

Task Summary

Facility: CPNPP Units 1 and 2		Date of Examination: September 2021	
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: NRC	
Administrative Topic (See Note)	Type Code*	Describe activity to be performed	
Conduct of Operations (RA1)	R, M	2.1.25	Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9) JPM: Determine Loss of RHR Impact on Indication (RO1413)
Conduct of Operations (RA2)	R, D	2.1.4	Knowledge of individual licensed responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc. (3.3) JPM: Determine Licensed Operator License Status (RO5001)
Equipment Control (RA3)	R, D	2.2.12	Knowledge of surveillance procedures. (3.7) JPM: Perform Control Room Air Conditioning Surveillance (RO5007)
Radiation Control (RA4)	R, D	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions. (3.2) JPM: Determine Escorted Radiation Worker Allowable Dose (BA1402)
Emergency Procedures/Plan	—	—	
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.			
* Type Codes & Criteria: <ul style="list-style-type: none"> (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected) 			

- RA1 The applicant is presented with a set of RCS conditions including time after shutdown, Reactor Vessel water level, and RCS temperature. The applicant will utilize ABN-104, Residual Heat Removal System Malfunction and determine the time to saturation from initial RCS temperature, time to core uncover, and actual Reactor Vessel water level under current conditions. This is a modified bank JPM. (K/A 2.1.25 - IR 3.9)
- RA2 The applicant is presented with a list of Reactor Operators and the watches they stood for the previous quarter. Utilizing the requirements of ODA-315, Licensed Operator Maintenance Tracking, the applicant will determine which Reactor Operators are available to be currently assigned as the Unit 1 Reactor Operator. This is a bank JPM. (K/A 2.1.4 - IR 3.3)
- RA3 The applicant will be presented necessary conditions to complete OPT-116, CR AC System, on the Train B Control Room Air Conditioning System. The applicant will complete the OPT-116-1, CR AC System Data Sheet and determine the units are operating acceptably. This is a bank JPM. (K/A 2.2.12 - IR 3.7).
- RA4 The applicant will be required to determine if two different Escorted Radiation workers with different sets of initial conditions and requirements would be allowed to assess the status of a piece of equipment that has been repaired. In one scenario the assessment would occur with shielding and the other would occur without shielding. This is a modified bank JPM. (K/A 2.3.4 - IR 3.2)

Facility: CPNPP JPM # NRC RA1 Task # RO1413 K/A # 2.1.25 3.9
 Title: Determine Loss of RHR Impact on Indication

Examinee (Print): _____

Testing Method:

Simulated Performance:	<u> X </u>	Classroom:	<u> X </u>
Actual Performance:	_____	Simulator:	_____
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u> M </u>	Emerg:	_____ EN: _____

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 Reactor Vessel water level at 53" above top of Upper Core Plate.
- The Reactor was shut down 320 hours ago.
- A Loss of all Residual Heat Removal cooling occurred.
- Initial RCS temperature was 100°F.

Current conditions:

- RCS temperature increased to 180°F.
- Reactor Vessel water remains stable at 53" on 1-LI-3615A, RX VSL LVL (NR) and 1-LI-3615B, RX VSL LVL (WR).

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

- DETERMINE per ABN-104, Residual Heat Removal System Malfunction, Attachment 5, Time to Saturation and Time to Core Uncovery for Loss of All RHR with the RCS at Reduced Inventory and Attachment 16, Actual Versus Indicated Reactor Vessel Level:
 - Time to Saturation from initial RCS temperature _____
 - Time to Core Uncovery _____
 - Actual Reactor Vessel water level for current conditions:
 - 1-LI-3615A, RX VSL LVL (NR) _____
 - 1-LI-3615B, RX VSL LVL (WR) _____

Task Standard: Utilizing ABN-104, DETERMINED Time to Saturation from initial conditions, Time to Core Uncovery, and actual RCS level using both narrow range and wide range level indicators following Loss of the Residual Heat Removal System. Values of items above must be calculated within the accuracy of the attached key.

Required Materials: ABN-104, Residual Heat Removal System Malfunction (Rev. 9 – PCN 11).

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:

- **ABN-104, Residual Heat Removal Malfunction**
 - **Attachment 5, Time to Saturation and Time to Core Uncovery for Loss of All RHR with the RCS at Reduced Inventory (Orange paper)**
 - **Attachment 16, Actual Versus Indicated Reactor Vessel Level (Orange paper)**

PROVIDE the examinee a Straightedge or ruler.

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following steps are from ABN-104, Attachment 5.
Perform Step: 1 √	Determine Time to Saturation : <ul style="list-style-type: none"> Find Time to Saturation from Attachment 5, Page 1.
Standard:	REFERRED to Page 1 of Attachment 5 and DETERMINED the intersection of Time After Shutdown (320 hours) and Initial Temp (100°F) and DETERMINED: TIME TO SATURATION = 20 ± 1 minutes .
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps are from ABN-104, Attachment 5.
Perform Step: 2 √	Determine Time to Core Uncovery : <ul style="list-style-type: none"> Find Time to Core Uncovery from Attachment 5, Page 2.
Standard:	REFERRED to Page 2 of Attachment 5 and DETERMINED the intersection of Time After Shutdown (320 hours/24 hrs = 13.3 days) and Initial Level (53 inches) and DETERMINED: TIME TO CORE UNCOVERY = 2.2 ± 0.05 hours .
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following step is from ABN-104, Attachment 16.
Perform Step: 3 √	Determine Actual Reactor Vessel Level : <ul style="list-style-type: none"> Find Actual Reactor Vessel Level from Attachment 16, Page 2 for 1-LI-3615A.
Standard:	REFERRED to Page 2 of Attachment 16 and DETERMINED the intersection of Indicated Level (53 inches) and Current Temperature (180°F) and DETERMINED: ACTUAL LEVEL = 60.5 ± 0.5 inches .
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following step is from ABN-104, Attachment 16.	
Perform Step: 4√	Determine Actual Reactor Vessel Level : <ul style="list-style-type: none"> Find Actual Reactor Vessel Level from Attachment 16, Page 1 for 1-LI-3615B. 	
Standard:	REFERRED to Page 1 of Attachment 16 and DETERMINED the intersection of Indicated Level (53 inches) and Current Temperature (180°F) and DETERMINED: ACTUAL LEVEL = 60.5 ± 1.0 inches .	
Terminating Cue:	JPM complete.	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 5 with Reactor Vessel water level at 53" above top of Upper Core Plate.
- The Reactor was shut down 320 hours ago.
- A Loss of all RHR cooling occurred.
- Initial RCS temperature was 100°F.

Current conditions:

- RCS temperature increased to 180°F.
- Reactor Vessel water remains stable at 53" on 1-LI-3615A, RX VSL LVL (NR) and 1-LI-3615B, RX VSL LVL (WR).

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

- DETERMINE per ABN-104, Residual Heat Removal System Malfunction, Attachment 5, Time to Saturation and Time to Core Uncovery for Loss of All RHR with the RCS at Reduced Inventory and Attachment 16, Actual Versus Indicated Reactor Vessel Level:
 - Time to Saturation from initial RCS temperature _____
 - Time to Core Uncovery _____
 - Actual Reactor Vessel water level for current conditions:
 - 1-LI-3615A, RX VSL LVL (NR) _____
 - 1-LI-3615B, RX VSL LVL (WR) _____

Initial Conditions:

Given the following conditions:

- Unit 1 is in MODE 5 with Reactor Vessel water level at 53” above top of Upper Core Plate.
- The Reactor was shut down 320 hours ago.
- A Loss of all Residual Heat Removal cooling occurred.
- Initial RCS temperature was 100°F.

Current conditions:

- RCS temperature increased to 180°F.
- Reactor Vessel water remains stable at 53” on 1-LI-3615A, RX VSL LVL (NR) and 1-LI-3615B, RX VSL LVL (WR).

Initiating Cue:

