages.**
	US	CHECK If RCPs Should Be Stopped:
		• VERIFY RCS subcooling less than 25ºF (55ºF FOR ADVERSE CONTAINMENT).
		• VERIFY ECCS Pumps (CCP or SI) – AT LEAST ONE RUNNING.
CRITICAL TASK	RO	• STOP all RCPs.
	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2. [Step 5]
	RO	VERIFY AFW Alignment: [Step 6]
		• VERIFY both MDAFW Pumps – RUNNING. [Step 6.a]
		• PLACE TDAFW Pump in PULLOUT per Foldout Page. [Step 6.b]
		• VERIFY AFW total flow – GREATER THAN 460 GPM. [Step 6.c]
		• VERIFY AFW valve alignment - PROPER ALIGNMENT. [Step 6.d]

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	20	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	RO	VERIFY Containment Spray NOT Required: [Step 7]
		• VERIFY 1-ALB-2B, Window 1-8, CS ACT – NOT ILLUMINATED. [Step 7.a]
		• VERIFY 1-ALB-2B, Window 4-11, CNTMT ISOL PHASE B ACT – NOT ILLUMINATED. [Step 7.a]
		• VERIFY Containment pressure – LESS THAN 18.0 PSIG. [Step 7.a]
		• VERIFY Containment Spray Heat Exchanger Outlet Valves – CLOSED. [Step 7.b]
		• VERIFY Containment Spray Pumps – RUNNING. [Step 7.c]
	RO	CHECK if Main Steam lines should be ISOLATED: [Step 8]
		• VERIFY Containment pressure – GREATER THAN 6.0 PSIG. [Step 8.a]
		• VERIFY Steam Line pressure – LESS THAN 610 PSIG. [Step 8.a]
		• GO to Step 9. [Step 8.a RNO]
	RO	CHECK RCS Temperature: [Step 9]
		• VERIFY RCS Average Temperature – STABLE AT OR TRENDING TO 557°F. [Step 9]
		• If temperature less than 557°F, PERFORM the following: [Step 9 RNO]
		• STOP dumping steam. [Step 9.a RNO]
	RO	CHECK PRZR Valve Status: [Step 10]
		• VERIFY PRZR Safeties – CLOSED. [Step 10.a]
		• VERIFY Normal PRZR Spray Valves – CLOSED. [Step 10.b]
		• VERIFY PORVs – CLOSED. [Step 10.c]
		• If PRZR pressure less than 2235 PSIG, manually CLOSE PORVs. [Step 10.c RNO]
		• If any PORV can <u>NOT</u> be closed, manually CLOSE PORV block valves. [Step 10.c RNO]
		• DETERMINE 1/1-8000A, PRZR PORV block valve will <u>NOT</u> CLOSE. [Step 10.c RNO]

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	21	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		• GO to EOP-1.0A, Loss of Reactor or Secondary Coolant, Step 1. [Step 10.c RNO]
	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.		
CAUTION: Following a high energy line rupture inside containment, the operator should not rely upon steam generator water level indications in any depressurized steam generators.		
NOTE: As PRZR Temperature decreases the error on indicated PRZR level will increase. Attachment 2 may be used to determine actual PRZR level.		
CRITICAL TASK STATEMENT		**Trip Reactor Coolant Pumps within 10 minutes upon a Loss of Subcooling per EOP-0.0A, Reactor Trip or Safety Injection, or EOP-1.0A, Loss of Reactor or Secondary Coolant, Foldout Pages.**
	US	CHECK If RCPs Should Be Stopped: [Step 1]
		• VERIFY RCS subcooling less than 25ºF (55ºF FOR ADVERSE CONTAINMENT). [Step 1.a]
		• VERIFY ECCS Pumps (CCP or SI) – AT LEAST ONE RUNNING. [Step 1.b]
CRITICAL TASK	RO	• STOP all RCPs. [Step 1.c]
	RO/BOP	CHECK if Any Steam Generator Is Faulted: [Step 2]
		• VERIFY any Steam Generator pressure – DECREASING IN AN UNCONTROLLED MANNER. [Step 2.a]
		• GO to Step 3. [Step 2.a RNO]

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	22	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	US	CHECK Intact Steam Generator Levels: [Step 3]
		• VERIFY Narrow range level – GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT). [Step 3.a]
		• CONTROL AFW flow to maintain narrow range level between 43% (50% FOR ADVERSE CONTAINMENT) and 60%. [Step 3.b]
	US	CHECK Secondary Radiation NORMAL: [Step 4]
		• VERIFY Condenser off gas radiation – NORMAL.
		• VERIFY Main Steam Line radiation – NORMAL.
		• VERIFY SG Blowdown Sample Radiation Monitor – NORMAL.
		• VERIFY levels in all Steam Generators – NORMAL.
		CAUTION: If any PRZR PORV opens because of high PRZR pressure, Step 5b should be repeated after pressure decreases to less than the PORV setpoint.
	US	CHECK PRZR PORVs and Block Valves: [Step 5]
		• VERIFY power to Block Valves – AVAILABLE. [Step 5.a]
		• VERIFY PORVs – CLOSED. [Step 5.b]
		• If PRZR pressure less than 2235 PSIG, manually CLOSE PORVs. [Step 5.b RNO]
		• If any PORV can NOT be closed, manually CLOSE PORV block valves. [Step 5.b RNO]
		• VERIFY Block Valves – AT LEAST ONE OPEN. [Step 5.c]
		• Manually OPEN one PRZR PORV block valve unless it was closed to isolate an open PORV. [Step 5.c RNO]
	US/RO	CHECK if ECCS Flow Should Be Reduced: [Step 6]
		• VERIFY Secondary heat sink conditions – SATISFIED. [Step 6.a]
		• VERIFY total AFW flow to Intact SGs – GREATER THAN 460 GPM.
		• VERIFY intact SG NR level – GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT).

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	23	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		• VERIFY RCS subcooling – GREATER THAN 25°F (55°F FOR ADVERSE CONTAINMENT). [Step 6.b]
		• GO to Step 7 and OBSERVE CAUTIONS prior to Step 7. [Step 6.b RNO]
		CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.
		CAUTION: When time permits, Attachment 9 of EOP-0.0A, REACTOR TRIP OR SAFETY INJECTION should be performed to realign equipment after an SI signal has been reset.
	RO/BOP	RESET ESF Actuation Signals. [Step 7]
	RO/BOP	• PLACE both EDG EMERG STOP/START handswitches in START. [Step 7.a]
Examiner Note:		**When Safety Injection and SI Sequencers are properly RESET, Annunciator 1-ALB-2B, Window 2.8 – SFGD SEQR TRN A/B AUTO TEST TRBL, will RESET.**
	RO/BOP	• RESET SI. [Step 7.b]
		• DEPRESS 1/1-SIRA, TRAIN A SI RESET pushbutton.
		• DEPRESS 1/1-SIRB, TRAIN B SI RESET pushbutton.
	RO/BOP	• RESET SI Sequencers. [Step 7.c]
		• At SI Sequencer Train A Cabinet, DEPRESS SI SEQR RESET green pushbutton then PLACE ON/RESET toggle switch in RESET.
		• PLACE ON/RESET toggle switch in ON.
		• At SI Sequencer Train B Cabinet, DEPRESS SI SEQR RESET green pushbutton then PLACE ON/RESET toggle switch in RESET.
		• PLACE ON/RESET toggle switch in ON.