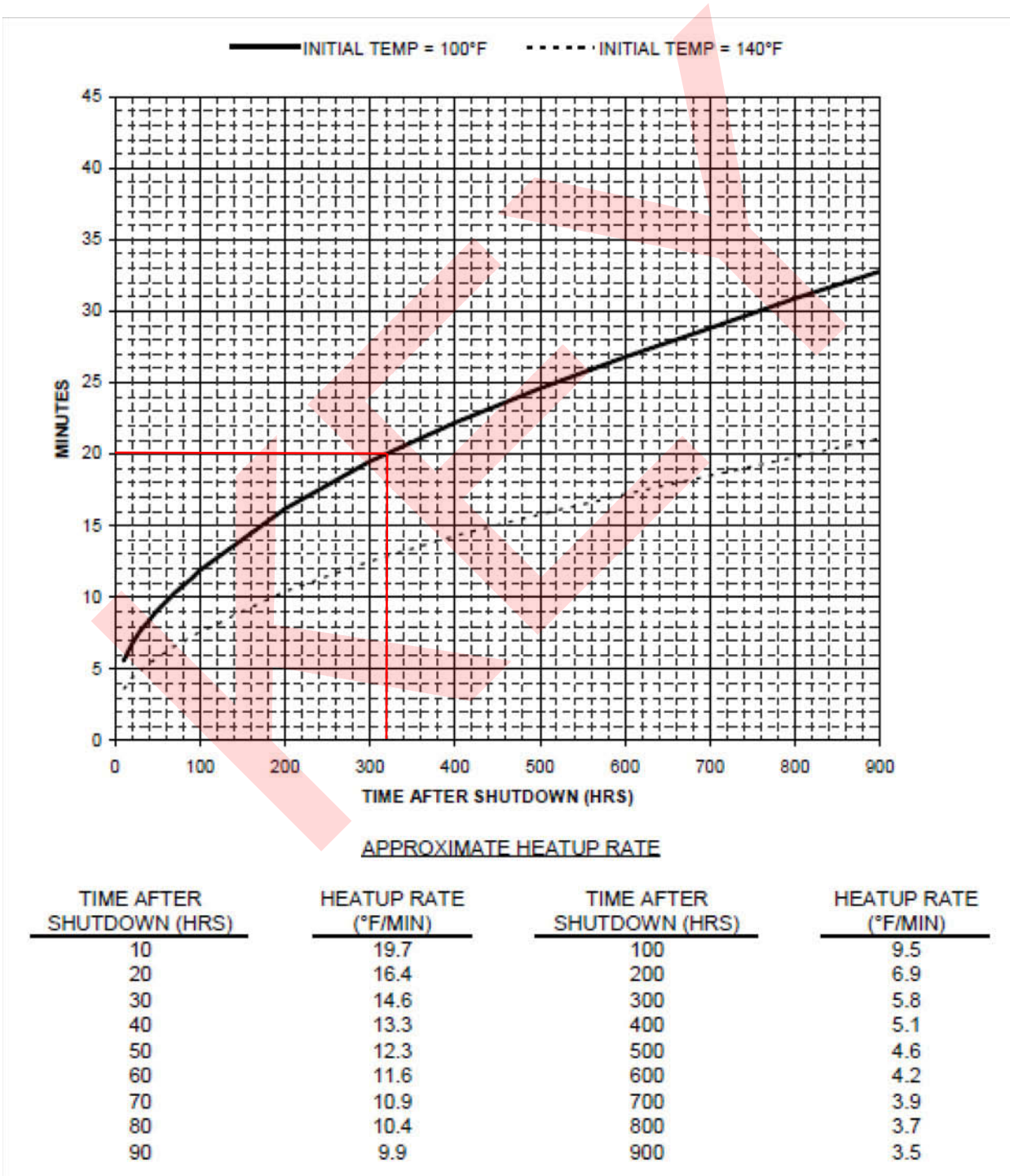
The Unit Supervisor directs you to PERFORM the following:

- DETERMINE per ABN-104, Residual Heat Removal System Malfunction, Attachment 5, Time to Saturation and Time to Core Uncovery for Loss of All RHR with the RCS at Reduced Inventory and Attachment 16, Actual Versus Indicated Reactor Vessel Level:
 - Time to Saturation from initial RCS temperature. 20 ± 1 minutes
 - Time to Core Uncovery. 2.2 ± 0.05 hours
 - Actual Reactor Vessel water level for current conditions:
 - 1-LI-3615A, RX VSL LVL (NR) 60.5 ± 0.5 inches
 - 1-LI-3615B, RX VSL LVL (WR) 60.5 ± 1.0 inches

CPNPP ABNORMAL CONDITIONS PROCEDURES MANUAL	UNIT 1 AND 2	PROCEDURE NO. ABN-104
RESIDUAL HEAT REMOVAL SYSTEM MALFUNCTION	REVISION NO. 9	PAGE 75 OF 134

ATTACHMENT 5
PAGE 1 OF 2

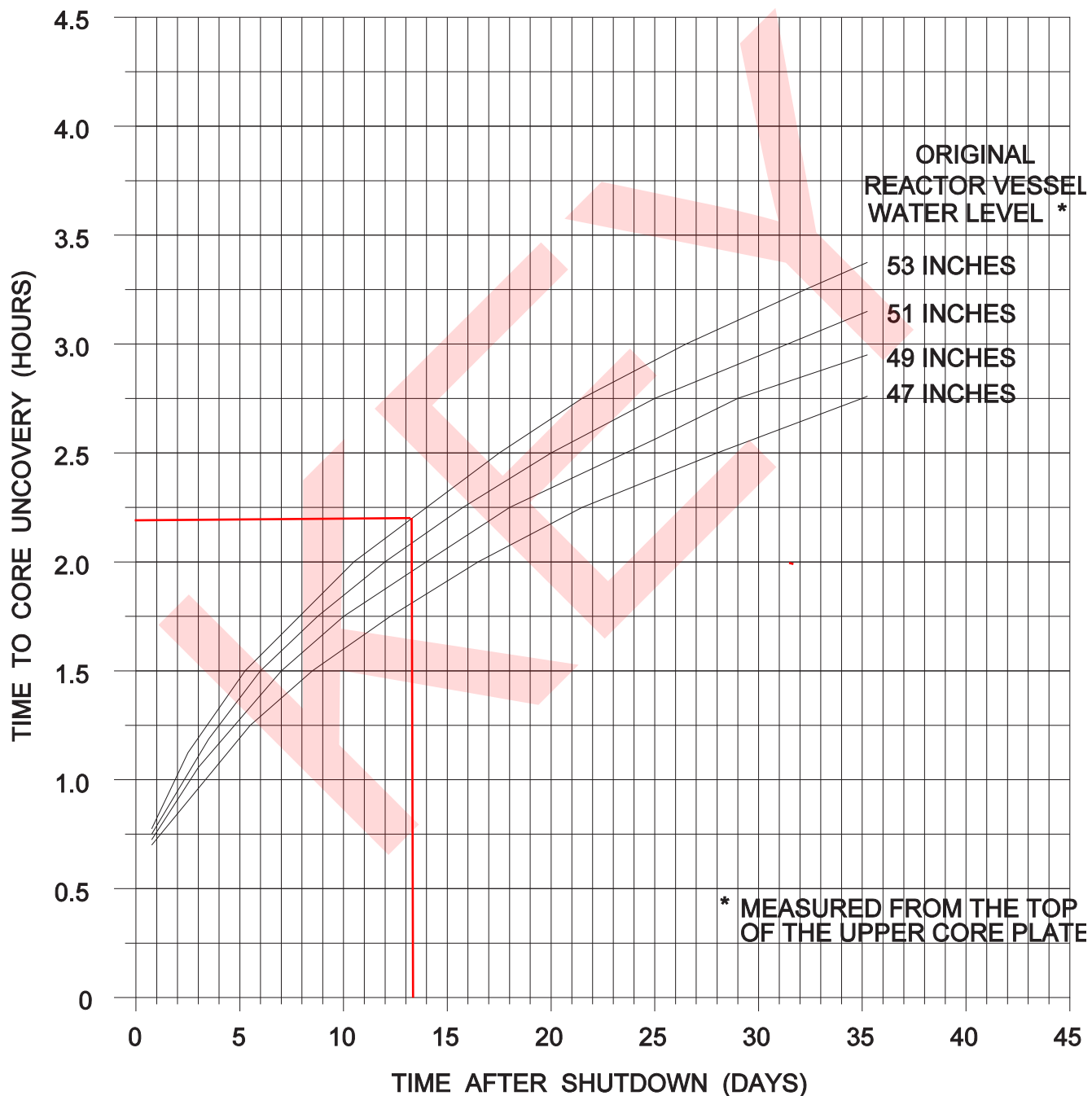
[C] TIME TO SATURATION FOR LOSS OF ALL RHR WITH THE RCS AT REDUCED INVENTORY (assuming no makeup)



CPNPP ABNORMAL CONDITIONS PROCEDURES MANUAL	UNIT 1 AND 2	PROCEDURE NO. ABN-104
RESIDUAL HEAT REMOVAL SYSTEM MALFUNCTION	REVISION NO. 9	PAGE 76 OF 134

ATTACHMENT 5
PAGE 2 OF 2

TIME TO CORE UNCOVERY FOR LOSS OF ALL RHR WITH
THE RCS AT REDUCED INVENTORY (assuming no makeup)