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	24	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	RO/BOP	• RESET Containment Isolation Phase A and Phase B. [Step 7.d]
		• DEPRESS 1/1-C1PARA, CNTMT ISOL – PHASE A RESET pushbutton.
		• DEPRESS 1/1-C1PARB, CNTMT ISOL – PHASE A RESET pushbutton.
		• DEPRESS 1/1-C1PBRA, CNTMT ISOL – PHASE B RESET pushbutton.
		• DEPRESS 1/1-C1PBRB, CNTMT ISOL – PHASE B RESET pushbutton.
	RO/BOP	• RESET Containment Spray Signal. [Step 7.e]
		• DEPRESS 1/1-CSRA, TRAIN A CS RESET pushbutton.
		• DEPRESS 1/1-CSRB, TRAIN B CS RESET pushbutton.
		CAUTION: RCS pressure should be monitored. If RCS pressure decreases in an uncontrolled manner to less than 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT) the RHR pumps must be manually restarted to supply water to the RCS.
	US	CHECK If RHR Pumps Should Be Stopped: [Step 8]
	RO/BOP	• VERIFY RCS pressure – GREATER THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT). [Step 8.a.1)]
	RO/BOP	• VERIFY RCS pressure – STABLE OR INCREASING. [Step 8.a.2)]
	US	• GO to Step 9. [Step 8.b.2) RNO]
	US	CHECK RCS and SG Pressures: [Step 9]
	RO/BOP	• VERIFY RCS pressure – STABLE OR DECREASING. [Step 9]
	RO/BOP	• VERIFY all SG pressures – STABLE OR INCREASING. [Step 9]
	US	CHECK If Diesel Generators Should Be Stopped: [Step 10]

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	25	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	RO/BOP	• VERIFY AC Safeguards Buses ENERGIZED by Offsite Power. [Step 10.a]
		• PLACE both EDG EMERG STOP/START handswitches in STOP. [Step 10.b]
		NOTE: Verification of at least one flowpath from a RHR pump to the RCS via a SI pump or CCP is sufficient to verify cold leg recirculation capability.
	US	INITIATE Evaluation of Plant Status. [Step 11]
	RO/BOP	• VERIFY Cold Leg Recirculation capability: [Step 11.a]
		• VERIFY Train A RHR Pump – AVAILABLE. [Step 11.a.1)]
		• VERIFY CCW to Train A RHR Pump – AVAILABLE. [Step 11.a.1)]
		• VERIFY 1/1-8811A, CNTMT SMP TO RHRP 1 SUCT ISOL VLV – AVAILABLE. [Step 11.a.1)]
		• VERIFY Train B RHR Pump – AVAILABLE. [Step 11.a.1)]
		• VERIFY CCW to Train B RHR Pump – AVAILABLE. [Step 11.a.1)]
		• VERIFY 1/1-8811B, CNTMT SMP TO RHRP 2 SUCT ISOL VLV – AVAILABLE. [Step 11.a.1)]
		• VERIFY 1/1-8804A, RHRP 1 TO CCP SUCT VLV – AVAILABLE. [Step 11.a.2)]
		• VERIFY 1/1-8804B, RHRP 2 TO SIP SUCT VLV – AVAILABLE. [Step 11.a.2)]
	RO/BOP	• CHECK Auxiliary Building and Safeguards Building radiation – NORMAL: [Step 11.b]
		• CHECK PC-11 monitors – NORMAL OR Notify Radiation Protection to PERFORM local Radiation Surveys. [Step 11.b]
	US	• NOTIFY Chemistry to OBTAIN RCS samples to assist in determining extent of the accident. [Step 11.c]
	US	• CONTACT Plant Staff to EVALUATE plant equipment. [Step 11.d]

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	26	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	US	CHECK if RCS Cooldown and Depressurization Is Required: [Step 12]
	RO/BOP	• VERIFY RCS pressure – GREATER THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT). [Step 12.a]
	US	• GO to EOS-1.2A, Post LOCA Cooldown and Depressurization, Step 1. [Step 12.b]
Examiner Note:		**EOS-1.2A, Post LOCA Cooldown and Depressurization, steps begin here. Steps in [brackets] are from the associated EOS-1.2A Attachments.**
		CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.
		CAUTION: When time permits Attachment 9 of EOP-0.0A, REACTOR TRIP OR SAFETY INJECTION should be performed to realign equipment after an SI signal has been reset.
	RO/BOP	[1.D] VERIFY Diesel Generators – NOT RUNNING. [Step 1]
	RO/BOP	[1.D] VERIFY SI – RESET. [Step 2]
	RO/BOP	[1.D] VERIFY SI Sequencers – RESET. [Step 3]
	RO/BOP	[1.D] VERIFY Containment Isolation Phase A and Phase B – RESET. [Step 4]
	RO/BOP	[1.D] VERIFY Containment Spray Signal – RESET. [Step 5]
	RO/BOP	[1.D] ESTABLISH Instrument Air and Nitrogen to Containment. [Step 6]
		• ESTABLISH Instrument Air: [Step 6.a]

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	27	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		• VERIFY Air Compressor – RUNNING. [Step 6.a.1)]
		• ESTABLISH Instrument Air to Containment: [Step 6.a.2)]
		• ESTABLISH Nitrogen: [Step 6.b]
		• VERIFY ACCUM 1●4 VENT CTRL, 1-HC-943 – CLOSED. [Step 6.b.1)]
		• OPEN SI/PORV ACCCUM N2 ISOL VLV 1/1-8880. [Step 6.b.2)]
	BOP	VERIFY all AC Buses – ENERGIZED BY OFFSITE POWER. [Step 7]
		CAUTION: PRZR heaters should not be energized until PRZR water level indicates greater than minimum level recommended by Plant Staff to ensure heaters are covered.
	RO	DEENERGIZE PRZR Heaters: [Step 8]
		• PLACE all PRZR heater switches in OFF position. [Step 8.a]
		• CONSULT Plant Staff for a recommended minimum indicated PRZR water level that will ensure heaters are covered. [Step 8.b]
		CAUTION: RCS pressure should be monitored. If RCS pressure decreases in an uncontrolled manner to less than 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT), the RHR pumps must be manually restarted to supply water to the RCS.
	US	CHECK If RHR Pumps Should Be Stopped. [Step 9]
		• VERIFY RHR Pumps – ANY RUNNING WITH SUCTION ALIGNED TO RWST. [Step 9.a]
		• CHECK RCS pressure – GREATER THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT). [Step 9.b]
		• CHECK RCS pressure – STABLE OR INCREASING. [Step 9.b]
		• STOP RHR Pumps and PLACE in standby. [Step 9.c]

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	28	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		• RESET RHR Auto Switchover. [Step 9.d]
	US	CHECK Intact SG Levels: [Step 10]
		• VERIFY narrow range level – GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT): [Step 10.a]
		• CONTROL AFW flow to maintain narrow range level between 43% (50% FOR ADVERSE CONTAINMENT) and 60%. [Step 10.b]
		NOTE: Shutdown margin should be monitored during RCS cooldown.
		NOTE: After the low steamline pressure SI signal is blocked, main steamline isolation will occur if the high steam pressure rate setpoint is exceeded.
CRITICAL TASK STATEMENT		**Initiate Cooldown of Reactor Coolant System Prior to Exiting EOS-1.2A, Post LOCA Cooldown and Depressurization.**
	US	INITIATE RCS Cooldown to Cold Shutdown: [Step 11]
		• MAINTAIN cooldown rate in RCS Cold Legs – LESS THAN 100°F/HR. [Step 11.a]
		• When Pressurizer pressure LESS THAN 1960 PSIG – BLOCK Low Main Steam Pressure SI signal. [Step 11.b]
CRITICAL TASK		• DUMP steam to atmosphere via Atmospheric Relief Valves from intact Steam Generators. [Step 11.c]
When a RCS cooldown is in progress, TERMINATE the scenario.		

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	29	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
Examiner Note: These steps are performed by the BOP per EOP-0.0A, Attachment 2.		
		CAUTION: If during performance of this procedure the SI sequencer fails to complete its sequence, Attachment 3 may be used to ensure proper equipment operation for major equipment.
	BOP	VERIFY SSW Alignment: [Step 1]
		• VERIFY SSW Pumps – RUNNING. [Step 1.a]
		• VERIFY Diesel Generator Coolers SSW return flow. [Step 1.b]
	BOP	VERIFY Safety Injection Pumps – RUNNING. [Step 2]
	BOP	VERIFY Containment Isolation Phase A – APPROPRIATE MLB LIGHT INDICATION (RED WINDOWS). [Step 3]
	BOP	VERIFY Containment Ventilation Isolation – APPROPRIATE MLB LIGHT INDICATION (GREEN WINDOWS). [Step 4]
	BOP	VERIFY CCW Pumps – RUNNING. [Step 5]
	BOP	VERIFY RHR Pumps – RUNNING. [Step 6]
		• Manually START Train B RHR Pump 1-02. [Step 6 RNO]
	BOP	VERIFY Proper CVCS Alignment: [Step 7]
		• VERIFY Train B CCP 1-02 – RUNNING. [Step 7.a]
		• VERIFY Letdown Relief Valve Isolation: [Step 7.b]
		• VERIFY Letdown Orifice Isolation Valves – CLOSED. [Step 7.b.1)]
		• VERIFY Letdown Isolation Valves 1/1-LCV-459 & 1/1-LCV-460 – CLOSED. [Step 7.b.2)]

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	30	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	VERIFY ECCS flow: [Step 8]
		• CCP SI flow indicators – CHECK FOR FLOW. [Step 8.a]
		• RCS pressure – LESS THAN 1700 PSIG (1800 PSIG FOR ADVERSE CONTAINMENT). [Step 8.b]
		• SIP discharge flow indicator – CHECK FOR FLOW. [Step 8.c]
		• RCS pressure – LESS THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT). [Step 8.d]
		• GO to Step 9. [Step 8.d RNO]
	BOP	VERIFY Feedwater Isolation Complete: [Step 9]
		• Feedwater Isolation Valves – CLOSED.
		• Feedwater Isolation Bypass Valves – CLOSED.
		• Feedwater Bypass Control Valves – CLOSED.
		• Feedwater Control Valves – CLOSED.
	BOP	VERIFY Diesel Generators – RUNNING. [Step 10]
	BOP	VERIFY Monitor Lights for SI Load Shedding on 1-MLB-9 and 1-MLB10 – LIT. [Step 11]
		NOTE: The MLB indication for SI alignment includes components which may be in a different alignment to support unit conditions. MSIVs, MSLs BEF MSIV D/POT ISOL, TDAFWP STEAM SUPPLIES, TDAFWP RUN, MDAFWP FLO CTRL VLVs and TDAFWP FLO CTRL VLVs may be exceptions to the expected MLB indication.
	BOP	VERIFY Proper SI alignment – PROPER MLB LIGHT INDICATION. [Step 12]
	BOP	INITIATE periodic monitoring of Spent Fuel Cooling (GD_SFP). [Step 13]
		• Spent Fuel Pool temperature (T2900A, T2901A).
		• Spent Fuel Pool level (L4800A, L4801A, L4802A, L4803A).

Operating Test :	NRC	Scenario #	2	Event #	5, 6, 7, & 8	Page	31	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior

NOTE: Any previously removed missile shield(s) that affects the Control Room, Auxiliary, Safeguards or Fuel Building pressure boundary is required to be restored upon initiation of a Safety Injection Signal.

NOTE: When the SI sequencer has timed out,the Reactor Makeup Water Pump with its handswitch in Auto will restart.

BOP — VERIFY Components on Table 1 are Properly Aligned. [Step 14]

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)
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 #	2	Event #	5, 6, 7, & 8	Page	33	of	33
Event Description:	Power Operated Relief Valve and Block Valve Failures / Small Break Loss of Coolant Accident / Automatic Safety Injection Signal Failure / Residual Heat Removal Pump SI Sequencer Failure								

Time	Position	Applicant's Actions or Behavior

Examiner Note: The next four 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. [Step 14]			

EOP-0.0A, Attachment 2 steps are now complete.

Appendix D	Scenario Outline	Form ES-D-1

Facility:	CPNPP 1 & 2	Scenario No.:	3	Op Test No.:	June 2014 NRC
Examiners:		Operators:			

Initial Conditions: 100% power MOL - RCS Boron is 924 ppm (by sample).

Turnover: Maintain steady-state power conditions.

Critical Tasks:
- Manually Trip Reactor Due to Reactor Protection System Failure Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection. (Event 5)
- Initiate Train A and/or Train B Containment Isolation Phase A due to Failure to Automatically Actuate Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection. (Event 8)
- Identify and Isolate Ruptured Steam Generator Prior to Commencing an Operator Induced Cooldown per EOP-3.0A, Steam Generator Tube Rupture. (Event 6)
- Initiate Cooldown of Reactor Coolant System Prior to Exiting EOP-3.0A, Steam Generator Tube Rupture. (Event 6)

Event No.	Malf. No.	Event Type*	Event Description
1 +10 min	SG01A		Steam Generator (1-01) Tube Leak at 50 gpd (0.0347 gpm).
2 +20 min	RX09A	I (RO, BOP, SRO) TS (SRO)	Main Turbine 1st Stage Pressure Transmitter (PT-505) Fails High.
3 +30 min	SW01B	C (BOP, SRO) TS (SRO)	Station Service Water Pump 1-02 Trip.
4 +50 min	FW16	R (RO) N (BOP, SRO)	Lowering Condenser Vacuum Requiring Power Reduction Followed by Total Loss of Condenser Vacuum.
5 +55 min	RP01 RP13A	I (BOP)	Automatic Reactor Trip Failure. Manual Reactor Trip Failure from CB-07.
6 +65 min	SG01A	M (RO, BOP, SRO)	Steam Generator (1-01) Tube Rupture at 500 gpm (600 second ramp) upon Turbine Trip.
7 +70 min	OVRDE	I (RO/BOP)	Steam Generator (1-01) Blowdown Isolation Valve (1-HS-2397) Fails to Close on Safety Injection.
8 +70 min	RP09A RP09B	C (BOP)	Containment Isolation Phase A Train A and Train B Auto Actuation Failure.

Actual	Target Quantitative Attributes
8	Total malfunctions (5-8)
3	Malfunctions after EOP entry (1-2)
4	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
0	EOP contingencies requiring substantive actions (0-2)
4	Critical tasks (2-3)

SCENARIO SUMMARY NRC 3

The crew will assume the watch at 100% power with no scheduled activities per IPO-003A, Power Operations.

The first event is a Steam Generator #1 tube leak of 50 gpd. Crew actions are per ABN-106, High Secondary Activity, Section 2.0, and include verification of leakage rate to ensure proper procedural action. The SRO will refer to Technical Specifications.

The next event is a Main Turbine 1st Stage Pressure Transmitter failure. The crew responds per ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st-Stage Pressure and Feed Header Pressure Instrument Malfunction, Section 4.0. Several actions are required on the part of the RO and BOP to stabilize plant conditions. The SRO will refer to Technical Specifications.

When conditions are stable, Station Service Water Pump 1-02 will trip. The crew will enter ABN-501, Station Service Water System Malfunction, Section 2.0. Initial operator actions include placing the Train B Emergency Diesel Generator in PULLOUT. The SRO will refer to Technical Specifications.

When Pressurizer conditions are stable, a loss of Condenser vacuum will occur. The crew will respond per ABN-304, Main Condenser and Circulating Water System Malfunction, Section 3.0. Actions include lowering of Main Turbine load in 50 MWe increments in an attempt to maintain Condenser vacuum. Once a load reduction is performed, Condenser vacuum will continue to deteriorate until a Reactor Trip is required.

Once it is determined that Condenser vacuum cannot be maintained, the Reactor must be manually tripped and EOP-0.0A, Reactor Trip or Safety Injection, entered. The automatic Reactor Trip function and one manual Reactor Trip switch are disabled to ensure appropriate crew actions and communication. The crew will transition from EOP-0.0A to EOS-0.1A, Reactor Trip Response and then return to EOP-0.0 when Foldout Page criteria for Pressurizer level or Reactor Coolant System (RCS) subcooling are not met. A Steam Generator Tube Rupture is diagnosed in EOP-0.0A and a transition to EOP-3.0A, Steam Generator Tube Rupture will be performed.

The scenario is complicated by a Train A and B Containment Isolation Phase A failure and a Steam Generator Blowdown Valve that fails to automatically isolate.

While in EOP-3.0A, the ruptured Steam Generator will be isolated and a RCS cooldown commenced using the Atmospheric Relief Valves. The scenario is terminated when steps to cooldown the Reactor Coolant System are reached in EOP-3.0A.