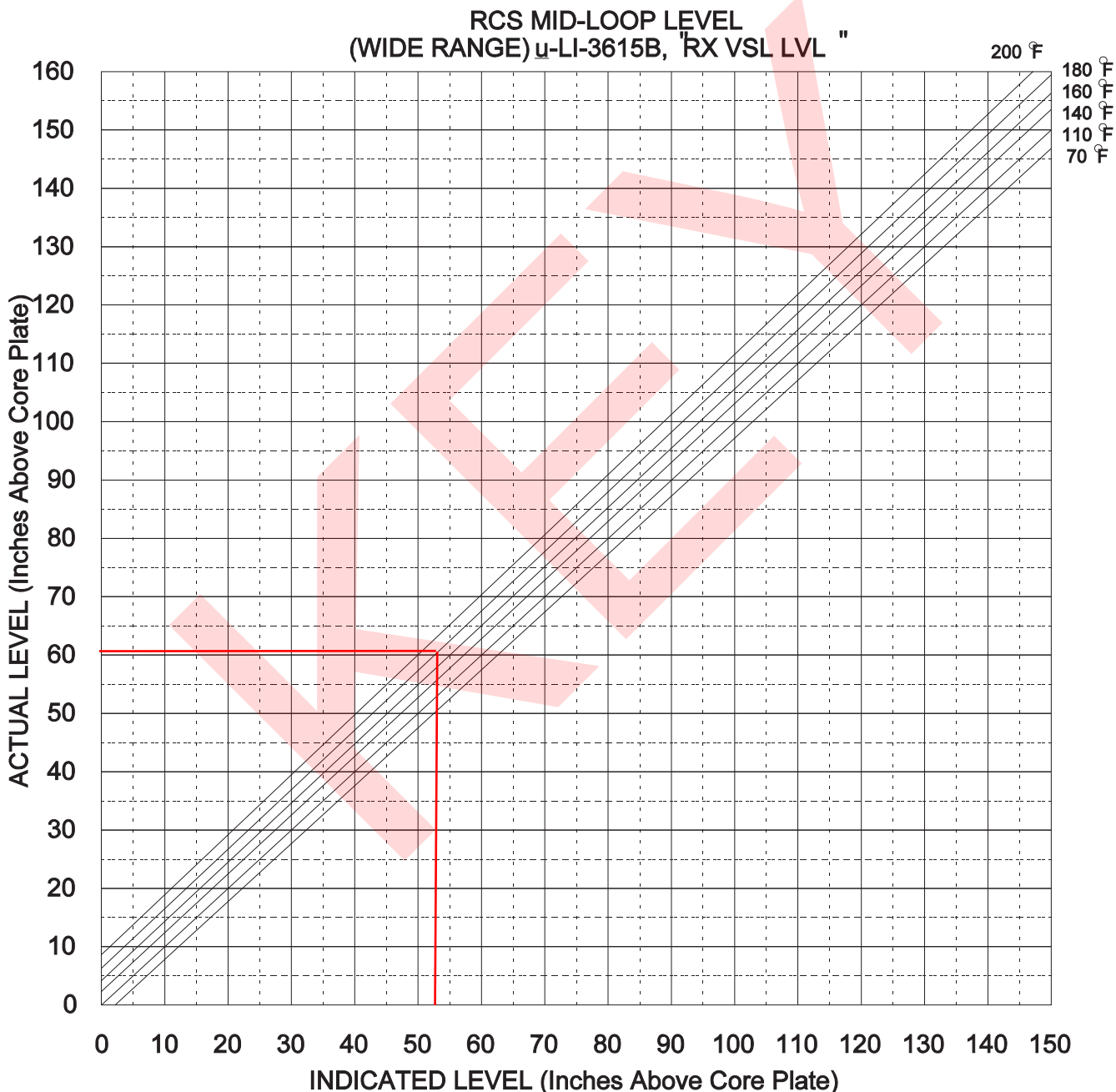


* MEASURED FROM THE TOP OF THE UPPER CORE PLATE

CPNPP ABNORMAL CONDITIONS PROCEDURES MANUAL	UNIT 1 AND 2	PROCEDURE NO. ABN-104
RESIDUAL HEAT REMOVAL SYSTEM MALFUNCTION	REVISION NO. 9	PAGE 108 OF 134

ATTACHMENT 16
PAGE 1 OF 2

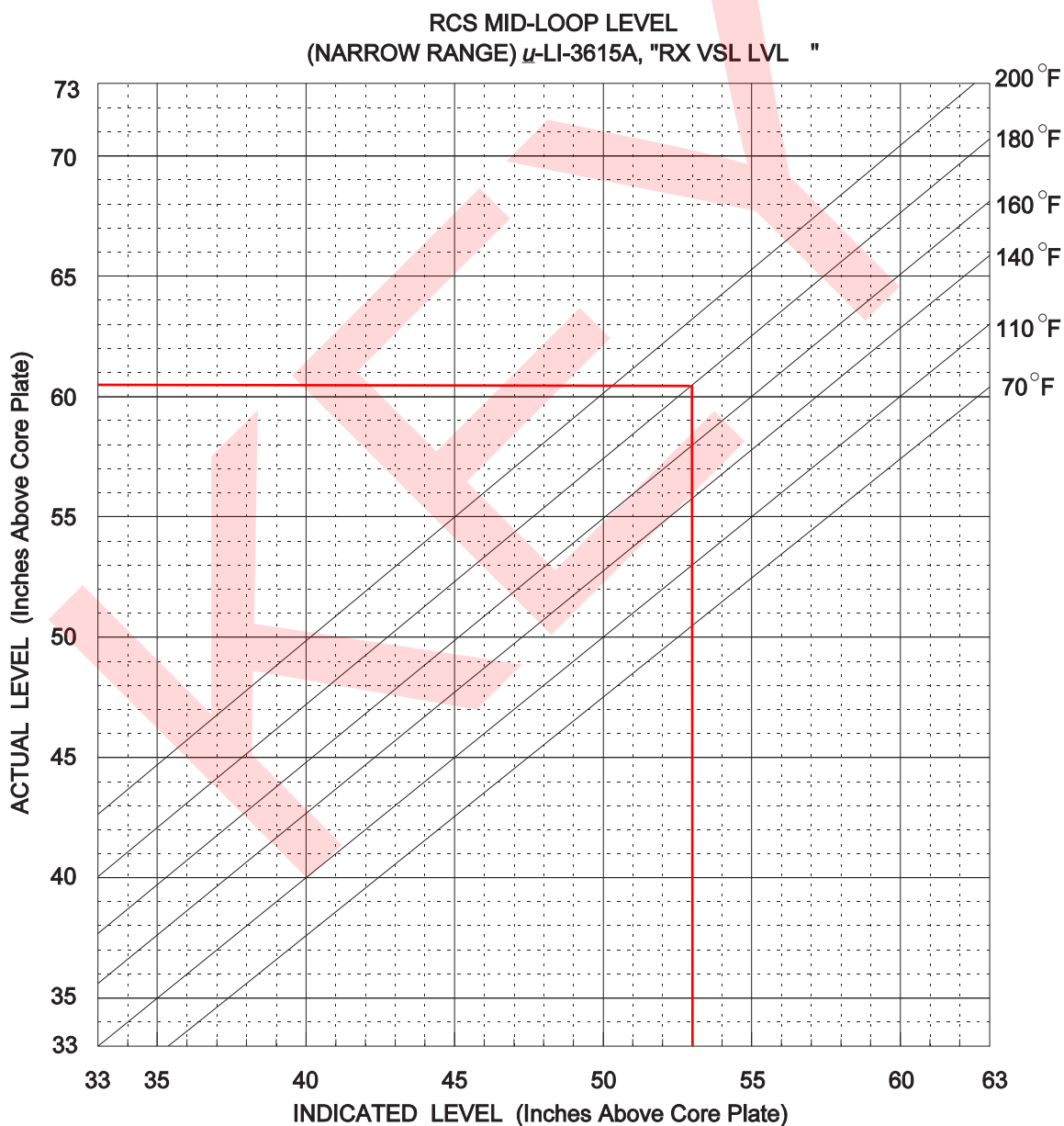
ACTUAL VERSUS INDICATED REACTOR VESSEL LEVEL
(For Various Temperatures)



CPNPP ABNORMAL CONDITIONS PROCEDURES MANUAL	UNIT 1 AND 2	PROCEDURE NO. ABN-104
RESIDUAL HEAT REMOVAL SYSTEM MALFUNCTION	REVISION NO. 9	PAGE 109 OF 134

ATTACHMENT 16
PAGE 2 OF 2

ACTUAL VERSUS INDICATED REACTOR VESSEL LEVEL
(For Various Temperatures)



Facility: CPNPP JPM # NRC RA2 Task # RO5001 K/A # 2.1.4 3.3

Title: Determine Licensed Operator License Status

Examinee (Print): _____

Testing Method:

Simulated Performance:	_____	Classroom:	<u>X</u>
Actual Performance:	<u>X</u>	Simulator:	_____
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>B</u>	Emerg:	_____ EN: _____

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:

- Today is October 6, 2021
- Three Licensed ROs are available to be assigned as the Unit 1, Reactor Operator for the oncoming shift
- Both Units maintained 100% RTP during the third quarter

Initiating Cue: The US directs you to PERFORM the following:

- Given the third quarter shifts worked as recorded in the Unit and Station Logs, DETERMINE which ROs are current on maintaining proficiency of an Active License. (Circle Correct Status)

• RO A	Active	Inactive
• RO B	Active	Inactive
• RO C	Active	Inactive

Task Standard: Utilizing ODA-315, Licensed Operator Maintenance Tracking DETERMINED license status of each operator. DETERMINED RO A has only stood four 12-hour that meet requirements. CIRCLED Inactive for RO A. DETERMINED RO B has stood five 12-hour watches that meet requirements. CIRCLED Active for RO B. DETERMINED RO C has only stood four 12-hour watches that meet requirements. CIRCLED Inactive for RO C. Values of items above must be calculated within the accuracy of the attached key.