Risk Significance:

- Failure of risk important system prior to trip:
  - Steam Generator Tube Leak
  - Train B Emergency Diesel Generator
- Risk significant core damage sequence:
  - Automatic Reactor Trip Failure
  - Steam Generator Tube Rupture
- Risk significant operator actions:
  - Manually Initiate Reactor Trip
  - Isolate SG Blowdown Flow
  - Initiate Containment Phase A Isolation
  - Identify and Isolate Ruptured SG

Scenario Event Description
NRC Scenario 3

~~BOOTH~~SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

INITIALIZE to IC-18 and LOAD LC22 NRC Scenario 3.

EVENT	REM. FUNC.	MALF.	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
SETUP		OVRDE	SG BD Isolation Valve (HS-2397) Auto Close Failure IOR DISGHS2397 f:3	FAIL	K0
		OVRDE	SG BD Isolation Valve (HS-2397) Manual Close {DISGHS2396.Value =0} DOR DISGHS2397 f:0	CLOSE	K0
		RP09A	CNTMT Phase A Train A Auto Actuation Failure	FAIL	K0
		RP09B	CNTMT Phase A Train B Auto Actuation Failure	FAIL	K0
		RP01	Automatic Reactor Trip Failure	FAIL	K0
		RP13A	Manual Reactor Trip Failure from CB-07	FAIL	K0
1		SG01A	Steam Generator (1-01) Tube Leak at 50 gpd	.0347 gpm	K1
2		RX09A	1st Stage Pressure Transmitter (PT-505) Failure	120%	K2
3		SW01B	Station Service Water Pump 1-02 Failure	TRIP	K3
4		FW16	Initial Loss of Condenser Vacuum	5%	K4
4		FW16	Loss of Condenser Vacuum after 1st Runback	35%	K5 (600 sec. ramp)
5		RP01	Automatic Reactor Trip Failure	FAIL	K0
5		RP13A	Manual Reactor Trip Failure from CB-07	FAIL	K0
6		SG01A	Steam Generator (1-01) Tube Rupture	500 gpm	On RX Trip (600 sec. ramp)
7		OVRDE	SG BD Isolation Valve (HS-2397) Auto Close Failure IOR DISGHS2397 f:3	FAIL	K0
7		OVRDE	SG BD Isolation Valve (HS-2397) Manual Close {DISGHS2396.Value =0} DOR DISGHS2397 f:0	CLOSE	K0

8		RP09A	CNTMT Phase A Train A Auto Actuation Failure	FAIL	K0
8		RP09B	CNTMT Phase A Train B Auto Actuation Failure	FAIL	K0

Scenario Event Description
NRC Scenario 3

~~Booth~~Simulator Operator: INITIALIZE to IC-18 and LOAD LC22 NRC Scenario 3.
ENSURE all Simulator Annunciator Alarms are ACTIVE.
ENSURE all Control Board Tags are removed.
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 60/90 buttons DEPRESSED on ASD.
ENSURE ASD speakers are ON at half volume.
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 with Bank D at 215 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	6	of	31
Event Description:	Steam Generator Tube Leak								

Time	Position	Applicant's Actions or Behavior
		~~Booth~~Simulator Operator: When directed, EXECUTE Event 1 (Key 1). **- SG01A, Steam Generator 1-01 Tube Leak at 50 gpd.**
		Indications Available: **PC-11 – N16-174 MSL 1 (1-RE-2325A) is RED** **PC-11 – 182 COG (1-RE-2959) is RED (Condenser Off Gas is delayed)**
+1 min	RO/BOP	RESPOND to PC-11, Digital Radiation Monitoring System alarms.
	RO/BOP	RECOGNIZE radiation monitor alarms associated with Steam Generator 1-01.
	US	DIRECT performance of ABN-106, High Secondary Activity, Section 2.0.
		NOTE: Due to the minimum sensitivity of the MSL radiation monitors, a valid alarm indicates a leak rate of at least 3600 gpd (2.5 gpm).
	RO/BOP	VERIFY Main Steam Line 1-01 radiation alarm 1-RE-2325 (MSL-178) – CLEAR. [Step 2.3.1]
		NOTE: Leakage is qualitatively confirmed when two independent radiation monitors trend in the same direction with the same order of magnitude.
	RO	CORRELATE Radiation Monitor readings to leak rate. [Step 2.3.2]
		• VERIFY with N16 leak rate indication ≥ 40% power.
		• POSTED Condenser Off Gas (COG) correlation graphs by PC-11.
		• CPINET, Chemistry Department primary to secondary leakage tab.
		Note: Step 3 is a continuous action step.
	RO	VERIFY leak rate < 75 gpd (0.052 gpm). [Step 2.3.3]

Operating Test :	NRC	Scenario #	3	Event #	1	Page	7	of	31
Event Description:	Steam Generator Tube Leak								

Time	Position	Applicant's Actions or Behavior
	RO	VERIFY leak rate ≥ 30 gpd (0.02 gpm). [Step 2.3.4]
		• COMMENCE trending RCS leakage rates AND secondary coolant radiation levels at 10 minute intervals. [Step 2.3.4.a]
		• VERIFY leakage remains – STABLE. [Step 2.3.4.b]
	RO/BOP	ISOLATE Auxiliary Steam supplied from the affected Unit. [Step 2.3.5]
Note: Step 6 is a continuous action step.		
	US	VERIFY Condenser Off Gas Radiation Monitor 1-RE-2959 (COG-182) – OPERABLE. [Step 2.3.6]
NOTE: • A preferred sampling sequence may be specified if one Steam Generator is suspected of leaking. • Sample isolation valves will have to be held open while sampling if isolated due to high radiation on u-RE-4200 (SGS-u64).		
	US	DIRECT Chemistry to implement CHM-113. [Step 2.3.7]
Examiner Note: The Unit Supervisor may reference Technical Specifications.		
~~Booth~~Simulator Operator: If contacted as Shift Manager, REPORT Unit will remain on line until further chemical analysis is performed.		
+10 min	US	ESTABLISH Conditions and PERFORM RCS Leak Rate Check per OPT-303. [Step 2.3.8]
		• DETERMINE RCS leak rate within Technical Specification LCO 3.4.13 limits. [Step 2.3.8.a]
		• CONSULT with Shift Manager and Duty Manager to VERIFY Unit will remain in operation. [Step 2.3.8.b]
When the Shift Manager is contacted, or at Lead Examiner discretion, PROCEED to Event 2.		

Operating Test :	NRC	Scenario #	3	Event #	2	Page	8	of	31
Event Description:	Main Turbine 1st Stage Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
		~~Booth~~Simulator Operator: When directed, EXECUTE Event 2 (Key 2). **- RX09A, Main Turbine 1st Stage Pressure Transmitter (PT-505) fails high.**
		Indications Available: **6D-4.14 – CONTROL ROD BANK D FULL WTHDRWL** **1-PI-505 – Turbine Impulse Pressure Channel I indication fails high** **Control Rods withdraw to 225 steps**
+30 secs	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE Control Rods INSERTING due to Turbine Impulse Pressure Instrument failure.
	RO/BOP	REPORT PT-505, Turbine Impulse Pressure Channel I has failed low.
	US	DIRECT implementation of ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 4.0.
	RO	PLACE 1/1-RBSS Control Rod Bank Select Switch in MANUAL. [Step 4.3.1]
		NOTE: The following step will prevent automatic steam dump actuation on an actual load rejection, if RNO step is applied.
	BOP	VERIFY Steam Dumps - CLOSED WITH NO OPEN DEMAND. [Step 4.3.2]
		• 1-UI-500, STM DMP DEMAND indicating 0% – DEMAND. [Step 4.3.2.a]
		• STM DMP VLV ZL lights indicating – CLOSE. [Step 4.3.2.a]
		CAUTION: A briefing should be conducted to evaluate steam dump response and contingency actions should a subsequent runback or trip occur. Reference Section 4.2.
		NOTE: • If transferring dumps to steam pressure mode, steam demand will be erroneously high if PT-505 is failed low. • The following step ensures steam dumps available for subsequent runbacks or trips.

Operating Test :	NRC	Scenario #	3	Event #	2	Page	9	of	31
Event Description:	Main Turbine 1st Stage Pressure Transmitter Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	RESTORE Steam Dump availability, PLACE Steam Dumps in STEAM PRESSURE Mode per Attachment 7. [Step 4.3.3]
Examiner Note:		**The following five steps are from ABN-709, Attachment 7, Transferring Steam Dumps and are performed using the Control Board Job Aid.**
Are the following steps correct for the high vice low failure of PT-505? Did not observe		
	BOP	ENSURE 1-PK-507, STM DMP PRESS CTRL is in MANUAL. [Step 1]
	BOP	MATCH 1-PK-507, STM DUMP PRESS CTRL demand to current Steam Dump Valve position. [Step 2]
	BOP	VERIFY 1-PCIP, Window 1.4 – CNDSR AVAIL STM DMP ARMED C-9 is ON. [Step 3]
	BOP	PLACE 43/1-SD, STM DMP MODE SELECT in STM PRESS. [Step 4]
	BOP	ENSURE both STM DMP INTLK SELECT switches are ON. [Step 5]
	BOP	If desired to control Steam Dumps in AUTO, then PERFORM the following: [Step 6]
		• VERIFY 1-PI-507, MS HDR PRESS indicates current MSL pressure. [Step 6.A]
		• ENSURE 1-PK-507, STM DMP PRESS CTRL set to control at 1092 psig for "no load" conditions (Pot setting 6.86). [Step 6.B]
		• PLACE 1-PK-507, STM DMP PRESS CTRL in AUTO. [Step 6.C]
	RO	TRANSFER 1-PS-505Z, TURB IMP PRESS CHAN SELECT to PT-506. [Step 4.3.4]
	RO	ENSURE T_{AVE} within 1ºF of T_{REF}. [Step 4.3.5]
		• RESTORE T_{AVE} to within 1ºF of T_{REF} prior to placing Rod Control in AUTO.

Operating Test : NRC	Scenario # 3	Event # 2	Page 10 of 31
Event Description: Main Turbine 1st Stage Pressure Transmitter Failure			

Time	Position	Applicant's Actions or Behavior
	RO	PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in AUTO. [Step 4.3.6]
	US/RO	CHECK Reactor Power in – MODE 1. [Step 4.3.7]
	US/BOP	CHECK Turbine Power – GREATER THAN 10% POWER. [Step 4.3.8]
		NOTE: The following step will prevent the automatic block of several reactor trips when Reactor power is below 10% power.
	US	Within 1 hour, VERIFY PCIP Window 4.6 – TURB ≤ 10% PWR P-13, IN PROPER STATE for existing plant conditions (DARK). [Step 4.3.9]
	US	EVALUATE Technical Specifications. [Step 4.3.9]
		• LCO 3.3.1.T, Reactor Trip System Instrumentation. (Function 18.f, Turbine 1st Stage Pressure P-13)
		• CONDITION T - One or more required channels inoperable. • ACTION T.1 - Verify interlock is in required state for existing unit conditions within one hour, OR • ACTION T.2 - Be in MODE 2 within 7 hours.
	US	VERIFY PCIP Window 1.3 – AMSAC BLK TURB < 40% PWR C-20 – IN PROPER STATE (DARK) for actual Turbine power. [Step 4.3.10]
		• If AMSAC actuation blocked and Turbine power > 40%, ENSURE Automatic Actions of ALB-9B, Window 3.7 – AMSAC ACT TURB TRIP as necessary.
	US	INITIATE a SMART Form per STA-421. [Step 4.3.11]
+10 min	US	INITIATE repairs per STA-606. [Step 4.3.12]
When Technical Specifications are addressed, or at Lead Evaluator's discretion, PROCEED to Event 3.		

Operating Test :	NRC	Scenario #	3	Event #	3	Page	11	of	31
Event Description:	Station Service Water Pump Trip								

Time	Position	Applicant's Actions or Behavior
		~~Booth~~Simulator Operator: When directed, EXECUTE Event 3 (Key 3). **- SW01B, Station Service Water Pump 1-02 trip.**
		Indications Available: **01-1.8 – SSWP 1 / 2 OVRLOAD / TRIP** **01-2.11 – CCP 2 L/O CLR SSW RET FLO LO** **01-2.12 – SIP 2 L/O CLR SSW RET FLO LO** **01-4.8 – CSP 2 & 4 BRG CLR SSW RET FLO LO** **Station Service Water Pump 1-02 amber MISMATCH and white TRIP lights lit**
+30 sec	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE 1-HS-4251A, Service Water Pump 1-02 amber MISMATCH and white TRIP lights LIT.
	US	DIRECT performance of ABN-501, Station Service Water System Malfunction, Section 2.0.
		NOTE: • The diesel generator can be operated, with load, for approximately one minute without SSW flow and not affect diesel performance. • When a fault exists on the 6.9KV safeguard bus, the SSW pump will not be available to supply cooling water to the DG. • Diamond step 1 denotes Initial Operator Actions.
		Examiner Note: Diamond steps (◊) are Initial Operator Actions.
	◊ BOP ◊	PLACE CS-1DG2E, Train B Diesel Generator Emergency Start/Stop handswitch in PULLOUT. [Step 2.3.1]
	BOP	VERIFY Train A SSW Pump – RUNNING. [Step 2.3.2]
	BOP	VERIFY Train A CCW Pump – RUNNING. [Step 2.3.3]
		~~Booth~~Simulator Operator: When asked about status of SSW Pump, REPORT that the SSW Pump 1-02 50/51 overcurrent relays on Phases B & C are tripped.

Operating Test :	NRC	Scenario #	3	Event #	3	Page	12	of	31
Event Description:	Station Service Water Pump Trip								

Time	Position	Applicant's Actions or Behavior
		NOTE: The CCW pump on the affected train may be left operating at the discretion of the Shift Manager. However, with this pump operating, the affected SSW Pump will have an Auto Start Signal to it.
	RO/BOP	VERIFY equipment on Train B – NOT REQUIRED FOR OPERATION: [Step 2.3.4]
		• Centrifugal Charging Pump 1-02 • Diesel Generator 1-02 • Component Cooling Water Pump 1-02 • Safety Injection Pump 1-02 • Containment Spray Pumps 1-02 & 1-04
		CAUTION: Do not place pump handswitch in STOP if pump tripped (white TRIP light). This will reset 86M relay (white TRIP light) and may result in an automatic restart.
	RO/BOP	PLACE equipment on Train B in PULLOUT. [Step 2.3.5]
		• Centrifugal Charging Pump 1-02 • Safety Injection Pump 1-02 • Containment Spray Pumps 1-02 & 1-04 • Station Service Water Pump 1-02 (may leave as is due to CAUTION)
	BOP	CHECK status of Train B CCW Pump. [Step 2.3.6]
		• VERIFY CCW Pump – NOT RUNNING. [Step 2.3.6.a]
		• CONTINUE with Step 7. [Step 2.3.6.a RNO]
	US	INITIATE a work request per STA-606. [Step 2.3.7]
	US	REFER to EPP-201. [Step 2.3.8]

Operating Test :	NRC	Scenario #	3	Event #	3	Page	13	of	31
Event Description:	Station Service Water Pump Trip								

Time	Position	Applicant's Actions or Behavior
	US	EVALUATE Technical Specifications. [Step 2.3.9]
		• LCO 3.7.8.B, Station Service Water System.
		• CONDITION B - One SSWS Train inoperable. • ACTION B.1 - Restore SSWS Train to OPERABLE status within 72 hours.
		• LCO 3.8.1.B, AC Sources - Operating.
		• CONDITION B - One DG inoperable. • ACTION B.1 - Perform SR 3.8.1.1 for the required offsite circuit(s) within 1 hour AND once per 8 hours thereafter, AND • ACTION B.2 - Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable within 4 hours from discovery of Condition B concurrent within inoperability of redundant required feature(s), AND • ACTION B.3.1 - Determine OPERABLE DG(s) is not inoperable due to common cause failure within 24 hours, OR • ACTION B.3.2 - Perform SR 3.8.1.1 for OPERABLE DG(s) within 24 hours.
~~Booth~~Simulator Operator: If contacted, INFORM the Unit Supervisor that another operator will perform required Technical Specification Surveillance.		
	US	COMPLETE OPT-215 verification within one hour. [Step 2.3.10]
+10 min	US	SUBMIT a SMART Form per STA-421. [Step 2.3.11]
When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Event 4.		