Ref. Materials: ODA-315, Licensed Operator Maintenance Tracking (Rev. 8 - 0)
ODA-315-1, Active License Status Form (Rev. 8)

Validation Time: 5 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP**EXAMINER:**

PROVIDE examinee with copy of:

- **ODA-315, Licensed Operator Maintenance Tracking (All pages) (Orange paper)**
- **ODA-315-1, Active License Status Form (All pages) (Orange paper)**
- **Make-up CPNPP 2021 NRC JPM RA2 Handout (All pages) (Orange paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Perform Step: 1 √	DETERMINE which Reactor Operators are current on maintaining proficiency of an Active License. (Circle Correct Status)	
Standard:	DETERMINED RO A has only stood four 12-hour watches which qualify as the 9/31/21 watch was not completed in the previous quarter and does not count. CIRCLED Inactive for RO A.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 2 √	DETERMINE which Reactor Operators are current on maintaining proficiency of an Active License. (Circle Correct Status)	
Standard:	DETERMINED RO B has stood five 12-hour watches which qualify as the RO or BOP. CIRCLED Active for RO B.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 3 √	DETERMINE which Reactor Operators are current on maintaining proficiency of an Active License. (Circle Correct Status)	
Standard:	DETERMINED RO C has only stood four 12-hour watches which qualify as the 9/13/21 watch was only 8-hours and does not count. CIRCLED Inactive for RO C.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

STOP TIME:

**Make-Up CPNPP 2021 NRC RA2 Handout
RO 3rd Quarter Shifts Worked**

DATE	RO A	RO B	RO C
9/3/2021	U1 RO: 0600-1830		
9/4/2021	U2 RO: 0600-1830		
9/5/2021		U1 BOP: 0600-1830	U2 RO: 1800-0630
9/6/2021		U2 BOP: 0600-1830	U2 RO: 1800-0630
9/7/2021		U2 RO: 0600-1830	
9/12/2021	U1 BOP: 0600-1830		
9/13/2021			U1 RO: 0600-1530
9/14/2021		U1 RO: 1800-0630	
9/19/2021	U2 RO: 1800-0630		
9/24/2021		U1 BOP: 0600-1830	
9/25/2021			U1 BOP: 0600-1830
9/30/2021			U2 BOP: 1800-0630
9/31/2021	U1 BOP: 1800-0630		

Initial Conditions: Given the following conditions:

- Today is October 6, 2021
- Three Licensed ROs are available to be assigned as the Unit 1, Reactor Operator for the oncoming shift
- Both Units maintained 100% RTP during the third quarter

Initiating Cue: The US directs you to **PERFORM** the following:

- Given the third quarter shifts worked as recorded in the Unit and Station Logs, **DETERMINE** which ROs are current on maintaining proficiency of an Active License.
(Circle Correct Status)
 - RO A Active Inactive
 - RO B Active Inactive
 - RO C Active Inactive

MAKE-UP CPNPP 2021 NRC JPM RA2 Key

Initial Conditions: Given the following conditions:

- Today is October 6, 2021
- Three Licensed ROs are available to be assigned as the Unit 1, Reactor Operator for the oncoming shift
- Both Units maintained 100% RTP during the third quarter

Initiating Cue: The US directs you to PERFORM the following:

- Given the third quarter shifts worked as recorded in the Unit and Station Logs, DETERMINE which ROs are current on maintaining proficiency of an Active License.
(Circle Correct Status)

- | | | |
|--------|--------|----------|
| • RO A | Active | Inactive |
| • RO B | Active | Inactive |
| • RO C | Active | Inactive |

KEY

Facility: CPNPP JPM # NRC RA3 Task # RO5007 K/A # 2.2.12 3.7

Title: Perform Control Room Air Conditioning System Surveillance

Examinee (Print): _____

Testing Method:

Simulated Performance:	_____	Classroom:	<u>X</u>
Actual Performance:	<u>X</u>	Simulator:	_____
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>B</u>	Emerg:	_____ EN: _____

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:

- Both Units are operating at 100% power with all controls in Automatic
- Train B Control Room Air Conditioning System is being tested per OPT-116, CR AC SYSTEM following maintenance
- The 30-minute run time since completion of the Prerequisites is complete
- The following parameters are observed:
 - CR A/C UNIT 03- X-PI-3585A reads 150 psig and is operating 33% unloaded
 - CR A/C UNIT 04 -X-PI-3586A reads 140 psig and is operating 50% unloaded
 - X-TR-4123 reads 105°F
 - X-TI-5933 reads 72°F
 - X-TI-5734 reads 73°F
 - X-TI-5735 reads 73°F

Initiating Cue: The US directs you to PERFORM the following:

- COMPLETE the Control Room Air Conditioning System surveillance per OPT-116, CR AC SYSTEM
- RECORD and COMPLETE all data on OPT-116-1, CR AC System Data Sheet

Task Standard: Utilizing OPT-116, RECORDED data on OPT-116-1, PLOTTED air conditioning unit cooling capacity, and DETERMINED Acceptance Criteria met. Values of items above must be calculated within the accuracy of the attached key.

Ref. Materials: OPT-116, CR AC System (Rev. 5 - 0)
OPT-116-1, CR AC System Data Sheet (Rev. 5)

Validation Time: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP**EXAMINER:**

PROVIDE examinee with copy of:

- **OPT-116, CR AC System, INITIALED and N/A'd as appropriate up to Step 8.3 (All pages) (Orange paper)**
- **OPT-116-1, CR AC System Data Sheet, INITIALED and N/A'd as appropriate up to Step 8.3 (All pages) (Orange paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following steps are from OPT-116, Section 8.0.	
Perform Step: 1 8.3 & 1 st bullet	RECORD the following: <ul style="list-style-type: none"> • X-TR-4123, outside temperature (10M PRI) (X-CV-05) 	
Standard:	RECORDED X-TR-4123, outside temperature of 105°F on OPT-116-1 and INITIALED.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 2 8.3 & 2 nd bullet	RECORD the following: <ul style="list-style-type: none"> • X-TI-5933 ECB EXH TEMP (X-CV-01) 	
Standard:	RECORDED X-TI-5933, ECB EXH TEMP of 72°F, on OPT-116-1 and COMPARED to Required Test Conditions of ≥ 60 degrees and INITIALED.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 3 8.3 & 3 rd bullet	RECORD the following: <ul style="list-style-type: none"> • X-TI-5734, AB EXH TEMP EL-852' 6" (X-CV-03) 	
Standard:	RECORDED X-TI-5734, AB EXH TEMP of 73°F on OPT-116-1 and COMPARED to Required Test Conditions of ≥ 60 degrees and INITIALED.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 4 8.3 & 4 th bullet	RECORD the following: <ul style="list-style-type: none"> • X-TI-5735, AB EXH TEMP EL-831' 6" (X-CV-03) 	
Standard:	RECORDED X-TI-5735, AB EXH TEMP of 73°F, on OPT-116-1 and COMPARED to Required Test Conditions of ≥ 60 degrees and INITIALED.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 5 8.3 & 5 th bullet	RECORD the following: <ul style="list-style-type: none"> Compressor discharge pressures for operating A/C units. CR A/C Unit 03 (X-PI-3585A)
Standard:	RECORDED CR A/C Unit 03 (X-PI-3585A) pressure of 150 psig on OPT-116-1 and COMPARED to Required Test Conditions of < 170 psig and INITIALED.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 6 8.3 & 5 th bullet	RECORD the following: <ul style="list-style-type: none"> Compressor discharge pressures for operating A/C units CR A/C Unit 04 (X-PI-3586A)
Standard:	RECORDED CR A/C Unit 04 (X-PI-3586A) pressure of 140 psig on OPT-116-1 and COMPARED to Required Test Conditions of < 170 psig and INITIALED.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	If asked about Independent Verification (IV), REPORT to proceed as if the IV has been performed.
Perform Step: 7 8.4	VERIFY the above readings are within the specified limits. If any of the above readings are <u>NOT</u> within the specified limits, this test should be terminated and restarted when the above conditions can be met.
Standard:	VERIFIED that all readings are within limits and INITIALED.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 8 8.5	RECORD % unloaded (lights on A/C Unit Control Panel) for both operating A/C units. <ul style="list-style-type: none"> A/C UNIT 03
Standard:	RECORDED A/C UNIT 03 % unloaded of 33% on OPT-116-1 and INITIALED.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 9 8.5	RECORD % unloaded (lights on A/C Unit Control Panel) for both operating A/C units. <ul style="list-style-type: none"> A/C UNIT 04
Standard:	RECORDED A/C UNIT 04 % unloaded of 50% on OPT-116-1 and INITIALED.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step:10 √ 8.6	CALCULATE the average % unloaded by adding the % unloaded from the operating compressors and dividing by 2.
Standard:	ADDED 33% and 50% and DIVIDED by 2 to yield an average of 41.5%; RECORDED on OPT-116-1 and INITIALED.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 11 8.7	Using outside temperature (Step 8.3) and the calculated average compressor cooling capacity availability (Step 8.6), VERIFY operation is above the curve (Figure 1) in the data sheet, <u>AND</u> RECORD test results.
Standard:	PLOTTED the intersection point for 105 degrees and 41.5% on Figure 1 and COMPARED to the acceptability curve.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 12 √ 8.7	Using outside temperature (Step 8.3) and the calculated average compressor cooling capacity availability (Step 8.6), VERIFY operation is above the curve (Figure 1) in the data sheet, <u>AND</u> RECORD test results.
Standard:	VERIFIED plotted point is ABOVE the curve on Figure 1 and CIRCLED ABOVE then SAT on OPT-116-1 and INITIALED.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- **Both Units are operating at 100% power with all controls in Automatic**
- **Train B Control Room Air Conditioning System is being tested per OPT-116, CR AC SYSTEM following maintenance**
- **The 30-minute run time since completion of the Prerequisites is complete**
- **The following parameters are observed:**
 - **CR A/C UNIT 03- X-PI-3585A reads 150 psig and is operating 33% unloaded**
 - **CR A/C UNIT 04 -X-PI-3586A reads 140 psig and is operating 50% unloaded**
 - **X-TR-4123 reads 105°F**
 - **X-TI-5933 reads 72°F**
 - **X-TI-5734 reads 73°F**
 - **X-TI-5735 reads 73°F**

Initiating Cue: The US directs you to **PERFORM** the following:

- **COMPLETE** the Control Room Air Conditioning System surveillance per OPT-116, CR AC SYSTEM
- **RECORD** and **COMPLETE** all data on OPT-116-1, CR AC System Data Sheet

MAKE-UP CPNPP 2021 NRC JPM RA3 Key
CR A/C SYSTEM DATA SHEET

<u>STEP</u>		<u>OBSERVED</u>	<u>REQUIRED TEST CONDITIONS</u>	<u>INITIALS</u>
6.0	PREREQUISITES MET	N/A	N/A	<u>Seb</u>
	AND TIME/DATE	30 min ago/Today	N/A	<u>Seb</u>
8.1	CR A/C UNITS BEING TESTED	<u>3 / 4</u>	N/A	<u>Seb</u>
8.2	TIME AND DATE	<u>Now/Today</u>	≥ 30 MIN PAST STEP 6.0	<u>Seb</u>
8.3	RECORD THE FOLLOWING:			
	● X-TR-4123 OUTSIDE TEMPERATURE	<u>105F</u>	N/A	<u>Seb</u>
	● X-TI-5933	<u>72F</u>	≥ 60°F	<u>Seb</u>
	● X-TI-5734	<u>73F</u>	≥ 60°F	<u>Seb</u>
	● X-TI-5735	<u>73F</u>	≥ 60°F	<u>Seb</u>
	● COMPRESSOR DISCHARGE PRESSURES (N/A for shutdown units)			
	CR A/C UNIT 01 (X-PI-3583A)	<u>N/A</u>	<170 PSIG	<u>Seb</u>
	CR A/C UNIT 02 (X-PI-3584A)	<u>N/A</u>	<170 PSIG	<u>Seb</u>
	CR A/C UNIT 03 (X-PI-3585A)	<u>150 psig</u>	<170 PSIG	<u>Seb</u>
	CR A/C UNIT 04 (X-PI-3586A)	<u>140 psig</u>	<170 PSIG	<u>Seb</u>
8.4	ALL ABOVE REQUIRED TEST CONDITIONS MET	N/A	NOTE 1	<u>Seb</u>

NOTE 1: If test conditions are not met, TERMINATE test at this point. Test shall be restarted when conditions can be met.

MAKE-UP CPNPP 2021 NRC JPM RA3 Key
CR A/C SYSTEM DATA SHEET

<u>STEP</u>		<u>OBSERVED</u>	<u>INITIALS</u>
8.5	A/C UNIT % UNLOADED (N/A for shutdown units)		
	A/C UNIT 01	<u>N/A</u>	<u>Seb</u>
	A/C UNIT 02	<u>N/A</u>	<u>Seb</u>
	A/C UNIT 03	<u>33%</u>	<u>Seb</u>
	A/C UNIT 04	<u>50%</u>	<u>Seb</u>
8.6	CALCULATE AVERAGE		
	A/C UNIT NO. <u>3</u> A/C UNIT NO. <u>4</u>		<u>Seb</u>
	<u>% UNLOADED 33% + % UNLOADED 50%</u>	<u>= 41.5%</u>	<u>Seb</u>
	2	TRAIN AVERAGE COMPRESSOR COOLING CAPACITY AVAILABILITY	<u>Seb</u> <u>VERIFIED</u>
8.7	COMPARE OUTSIDE TEMP (STEP 8.3) AND AVERAGE COMPRESSOR COOLING CAPACITY AVAILABILITY (STEP 8.6) TO CURVE (FIGURE 1)	OPERATION <u>ABOVE/BELOW</u> CURVE	<u>Seb</u>
	ACCEPTANCE CRITERIA SAT IF OPERATION IS ABOVE CURVE	<u>SAT/UNSAT</u>	<u>Seb</u>

CONTINUOUS USE

OPT-116-1
PAGE 2 OF 4
R-5

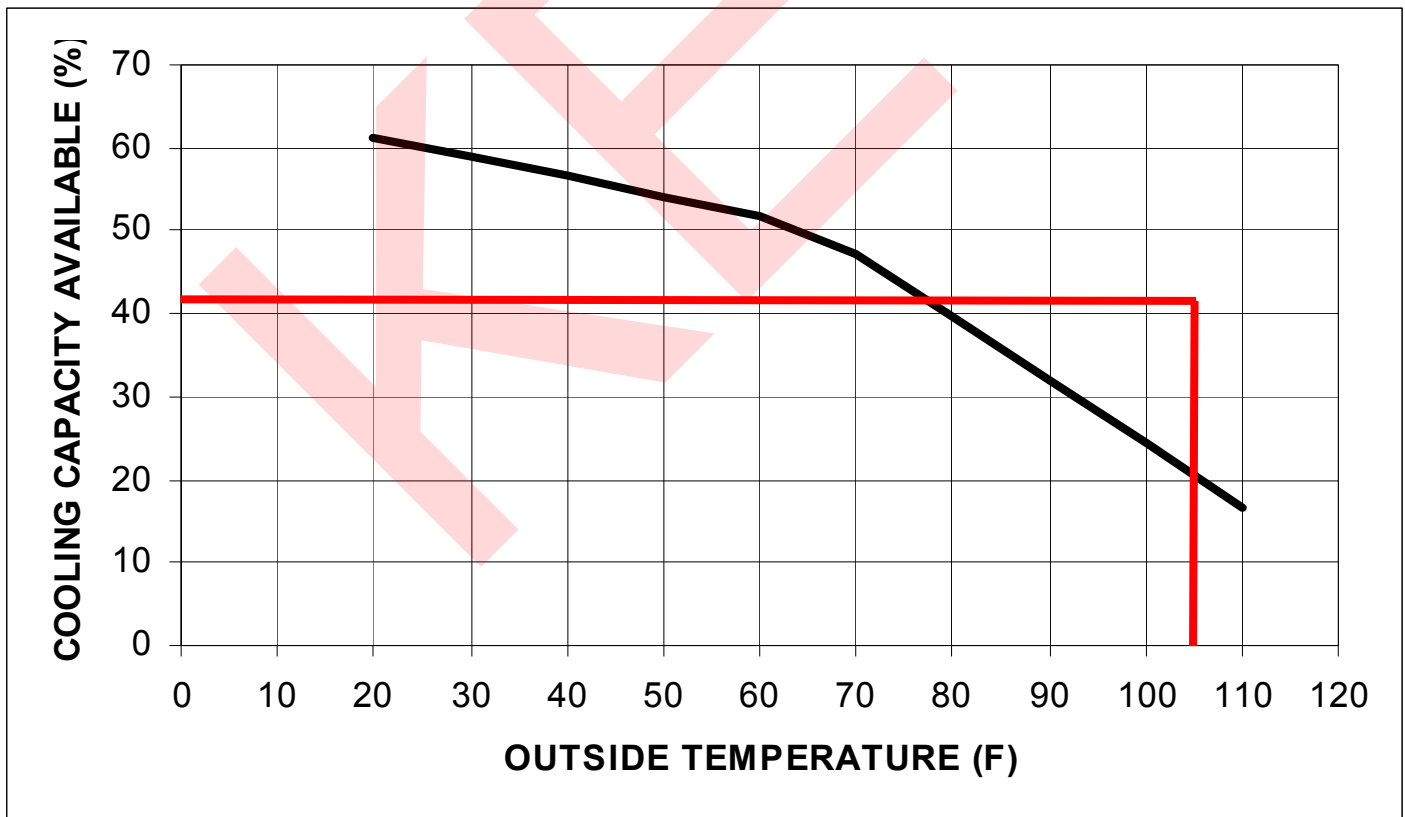
MAKE-UP CPNPP 2021 NRC JPM RA3 Key
CR A/C SYSTEM DATA SHEET

FIGURE 1

<u>OUTSIDE TEMPERATURE</u>	<u>PERCENT UNLOADED</u>
	16.7
110	24.3
100	32.0
90	39.6
80	47.2
70	51.7
60	54.1
50	56.5
40	58.9
30	61.3
20	

CONTROL ROOM HVAC MINIMUM REQUIRED AVAILABILITY

THE UNLOADED COMBINED AVERAGE OF THE TWO 50% CONTROL ROOM HVAC UNITS MUST BE ABOVE THE CURVE REPRESENTED BELOW:



CONTINUOUS USE

OPT-116-1
PAGE 3 OF 4
R-5

MAKE-UP CPNPP 2021 NRC JPM RA3 Key
CR A/C SYSTEM DATA SHEET

COMMENTS/DISCREPANCIES: _____

CORRECTIVE ACTIONS: _____

PERFORMED BY: _____ DATE: _____
SIGNATURE

REVIEWED BY: _____ DATE: _____
OPERATIONS MANAGEMENT

Facility: CPNPP JPM # NRC RA4

Task # BA1402

K/A # 2.3.4

3.2

Title: Determine Escorted Radiation Worker Allowable Dose

Examinee (Print): _____

Testing Method:

Simulated Performance: _____

Classroom: XActual Performance: X

Simulator: _____

Alternate Path: _____

Plant: _____

Time Critical: _____

Low Pwr: _____ RCA: _____

Bank / Mod / New: B

Emerg: _____ EN: _____

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:

- Two pump experts have been brought onsite to assess the status of a damaged Centrifugal Charging Pump that has been repaired
- Plant management has requested that you escort and coordinate the assessment with the pump experts
- The pump experts have NOT been authorized any DOSE beyond the normal Administrative Limits of an Escorted Radiation Worker
- The assessment is anticipated to take 2 hours
- The general dose rate in the area is 70 mrem/hour but can be reduced to 20 mrem/hour if lead shielding is installed
- Escorted Radiation Worker 'A' is a 40-year-old male that has received 250 mrem this year
- Escorted Radiation Worker 'B' is a 29-year-old female that has declared her pregnancy to Radiation Protection. She has received 15 mrem this month
- Today is September 22nd

CLASSROOM SETUP**Examiner:**

PROVIDE the examinee with a copy of:

- **STA-655, Exposure Monitoring Program (All pages) (Orange paper)**
- **STA-656, Radiation Work Control (All pages) (Orange paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Perform Step: 1 √	DETERMINE if Escorted Radiation Worker A can perform the assessment without shielding.
Performance Standard:	DETERMINED total dose for Escorted Radiation Worker A would be 70 mrem x 2 hours = 140 mrem. 140 mrem is greater than 100 mrem Administrative Limit. Escorted Radiation Worker A CANNOT perform the assessment without shielding.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 2 √	DETERMINE if Escorted Radiation Worker B can perform the assessment without shielding.
Performance Standard:	DETERMINED total dose for Escorted Radiation Worker B would be 70 mrem x 2 hours = 140 mrem. 140 mrem is greater than 50 mrem Administrative Limit per month. Escorted Radiation Worker B CANNOT perform the assessment without shielding.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 3 √	DETERMINE if Escorted Radiation Worker A can perform the assessment with shielding and without an exposure extension.
Performance Standard:	DETERMINED total dose for Escorted Radiation Worker A would be 20 mrem x 2 hours = 40 mrem. 40 mrem is less than 100 mrem Administrative Limit. Escorted Radiation Worker A CAN perform the assessment with shielding.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 4 √	DETERMINE if Escorted Radiation Worker B can perform the assessment with shielding and without an exposure extension.
Performance Standard:	DETERMINED total dose for Escorted Radiation Worker B would be 20 mrem x 2 hours = 40 mrem. 40 mrem + 15 mrem this month is greater than 50 mrem Administrative Limit per month. Escorted Radiation Worker B CANNOT perform the assessment with shielding without receiving an exposure extension.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:

Initial Conditions: Given the following conditions:

- Two pump experts have been brought onsite to assess the status of a damaged Centrifugal Charging Pump that has been repaired
- Plant management has requested that you escort and coordinate the assessment with the pump experts
- The pump experts have NOT been authorized any DOSE beyond the normal Administrative Limits of an Escorted Radiation Worker
- The assessment is anticipated to take 2 hours
- The general dose rate in the area is 70 mrem/hour but can be reduced to 20 mrem/hour if lead shielding is installed
- Escorted Radiation Worker 'A' is a 40-year-old male that has received 250 mrem this year
- Escorted Radiation Worker 'B' is a 29-year-old female that has declared her pregnancy to Radiation Protection. She has received 15 mrem this month
- Today is September 22nd

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

- DETERMINE if Escorted Radiation Worker 'A' can perform the assessment without shielding
 - Escorted Radiation Worker 'A' _____ perform the assessment without shielding
- DETERMINE if Escorted Radiation Worker 'B' can perform the assessment without shielding
 - Escorted Radiation Worker 'B' _____ perform the assessment without shielding
- DETERMINE if Escorted Radiation Worker 'A' can perform the assessment with shielding and without an exposure extension
 - Escorted Radiation Worker 'A' _____ perform the assessment with shielding and without an exposure extension
- DETERMINE if Escorted Radiation Worker 'B' can perform the assessment with shielding and without an exposure extension
 - Escorted Radiation Worker 'B' _____ perform the assessment with shielding and without an exposure extension

Initial Conditions: Given the following conditions:

- Two pump experts have been brought onsite to assess the status of a damaged Centrifugal Charging Pump that has been repaired
- Plant management has requested that you escort and coordinate the assessment with the pump experts
- The pump experts have NOT been authorized any DOSE beyond the normal Administrative Limits of an Escorted Radiation Worker
- The assessment is anticipated to take 2 hours
- The general dose rate in the area is 70 mrem/hour but can be reduced to 20 mrem/hour if lead shielding is installed
- Escorted Radiation Worker 'A' is a 40-year-old male that has received 250 mrem this year
- Escorted Radiation Worker 'B' is a 29-year-old female that has declared her pregnancy to Radiation Protection. She has received 15 mrem this year
- Today is September 22nd

Initiating Cue:

The Shift Manager directs you to PERFORM the following:

- DETERMINE if Escorted Radiation Worker 'A' can perform the assessment without shielding
 - Escorted Radiation Worker 'A' **CANNOT** perform the assessment without shielding
- DETERMINE if Escorted Radiation Worker 'B' can perform the assessment without shielding
 - Escorted Radiation Worker 'B' **CANNOT** perform the assessment without shielding
- DETERMINE if Escorted Radiation Worker 'A' can perform the assessment with shielding and without an exposure extension
 - Escorted Radiation Worker 'A' **CAN** perform the assessment with shielding and without an exposure extension
- DETERMINE if Escorted Radiation Worker 'B' can perform the assessment with shielding and without an exposure extension
 - Escorted Radiation Worker 'B' **CANNOT** perform the assessment with shielding and without an exposure extension

Facility: CPNPP Units 1 and 2		Date of Examination: September 2021
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: NRC
Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations (SA1)	R, N	2.1.34 Knowledge of primary and secondary plant chemistry. (3.5) JPM: Determine Chemistry Limitations and Required Actions (SO1029)
Conduct of Operations (SA2)	R, M	2.1.37 Knowledge of procedures, guidelines, or limitations associated with reactivity management. (4.6) JPM: Perform a Shutdown Margin Calculation (SO1017)
Equipment Control (SA3)	R, M	2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (4.4) JPM: Determine Loss of RHR Impact on Indication and Adequate Hot Leg Vent Path (SO1101)
Radiation Control (SA4)	R, D	2.3.6 Ability to approve release permits. (3.8) JPM: Review Containment Release Permit (SO1002)
Emergency Procedures/Plan (SA5)	R, M	2.4.41 Knowledge of the emergency action level thresholds and classifications. (4.6) JPM: Classify an Emergency Plan Event (SO1136)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 ; randomly selected)		

- SA1 The applicant will be presented with a set of RCS Chemistry parameters and utilize STA-609, Reactor Coolant Water Chemistry Control Program and CHM-120, Primary Chemistry to determine Action Levels and Actions required due to out of specification Chemistry parameters. The applicant will then refer to Technical Specifications and Technical Requirements Manual to determine any applicable LCOs, Actions and Conditions. This is a new JPM. (K/A 2.1.34 - IR 3.5)
- SA2 The applicant will perform a Shutdown Margin Calculation per OPT-301, Shutdown Margin Calculation, Attachment 1, Manual Generation of OPT-301-9, Shutdown Margin. Critical tasks include reviewing individual parameters, verifying adequate Shutdown Margin, and identifying any required action when the Acceptance Criteria is NOT met. This is a modified from bank JPM. (K/A 2.1.37 - IR 4.6)
- SA3 The applicant will be provided a set of plant conditions and will utilize ABN-104, Residual Heat Removal System Malfunction, to determine time to core saturation from initial RCS temperature, time to core uncover, and actual Reactor Vessel water level for conditions provided. The applicant will then utilize IPO-010A, Reactor Coolant System Reduced Inventory Operations to determine if an adequate Hot Leg vent path exists. This is a modified bank JPM (K/A 2.2.44 - IR 4.4)
- SA4 The applicant will utilize Technical Specifications, the Offsite Dose Calculation Manual, STA-603, Control of Station Radioactive Effluents, a completed STA-603-15, Containment Radioactive Effluent Release Data Sheet, and a completed CLI-744-3, Containment Gaseous Release DRMS Setpoint Data Sheet to determine the requirements that must be performed to conduct a release with 1-RE-5503 (CAG-197), Unit 1 Containment Air Gas Radiation Detector INOPERABLE. The applicant must also determine at what date/time the current Containment Air Sample expires as well as any applicable Technical Specification LCOs and Actions. This is a bank JPM. (K/A 2.3.6 - IR 3.8)
- SA5 The applicant will determine the appropriate Emergency Plan Classification in accordance with EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation. The critical steps will be to determine the correct classification within the notification time. This is a modified bank JPM. (K/A 2.4.41 - IR 4.6)

Facility: CPNPP JPM # NRC SA1 Task # SO1029 K/A # 2.1.34 3.5
 Title: Determine Chemistry Limitations and Required Actions

Examinee (Print): _____

Testing Method:

Simulated Performance: X Classroom: X
 Actual Performance: _____ Simulator: _____
 Alternate Path: _____ Plant: _____
 Time Critical: _____ Low Pwr: _____ RCA: _____
 Bank / Mod / New: N Emerg: _____ EN: _____

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 entered MODE 1 August 21, 2021 at 0000
- A new Mixed Bed Demineralizer was placed in service August 23, 2021 at 1530
- On August 24, 2021 at 1400, a turbine runback occurred following HDP 1-01 trip from 100% power
- Current Date and Time is August 24, 2021 1645
- The following sample results that have been observed and confirmed and appropriate notifications completed in accordance with STA-609-2, Primary Chemistry Out of Specification form:

Sample Date/Time	Parameter	Parameter Value
August 23, 2021 / 1630	RCS Chloride	195 ppb
August 23, 2021 / 1630	RCS Fluoride	95 ppb
August 23, 2021 / 1630	RCS Boron	860 ppm
August 23, 2021 / 1630	Dose Equivalent I ₁₃₁	1x10 ⁻⁵ µCi/gm
August 24, 2021 / 1630	RCS Chloride	155 ppb
August 24, 2021 / 1630	RCS Fluoride	55 ppb
August 24, 2021 / 1630	RCS Boron	890 ppm
August 24, 2021 / 1630	Dose Equivalent I ₁₃₁	0.47 µCi/gm

- Initiating Cue: The Shift Manager directs you to PERFORM the following:
- For each parameter, DETERMINE ACTION LEVEL and required action(s) per STA-609, Reactor Coolant Water Chemistry Control Program, if any
 - For each parameter, DETERMINE all Technical Specification and Technical Requirements Manual CONDITION(s), REQUIRED ACTION(s), and COMPLETION TIME(s), if any
- Task Standard: Utilizing STA-609, DETERMINED:
- RCS Chloride exceeds ACTION LEVEL 2 value for greater than 24 hours requiring initiation of plant shutdown to cold shutdown as quickly as permitted by other plant constraints
 - RCS Fluoride exceeded ACTION LEVEL 1 value requiring initiation of corrective actions to restore parameter within ACTION LEVEL 1 value within seven days (or six days remaining) AND notification to Director, Operations of condition and corrective action(s) taken
- Utilizing STA-609, Technical Specifications, and Technical Requirements Manual, DETERMINED:
- LCO 3.4.16, RCS Specific Activity applicable
 - CONDITION A. - Dose Equivalent I_{131} is not within limit
 - REQUIRED ACTIONS and COMPLETION TIMES
 - A.1 Verify DOSE EQUIVALENT I-131 $\leq 60 \mu\text{Ci/gm}$ once per 4 hours
 - A.2 Restore DOSE EQUIVALENT I-131 to within limit within 48 hours
 - TR LCO 13.4.33, Reactor Coolant System (RCS) Chemistry applicable
 - CONDITION A. - RCS Chloride exceeds Steady-State Limit but within Transient Limit
 - REQUIRED ACTIONS and COMPLETION TIMES
 - A.1 Restore parameter to within Steady-State limit within 24 hours

Required Materials: STA-609, Reactor Coolant Water Chemistry Control Program (Rev. 14)
CPNPP Technical Specifications - Unit 1 and 2 through Amendment 179
CPNPP Technical Specification Bases - Unit 1 and 2 (Rev. 82)
CPNPP Technical Requirements Manual - Unit 1 and 2 (Rev. 93)
CPNPP Technical Requirements Manual Bases - Unit 1 and 2 (Rev. 93)

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:

- **STA-609, Reactor Coolant Water Chemistry Control Program (all pages) (orange paper)**
- **CPNPP Technical Specifications (controlled copy)**
- **CPNPP Technical Specification Bases (controlled copy)**
- **CPNPP Technical Requirements Manual (controlled copy)**
- **CPNPP Technical Requirements Manual Bases (controlled copy)**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following steps are from STA-609, Attachment 8.A, Reactor Coolant System Power Operation (Reactor Critical).
Perform Step: 1 √	Determine appropriate RCS Chloride ACTION LEVEL: <ul style="list-style-type: none"> Find RCS Chloride limits Attachment 8.A, Page 1 of 3. Determine current RCS Chloride value from cue (155 ppb).
Standard:	REFERRED to Attachment 8.A Page 1 of 3 and DETERMINED RCS Chloride (> 150 ppb) results in ACTION LEVEL 2 classification.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps are from STA-609, Section 6.2.2.B, Action Level 2.
Perform Step: 2 √	Determine required actions for RCS Chloride exceeding ACTION LEVEL 2 value: <ul style="list-style-type: none"> Determine RCS Chloride exceeded limit from August 23, 2021 at 1630 to current time August 24, 2021 at 1645 (> 24 hours) based on cue provided. Find required action described in Section 6.2.2.B.2).
Standard:	REFERRED to Section 6.2.2.B.2) and DETERMINED required action is to initiate an orderly unit shutdown and bring plant to a cold shutdown condition as quickly as permitted by other plant constraints.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps are from STA-609, Attachment 8.A, Reactor Coolant System Power Operation (Reactor Critical).
Perform Step: 3 √	Determine appropriate RCS Fluoride ACTION LEVEL: <ul style="list-style-type: none"> Find RCS Fluoride limits Attachment 8.A, Page 1 of 3. Determine current RCS Fluoride value from cue (55 ppb).
Standard:	REFERRED to Attachment 8.A Page 1 of 3 and DETERMINED RCS Fluoride (> 50 ppb) results in ACTION LEVEL 1 classification.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps are from STA-609, Section 6.2.2.A, Action Level 1.	
Perform Step: 4√	Determine required actions for RCS Fluoride exceeding ACTION LEVEL 1 value: <ul style="list-style-type: none"> • Determine RCS Fluoride exceeded limit from August 23, 2021 at 1630 to current time August 24, 2021 at 1645 (> 24 hours) based on cue provided. • Find required action described in Section 6.2.2.A.2). 	
Standard:	<ul style="list-style-type: none"> • REFERRED to Section 6.2.2.A.2) and DETERMINED required action is to initiate corrective actions to return the parameter within the ACTION LEVEL 1 value range within 7 days (or 6 days remaining). • REFERRED to Section 6.2.2.A.3) and DETERMINED required action is to inform Director, Operations of condition and corrective actions taken. 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	The following steps are from Technical Specification LCO 3.4.16, Dose Equivalent I-131.	
Perform Step: 5√	DETERMINE all Technical Specifications impacted including CONDITION(s), REQUIRED ACTION(s) and COMPLETION TIME(s), if any	
Standard:	RECOGNIZED LCO 3.4.16, Dose Equivalent I-131 impacted and DETERMINED the following: <ul style="list-style-type: none"> • DETERMINED the following CONDITIONS of LCO 3.4.16 will be applicable <u>at time of discovery</u>: <ul style="list-style-type: none"> • CONDITION A – DOSE EQUIVALENT I-131 not within limit. <ul style="list-style-type: none"> • REQUIRED ACTION A.1 – Verify DOSE EQUIVALENT I-131 $\leq 60 \mu\text{Ci/gm}$ once per 4 hours <p><u>AND</u></p> <ul style="list-style-type: none"> • REQUIRED ACTION A.2 – Restore DOSE EQUIVALENT I-131 to within limit within 48 hours 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	The following steps are from Technical Requirements Manual TR LCO 13.4.33, Reactor Coolant System (RCS) Chemistry.	
Perform Step: 6√	DETERMINE all Technical Requirements Manual requirements impacted including CONDITION(s), REQUIRED ACTION(s) and COMPLETION TIME(s), if any	
Standard:	RECOGNIZED TR LCO 13.4.33, Reactor Coolant System (RCS) Chemistry impacted and DETERMINED the following: <ul style="list-style-type: none"> • DETERMINED the following CONDITIONS of TR LCO 13.4.33 will be applicable <u>at time of discovery</u>: <ul style="list-style-type: none"> • CONDITION A – RCS Chloride in excess of its Steady-State Limit but within its Transient Limit. • REQUIRED ACTION A.1 – Restore parameter to within Steady-State limit within 24 hours. 	
Terminating Cue:	JPM complete.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- Unit 1 entered MODE 1 August 21, 2021 at 0000
- A new Mixed Bed Demineralizer was placed in service August 23, 2021 at 1530
- On August 24, 2021 at 1400, a turbine runback occurred following HDP 1-01 trip from 100% power
- Current Date and Time is August 24, 2021 1645
- The following sample results that have been observed and confirmed and appropriate notifications completed in accordance with STA-609-2, Primary Chemistry Out of Specification form:

Sample Date/Time	Parameter	Parameter Value
August 23, 2021 / 1630	RCS Chloride	195 ppb
August 23, 2021 / 1630	RCS Fluoride	95 ppb
August 23, 2021 / 1630	RCS Boron	860 ppm
August 23, 2021 / 1630	Dose Equivalent I ₁₃₁	1x10 ⁻⁵ µCi/gm
August 24, 2021 / 1630	RCS Chloride	155 ppb
August 24, 2021 / 1630	RCS Fluoride	55 ppb
August 24, 2021 / 1630	RCS Boron	890 ppm
August 24, 2021 / 1630	Dose Equivalent I ₁₃₁	0.47 µCi/gm

Initial Conditions: Given the following conditions:

- Unit 1 entered MODE 1 August 21, 2021 at 0000
- A new Mixed Bed Demineralizer was placed in service August 23, 2021 at 1530
- On August 24, 2021 at 1400, a turbine runback occurred following HDP 1-01 trip from 100% power
- Current Date and Time is August 24, 2021 1645
- The following sample results that have been observed and confirmed and appropriate notifications completed in accordance with STA-609-2, Primary Chemistry Out of Specification form:

Sample Date/Time	Parameter	Parameter Value
August 23, 2021 / 1630	RCS Chloride	195 ppb
August 23, 2021 / 1630	RCS Fluoride	95 ppb
August 23, 2021 / 1630	RCS Boron	860 ppm
August 23, 2021 / 1630	Dose Equivalent I ₁₃₁	1x10 ⁻⁵ µCi/gm
August 24, 2021 / 1630	RCS Chloride	155 ppb
August 24, 2021 / 1630	RCS Fluoride	55 ppb
August 24, 2021 / 1630	RCS Boron	890 ppm
August 24, 2021 / 1630	Dose Equivalent I ₁₃₁	0.47 µCi/gm