Operating Test :	NRC	Scenario #	3	Event #	4	Page	14	of	31
Event Description:	Loss of Condenser Vacuum								

Time	Position	Applicant's Actions or Behavior
		~~Booth~~Simulator Operator: When directed, EXECUTE Event 4. **- FW16, Partial Loss of Condenser Vacuum @ 5%.**
		Indications Available: **P6600A – CNDSR A PRESS (VA)** **P6601A – CNDSR B PRESS (VA)** **1-PI-2042-1, CNDNSR A PRESS lowering** **1-PI-2042-2, CNDNSR B PRESS lowering** **Control Rods stepping out** **Main Steam pressure lowering**
+1 min	BOP	REFER to Annunciator Alarm Procedures.
		Examiner Note: Loss of Condenser vacuum will occur in 2 phases. In the 1st phase, Condenser vacuum is lost requiring a reduction in Turbine load. Once the power reduction is complete, the 2nd phase will result in a total loss of vacuum (600 sec. ramp).
	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. [Step 3.3.1]
		• VERIFY Condenser Vacuum Pumps 1 and 2 – RUNNING.
		• START 1-HS-2958, Condenser Vacuum Pump 3.
	RO/BOP	DISPATCH an operator to VERIFY CEV seal water tank level indicated. [Step 3.3.2]
	BOP	VERIFY Main Condenser vacuum > 21" Hg. [Step 2.3.3]
	BOP	DETERMINE Main Condenser vacuum < 26.5" Hg. [Step 2.3.4]
		• ENSURE Turbine not operating in the NOT PERMISSIBLE region.
		NOTE: Step 5 is a continuous action step.

Operating Test :	NRC	Scenario #	3	Event #	4	Page	15	of	31
Event Description:	Loss of Condenser Vacuum								

Time	Position	Applicant's Actions or Behavior
Examiner Note:		**The crew should perform multiple 50 MWe load reductions in an attempt to stabilize Condenser vacuum at greater than 24.5" Hg. After the 1st load reduction, vacuum will continue to deteriorate requiring a Reactor and Turbine trip.**
	US/BOP	DETERMINE Main Condenser Vacuum NOT being maintained > 24.5" Hg and stable. [Step 2.3.5]
	BOP	• CONTROL Turbine load as necessary to maintain vacuum > 24.5" Hg and power less than 100%. [Step 2.3.5 RNO]
		• As required, LOWER Turbine load to RAISE Condenser vacuum.
	US	• NOTIFY Shift Manager and Generation Controller of load changes. [Step 2.3.5 RNO]
	RO	ENSURE 1/1-RBSS, Control Rod Bank Select Switch in AUTO.
	BOP	PERFORM the following to LOWER Turbine Load:
		• DEPRESS "50 MWe" Manual Runback button.
		• CLICK on "0/1" button.
		• CLICK on "Execute" then VERIFY Manual Runback in progress.
~~Booth~~Simulator Operator:		**When the 1st load reduction is complete, ADJUST malfunction FW16 to 35% on a 600 second ramp (Key 5).**
	BOP	ENSURE Seal Steam pressure is approximately 4" H_2O. [Step 3.3.6]
Examiner Note:		**The crew should reference this previous step to determine that a Reactor and Turbine Trip are required.**
+20 min	RO/BOP	VERIFY Main Condenser vacuum > 21" Hg. [Step 2.3.3]
		• If Reactor Power is greater than or equal to 10%, then TRIP Reactor and GO to EOP-0.0A while others continue this procedure. [Step 2.3.3 RNO]
When Reactor and Turbine are tripped, or at Lead Examiner discretion, PROCEED to Events 5, 6, 7, and 8.		

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	16	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		~~Booth~~Simulator Operator: Upon Reactor Trip, Events 5, 6, 7, and 8 will occur. **- RP01, Automatic Reactor Trip failure.** **- RP13A, Manual Reactor Trip failure from CB-07.** **- SG01A, SG 1-01 Tube Rupture at 500 gpm on 600 second ramp.** **- OVRDE, SB (1-01) Blowdown Valve (1-HS-2397) fails to close.** **- RP09A, Containment Isolation Phase A Train A Auto Actuation failure.** **- RP09B, Containment Isolation Phase A Train B Auto Actuation failure.**
		Indications Available: **Lowering Condenser vacuum.**
+2 min	RO/BOP	RECOGNIZE Condenser vacuum LOWERING at a rising rate and TRIP the Reactor and Turbine.
		Examiner Note: The crew will enter EOP-0.0A, Reactor Trip or Safety Injection and transition to EOS-0.1A, Reactor Trip Response, at Step 4. Once it is determined that a Steam Generator Tube Rupture is in progress the crew will return to EOP-0.0A.
CRITICAL TASK STATEMENT		**Manually Trip Reactor Due to Reactor Protection System Failure Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection.**
CRITICAL TASK	RO	Manually TRIP the Reactor.
	RO	• PLACE 1/1-RTC, RX TRIP Switch in TRIP position and VERIFY Reactor Trip at CB-07.
	BOP	• PLACE 1/1-RT, RX TRIP Switch in TRIP position and VERIFY Reactor Trip at CB-10.
	US	DIRECT performance of EOP-0.0A, Reactor Trip or Safety Injection.
		Examiner Note: The following steps are from EOP-0.0A, Reactor Trip or Safety Injection.
	RO	VERIFY Reactor Trip: [Step 1]
		• VERIFY Reactor Trip Breakers – OPEN. [Step 1.a]
		• VERIFY Neutron flux – DECREASING. [Step 1.a]
		• VERIFY all Control Rod Position Rod Bottom Lights – ON. [Step 1.b]

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	17	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	BOP	VERIFY Turbine Trip: [Step 2]
		• VERIFY all HP Turbine Stop Valves – CLOSED. [Step 2]
	BOP	VERIFY Power to AC Safeguards Buses: [Step 3]
		• VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 3.a]
		• VERIFY both AC Safeguards Buses – ENERGIZED. [Step 3.b]
	RO	CHECK SI status: [Step 4]
		• CHECK if SI is actuated. [Step 4.a]
		• CHECK if SI is required: [Step 4.a RNO]
		• Steam Line Pressure less than 610 psig.
		• Pressurizer Pressure less than 1820 psig.
		• Containment Pressure greater than 3.0 psig.
	US	• If SI is NOT required, GO to EOS-0.1A, Reactor Trip Response, Step 1. [Step 4.a RNO]
Examiner Note: The following steps are from EOS-0.1A, Reactor Trip Response.		
CAUTION: If SI actuation occurs during this procedure, E0P-0.0A, REACTOR TRIP OR SAFETY INJECTION, shall be performed.		
	RO	CHECK RCS Temperature: [Step 1]
		• CHECK RCPs – ANY RUNNING. [Step 1.a]
		• VERIFY RCS average temperature stable at or trending to 557ºF. [Step 1.b]
NOTE: When establishing feedwater to SGs, at least two SGs should be used.		

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	18	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	RO/BOP	CHECK FW Status: [Step 2]
		• VERIFY Reactor Trip Breakers – OPEN. [Step 2.a]
		• CHECK RCS average temperatures < 564ºF. [Step 2.b]
		• VERIFY Feedwater Isolation – COMPLETE. [Step 2.c]
		• VERIFY total AFW flow to SGs – GREATER THAN 460 GPM. [Step 2.d]
	RO	CHECK PRZR Level Control: [Step 3]
		• VERIFY PRZR Level – GREATER THAN 17%. [Step 3.a]
		• VERIFY Charging – IN SERVICE. [Step 3.b]
		• VERIFY Letdown – IN SERVICE. [Step 3.c]
		• VERIFY PRZR Level – TRENDING TO 25%. [Step 3.d]
	RO	CHECK PRZR Pressure Control: [Step 4]
		• VERIFY Pressurizer Pressure – GREATER THAN 1820 PSIG. [Step 4.a]
		• VERIFY Pressurizer Pressure – STABLE AT OR TRENDING TO 2235 PSIG. [Step 4.b]
		• VERIFY PRZR PORVs – CLOSED. [Step 4.b RNO]
		• VERIFY PRZR Spray Valves – CLOSED. [Step 4.b RNO]
		• VERIFY PRZR Heaters – ON. [Step 4.b RNO]
	RO	CHECK Steam Generator Levels: [Step 5]
		• VERIFY Steam Generator Level – GREATER THAN 43%. [Step 5.a]
		• MAINTAIN total feed flow greater than 460 GPM until narrow range level greater than 43% in at least one SG. [Step 5.a RNO]
<u>Examiner Note</u>:		**In accordance with EOS-0.1A, Reactor Trip Response, Foldout Page, actuation of Safety Injection <u>AND</u> return to EOP-0.0A, Reactor Trip or Safety Injection, is required when subcooling is less than 25°F and/or Pressurizer level cannot be maintained greater than 6%.**

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	19	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		ATTACHMENT 1.A PAGE 1 OF 1 FOLDOUT FOR EOS-0.1A, REACTOR TRIP RESPONSE 1. SI ACTUATION CRITERIA Actuate SI and go to EOP-0.0A, REACTOR TRIP OR SAFETY INJECTION, Step 1, if EITHER condition listed below occurs: • RCS subcooling - LESS THAN 25°F • PRZR level - CANNOT BE MAINTAINED GREATER THAN 6%
	RO	Manually INITIATE both Trains of Safety Injection.
	RO	• PLACE 1/1-SIA2, SI MAN ACT Switch to ACT position at CB-07 and DETERMINE SI has actuated.
	RO	• VERIFY Both Trains SI Actuated:
		• SI Actuated blue status light – ON NOT FLASHING.
Examiner Note: The following steps are from EOP-0.0A, Reactor Trip or Safety Injection.		
	RO	VERIFY Reactor Trip: [Step 1]
		• VERIFY Reactor Trip Breakers – OPEN. [Step 1.a]
		• VERIFY Neutron flux – DECREASING. [Step 1.a]
		• VERIFY all Control Rod Position Rod Bottom Lights – ON. [Step 1.b]
	BOP	VERIFY Turbine Trip: [Step 2]
		• VERIFY all HP Turbine Stop Valves – CLOSED. [Step 2]
	BOP	VERIFY Power to AC Safeguards Buses: [Step 3]
		• VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 3.a]
		• VERIFY both AC Safeguards Buses – ENERGIZED. [Step 3.b]
	RO	CHECK SI status: [Step 4]
		• CHECK if SI is actuated. [Step 4.a]

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	20	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		• VERIFY Both Trains SI Actuated: [Step 4.b]
		• SI Actuated blue status light – ON NOT FLASHING.
Examiner Note: EOP-0.0A, Attachment 2 steps performed by the BOP are identified later in the scenario.		
Examiner Note: The RO may trip the RCPs per the Foldout Page if subcooling is < 25°F.		
CAUTION: A Safety Injection actuation will affect normal egress from the Containment Building. Attachment 9 of this procedure provides instructions to evacuate personnel from the Containment during a Safety Injection actuation.		
NOTE: Attachment 2 is required to be completed before FRGs are implemented.		
	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2. [Step 5]
	RO	VERIFY AFW Alignment: [Step 6]
		• VERIFY both MDAFW Pumps – RUNNING. [Step 6.a]
		• PLACE TDAFW Pump in PULLOUT per Foldout Page. [Step 6.b]
		• VERIFY AFW total flow – GREATER THAN 460 gpm. [Step 6.c]
		• VERIFY AFW valve alignment - PROPER ALIGNMENT. [Step 6.d]
	RO	DETERMINE Containment Spray NOT Required: [Step 7]
		• VERIFY 1-ALB-2B, Window 1-8, CS ACT – NOT ILLUMINATED. [Step 7.a]
		• VERIFY 1-ALB-2B, Window 4-11, CNTMT ISOL PHASE B ACT – NOT ILLUMINATED. [Step 7.a]

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	21	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		• VERIFY Containment pressure – LESS THAN 18.0 PSIG. [Step 7.a]
		• VERIFY Containment Spray Heat Exchanger Outlet Valves – CLOSED. [Step 7.b]
		• VERIFY Containment Spray Pumps – RUNNING. [Step 7.c]
	RO	CHECK If Main Steamlines Should Be ISOLATED: [Step 8]
		• VERIFY Containment pressure – GREATER THAN 6.0 PSIG. [Step 8.a]
		• VERIFY Steam Line pressure – LESS THAN 610 PSIG. [Step 8.a]
		• GO to Step 9. [Step 8.a RNO]
	RO	CHECK RCS Temperature:
		• VERIFY RCS Average Temperature – STABLE AT OR TRENDING TO 557°F. [Step 9]
	RO	CHECK PRZR Valve Status: [Step 10]
		• VERIFY PRZR Safeties – CLOSED. [Step 10.a]
		• VERIFY Normal PRZR Spray Valves – CLOSED. [Step 10.b]
		• VERIFY PORVs – CLOSED. [Step 10.c]
		• VERIFY Power to at least 1 Block Valve – AVAILABLE. [Step 10.d]
		• VERIFY Block Valves – AT LEAST ONE OPEN. [Step 10.e]
	RO	CHECK if RCPs Should Be Stopped: [Step 11]
		• VERIFY RCS subcooling less than 25ºF (55ºF FOR ADVERSE CONTAINMENT). [Step 11.a]
		• GO to Step 12. [Step 11.a RNO]
	US/RO	CHECK if any SG is Faulted: [Step 12]
		• VERIFY any Steam Generator pressure – DECREASING IN AN UNCONTROLLED MANNER. [Step 12.a]
		• VERIFY any Steam Generator pressure – COMPLETELY DEPRESSURIZED. [Step 12.a]
		• GO to Step 13. [Step 12.a RNO]

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	22	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
	US/RO	CHECK if SG Tubes are Not Ruptured: [Step 13]
		• DETERMINE SG 1-01 is ruptured and TRANSITION to EOP-3.0A, Steam Generator Tube Rupture, Step 1. [Step 13 RNO]
Examiner Note: EOP-3.0A, Steam Generator Tube Rupture steps begin here.		
	US/RO	CHECK If RCPs Should Be Stopped: [Step 1]
		• VERIFY RCS subcooling – LESS THAN 25°F. [Step 1.a]
		• GO to Step 2. [Step 1.a RNO]
	US/BOP	IDENTIFY Steam Generator 1-01 as ruptured. [Step 2]
		• OBSERVE rise in Steam Generator 1-01 narrow range level.
		• OBSERVE high radiation from Steam Generator 1-01 Main Steam line.
CAUTION: If the TDAFW pump is the only available source of feed flow, steam supply to the TDAFW pump must be maintained from at least one SG.		
CAUTION: At least one SG must be maintained available for RCS cooldown.		
NOTE: If any SG atmospheric opens the Plant Staff should be notified.		
CRITICAL TASK STATEMENT		**Identify and Isolate Ruptured Steam Generator Prior to Commencing an Operator Induced Cooldown per EOP-3.0A, Steam Generator Tube Rupture.**
CRITICAL TASK	RO/BOP	ISOLATE flow from Ruptured Steam Generator 1-01: [Step 3]

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	23	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		• ADJUST SG 1-01 Atmospheric Controller Setpoint to 1160 PSIG. [Step 3.a]
		• CHECK SG 1-01 Atmospheric Relief Valve – CLOSED. [Step 3.b]
		• CLOSE 1-HS-2333A, SG 1-01 Main Steam Isolation Valve. [Step 3.c]
		• CLOSE 1-HS-2409, SG 1-01 Drip Pot Isolation Valves. [Step 3.c]
		• PLACE 1-HS-2452-2, SG 1-01 TDAFW Pump Steam Supply Valve in PULLOUT. [Step 3.d]
		• CLOSE 1-HS-2397, SG 1-01 Blowdown Valve. [Step 3.e]
		CAUTION: If any ruptured SG is faulted, feed flow to that SG should remain isolated during subsequent recovery actions unless needed for RCS cooldown.
	RO/BOP	CHECK Ruptured SG 1-01 Level: [Step 4]
		• VERIFY narrow range level - GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT). [Step 4.a]
		• STOP AFW flow to SG 1-01. [Step 4.b]
		• CLOSE 1-FK-2453A, MD AFWP 1 SG 1 FLO CTRL. [Step 4.b]
		CAUTION: Major steam flow paths from the ruptured SG(s) should be isolated before initiating RCS cooldown.
	RO/BOP	CHECK SG 1-01 Pressure – GREATER THAN 420 PSIG. [Step 5]

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	24	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		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.
		NOTE: After the low steamline pressure SI signal is blocked, main steamline isolation will occur if the high steam pressure rate setpoint is exceeded.
	RO/BOP	INITIATE RCS Cooldown using Steam Dump Valves. [Step 6]
	RO/BOP	• When PRZR pressure decreases to less than 1960 psig, BLOCK Low Steam Line Pressure SI Signal. [Step 6.a]
	RO/BOP	• PLACE 1/1-SLS-1RBA and 1/1-SLS-1RBB, Main Steam Line Isolation Safety Injection Reset / Block in BLOCK position.
	US	• DETERMINE required Core Exit Thermocouple (CET) temperature from Table 1. [Step 6.b]
		• OBSERVED Steam Generator pressure = _____ psig
		• TARGET Core Exit Thermocouple (CET) temperature = _____ ºF

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	25	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior

TABLE 1

LOWEST -RUPTURED SG PRESSURE (PSIG)	CORE EXIT TEMPERATURE (°F)
1200	495°F (475°F for Adverse Containment)
1150	490°F (470°F for Adverse Containment)
1100	485°F (465°F for Adverse Containment)
1000	475°F (455°F for Adverse Containment)
900	460°F (440°F for Adverse Containment)
800	445°F (425°F for Adverse Containment)
700	430°F (410°F for Adverse Containment)
600	415°F (395°F for Adverse Containment)
500	390°F (375°F for Adverse Containment)
420	370°F (350°F for Adverse Containment)

CRITICAL TASK STATEMENT		**Initiate Cooldown of Reactor Coolant System Prior to Exiting EOP-3.0A, Steam Generator Tube Rupture.**
CRITICAL TASK	BOP	• DUMP steam to Condenser from intact SG(s) at maximum rate using Steam Dump Valves and AVOID Main Steam Isolation. [Step 6.c.]
		• DUMP steam to atmosphere from intact SG(s) at maximum rate. [Step 6.c RNO]
		• MAKE plant announcement and NOTIFY Plant Staff of steam release. [Step 6.c.1) RNO]
		• PERFORM the following as necessary to release steam: [Step 6.c.2) RNO]
		• PLACE SG Atmospheric Controllers in MANUAL and INCREASE demand.
		• PLACE SG Atmospheric ARV CONTROL OVERRIDEs to OPEN.

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Time	Position	Applicant's Actions or Behavior
		• LOCALLY control SG Atmospheric Valves and OPEN.
	US	• VERIFY Core Exit Thermocouples – LESS THAN REQUIRED TEMPERATURE. [Step 6.d]
	BOP	• STOP RCS cooldown. [Step 6.e]
+40 min	BOP	• MAINTAIN Core Exit Thermocouples – LESS THAN REQUIRED TEMPERATURE. [Step 6.f]
When cooldown is initiated via the Steam Dump Valves, TERMINATE the scenario.		

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Time	Position	Applicant's Actions or Behavior
Examiner Note: These steps are performed by the BOP per EOP-0.0A, Attachment 2.		
CAUTION: If during performance of this procedure the SI sequencer fails to complete its sequence, Attachment 3 may be used to ensure proper equipment operation for major equipment.		
	BOP	VERIFY SSW Alignment: [Step 1]
		• VERIFY SSW Pump 1-01 – RUNNING. [Step 1.a]
		• VERIFY Diesel Generator Cooler SSW return flow. [Step 1.b]
	BOP	VERIFY Safety Injection Pump 1-01 – RUNNING. [Step 2]
CRITICAL TASK STATEMENT		**Initiate Train A and/or Train B Containment Isolation Phase A due to Failure to Automatically Actuate Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection.**
	BOP	VERIFY Containment Isolation Phase A – APPROPRIATE MLB LIGHT INDICATION (RED WINDOWS). [Step 3]
CRITICAL TASK		• PLACE 1/1-CIPAA1 CNTMT ISOL – PHASE A / CNTMT VENT ISOL Switch in ACT position. [Step 3 RNO]
	BOP	VERIFY Containment Ventilation Isolation – APPROPRIATE MLB LIGHT INDICATION (GREEN WINDOWS). [Step 4]
	BOP	VERIFY CCW Pumps – RUNNING. [Step 5]
	BOP	VERIFY RHR Pumps – RUNNING. [Step 6]
	BOP	VERIFY Proper CVCS Alignment: [Step 7]
		• VERIFY CCP 1-01 – RUNNING. [Step 7.a]
		• VERIFY Letdown Relief Valve Isolation: [Step 7.b]

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	28	of	31
Event Description:	Steam Generator Tube Rupture / Main Steam Safety Valves Failure / Power Operated Relief Valve Failure / Residual Heat Removal Pump Safety Injection Sequencer Failure								

Time	Position	Applicant's Actions or Behavior
		• VERIFY Letdown Orifice Isolation Valves – CLOSED. [Step 7.b.1)]
		• VERIFY Letdown Isolation Valves 1/1-LCV-459 & 1/1-LCV-460 – CLOSED. [Step 7.b.2)]
	BOP	VERIFY ECCS flow: [Step 8]
		• CCP SI flow indicators – CHECK FOR FLOW. [Step 8.a]
		• RCS pressure – LESS THAN 1700 PSIG (1800 PSIG FOR ADVERSE CONTAINMENT). [Step 8.b]
		• SIP discharge flow indicator – CHECK FOR FLOW. [Step 8.c]
		• RCS pressure – LESS THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT). [Step 8.d]
		• GO to Step 9. [Step 8.d RNO]
	BOP	VERIFY Feedwater Isolation Complete: [Step 9]
		• Feedwater Isolation Valves – CLOSED.
		• Feedwater Isolation Bypass Valves – CLOSED.
		• Feedwater Bypass Control Valves – CLOSED.
		• Feedwater Control Valves – CLOSED.
	BOP	VERIFY Diesel Generator 1-01 – RUNNING. [Step 10]
	BOP	VERIFY Monitor Lights for SI Load Shedding on 1-MLB-9 and 1-MLB-10 – LIT. [Step 11]
		NOTE: The MLB indication for SI alignment includes components which may be in a different alignment to support unit conditions. MSIVs, MSLs BEF MSIV D/POT ISOL, TDAFWP STEAM SUPPLIES, TDAFWP RUN, MDAFWP FLO CTRL VLVs and TDAFWP FLO CTRL VLVs may be exceptions to the expected MLB indication.
	BOP	VERIFY Proper SI alignment – PROPER MLB LIGHT INDICATION. [Step 12]

Operating Test :	NRC	Scenario #	3	Event #	5, 6, 7, & 8	Page	29	of	31
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Time	Position	Applicant's Actions or Behavior
	BOP	INITIATE periodic monitoring of Spent Fuel Cooling (GD_SFP). [Step 13]
		• Spent Fuel Pool temperature (T2900A, T2901A).
		• Spent Fuel Pool level (L4800A, L4801A, L4802A, L4803A).

NOTE: Any previously removed missile shield(s) that affects the Control Room, Auxiliary, Safeguards or Fuel Building pressure boundary is required to be restored upon initiation of a Safety Injection Signal.

NOTE: When the SI sequencer has timed out,the Reactor Makeup Water Pump with its handswitch in Auto will restart.

BOP — VERIFY Components on Table 1 are Properly Aligned. [Step 14]

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)

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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

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Time	Position	Applicant's Actions or Behavior

Examiner Note: The next four 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. [Step 14]			

EOP-0.0A, Attachment 2 steps are now complete.