Initiating Cue:

The Shift Manager directs you to PERFORM the following:

- For each parameter, DETERMINE ACTION LEVEL and required action(s) per STA-609, Reactor Coolant Water Chemistry Control Program, if any

RCS Chloride

- ACTION LEVEL 2
- Required actions – initiation of plant shutdown to cold shutdown as quickly as permitted by other plant constraints

RCS Fluoride

- ACTION LEVEL 1
- Required actions – initiate corrective actions to restore parameter within ACTION LEVEL 1 value within 7 days (or 6 days remaining)

AND

notification to Director, Operations of condition and corrective action(s) taken

- For each parameter, DETERMINE all Technical Specification CONDITION(s), REQUIRED ACTION(s), and COMPLETION TIME(s), if any

**1) DETERMINED the following CONDITIONS of LCO 3.4.16,
RCS Specific Activity will be applicable**

- **CONDITION A. - Dose Equivalent I131 is not within limit**
- **REQUIRED ACTIONS**
 - **A.1 Verify DOSE EQUIVALENT I-131 < 60 µCi/gm
once per 4 hours**
 - **A.2 Restore DOSE EQUIVALENT I-131 to within limit
within 48 hours**

**2) DETERMINED the following CONDITIONS of TR LCO
13.4.33, Reactor Coolant System (RCS) Chemistry
applicable**

- **CONDITION A. - RCS Chloride exceeds Steady-State
Limit but within Transient Limit**
- **REQUIRED ACTIONS**
 - **A.1 Restore parameter to within Steady-State limit
within 24 hours**

Facility: CPNPP JPM # NRC SA2 Task # SO1017 K/A # 2.1.37 4.6
 Title: Perform a Shutdown Margin Calculation

Examinee (Print): _____

Testing Method:

Simulated Performance:	_____	Classroom:	<u>X</u>
Actual Performance:	<u>X</u>	Simulator:	_____
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>M</u>	Emerg:	_____ EN: _____

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:

- At 1200 on 09/22/2021 the Unit 1 Reactor was tripped from 100% power
- RCS average Tave is 535°F
- Safety Injection has NOT been blocked
- At 1930, boron concentration by sample was 800 ppm
- No additional borations or dilutions have occurred since the 1930 sample
- All control rods were fully inserted on the trip
- Core Burnup is 9,000 MWD/MTU
- Unit 1 was stable at 100% power for 200 days prior to the trip
- A Subcritical Margin Calculation is NOT required (Step 10 of OPT-301, Attachment 1)
- Time now is 2000 on 09/22/2021

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

- CALCULATE Shutdown Margin per OPT-301, Reactor Shutdown Margin Verification, Attachment 1, Manual Generation of OPT-301-9 Shutdown Margin
 - SDM Boron Concentration _____ ppm
 - SDM Acceptance Criteria Satisfied YES / NO (CIRCLE one)
 - Comment(s), if any, entered in COMMENTS Section of OPT-301-9

Task Standard: Utilizing OPT-301, the Nuclear Design Report, and the Core Operating Limits Report, CALCULATED Shutdown Margin (SDM) Boron Concentration, DETERMINED Acceptance Criteria NOT met for SDM, and DETERMINED boration and Shift Manager notification are required. Values of items above must be calculated within the accuracy of the attached key.

Required Materials: OPT-301, Reactor Shutdown Margin Verification (Rev. 13 - 2)
OPT-301-9, Shutdown Margin (Rev. 9)
Comanche Peak Unit 1 Cycle 22 Core Operating Limits Report (COLR), Rev. 0
Comanche Peak Unit 1 Cycle 22 Nuclear Design Report (Rev. 0)

Validation Time: 45 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP**EXAMINER:**

PROVIDE the examinee with a copy of:

- **OPT-301, Reactor Shutdown Margin Verification (All pages) (Orange paper)**
- **OPT-301-9, Shutdown Margin (Orange paper)**
- **Comanche Peak Unit 1 Cycle 22 Core Operating Limits Report (COLR) (All pages) (Orange paper)**
- **Comanche Peak Unit 1 Cycle 22 Nuclear Design Report (All pages) (Orange paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following steps are from OPT-301, Attachment 1.			
<table border="1"> <tr> <td><u>NOTE:</u></td> <td>All data and results for this section are recorded on OPT-301-9.</td> </tr> </table>			<u>NOTE:</u>	All data and results for this section are recorded on OPT-301-9.
<u>NOTE:</u>	All data and results for this section are recorded on OPT-301-9.			
Perform Step: 1 1	RECORD the Unit, Cycle, MODE, and the date and time of this calculation.			
Standard:	RECORDED Unit 1, Cycle 22, MODE 3, Date and Time of this calculation on OPT-301-9 at top of Page.			
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>			
Perform Step: 2 2 & A.1	RECORD the following plant conditions: <ul style="list-style-type: none"> The measured RCS boron concentration <u>AND</u> the Date/Time the sample was taken. 			
Standard:	RECORDED 800 ppm on 9/22/21 at 1930 on OPT-301-9, Step A.1.			
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>			
Perform Step: 3 2, A.2, & 1 st bullet	RECORD the following plant conditions: <ul style="list-style-type: none"> The RCS average coolant temperature (T_{AVE}). <u>IF</u> performing a SUBCRITICAL calculation, <u>THEN</u> enter the average T_{AVE}. 			
Standard:	RECORDED average T_{AVE} of 535°F on OPT-301-9, Step A.2.			
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>			
Perform Step: 4 2, A.3, 1 st & 3 rd bullets	RECORD the following plant conditions: <ul style="list-style-type: none"> The core average burnup in MWD/MTU. <ul style="list-style-type: none"> This value may be obtained from the CHORE. Mark the appropriate burnup range per Section 5.1 of the NDR. 			
Standard:	RECORDED 9,000 MWD/MTU and CHECKED the MOL box on OPT-301-9, Step A.3.			
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>			

<p><u>NOTE:</u> An RCCA should be considered stuck if it is:</p> <ul style="list-style-type: none"> not fully inserted in the core, <p><u>AND</u></p> <ul style="list-style-type: none"> untrippable or immovable due to excessive friction, mechanical interference or otherwise known to be untrippable. 	
<p>Perform Step: 5 2 & A.4</p>	<p>RECORD the following plant conditions:</p> <ul style="list-style-type: none"> The number of known stuck RCCAs.
<p>Standard:</p>	<p>RECORDED 0 on OPT-301-9, Step A.4.</p>
<p>Comment:</p>	<p>SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>
<p>Perform Step: 6 2, A.5, 1st & 2nd bullets</p>	<p>RECORD the following plant conditions:</p> <ul style="list-style-type: none"> The SDM reactivity requirement for the current MODE in units of pcm (e.g., 1.3% $\Delta K/K = 1300$ pcm). The SDM reactivity requirement may be found in the COLR. The value of A.5 should ALWAYS be entered as a POSITIVE number.
<p>Standard:</p>	<p>REFERRED to Unit 1 COLR, DETERMINED required SDM and RECORDED 1300 pcm on OPT-301-9, Step A.5.</p>
<p>Comment:</p>	<p>SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>

<p>NOTE: The uncorrected minimum boron concentration is that concentration required to place the core subcritical by the amount shown in A.5 in a Xenon and Samarium free condition with the most reactive RCCA stuck out, including all applicable uncertainties. This value is conservative and borating the RCS to this concentration may result in a large dilution volume in preparation for startup.</p>	
<p>Perform Step: 7 3, B.1, 1st, 2nd & 3rd bullets</p>	<p>Determine the uncorrected minimum boron concentration as described below.</p> <p>DETERMINE the uncorrected minimum boron concentration using NDR Table 5.13, SDM BORON CONCENTRATION (ppm) AS A FUNCTION OF BURNUP AND CORE AVERAGE TEMPERATURE as follows:</p> <ul style="list-style-type: none"> • IF performing a SUBCRITICAL calculation, THEN REVIEW the values in the table to determine the maximum boron value in the temperature range from [A.2 -10°F] to 557°F. The highest boron concentration is the uncorrected minimum boron concentration used for B.1. • The RCS average temperature corresponding to the highest boron concentration is the most limiting temperature for the UNCORRECTED boron. However, it may not be most limiting when reactivity corrections (Xe, Sm, Rod Worth) are applied. (As seen in section 9. D.) • The temperature value that corresponds to the limiting SDM boron concentration may be listed in the comments section of OPT-301-9.
<p>Standard:</p>	<p>OBSERVED 535°F vs burnup on NDR Table 5.13 and EVALUATED -10 degrees and ARRIVED at the most conservative value:</p> <ul style="list-style-type: none"> • DETERMINED that the required Boron is higher at 525°F vs any other value up to 557°F and choose 525°F. • DETERMINED Boron required at 9,000 MWD/MTU and RECORDED 1491 PPM on OPT-301-9, Step B.1.
<p>Comment:</p>	<p>SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>
<p>Perform Step: 8 4 & 4.A</p>	<p><u>IF</u> the actual RCS Boron Concentration from line A.1 is greater than or equal to the required boron concentration from line B.1 <u>AND</u> there are no stuck RCCAs (A.4 = 0), <u>THEN PERFORM</u> the following:</p> <ul style="list-style-type: none"> • SDM requirements are satisfied without the need to take credit for Xenon/Samarium.
<p>Standard:</p>	<p>DETERMINED A.1 is less than B.1 and CONTINUED with procedure.</p>
<p>Comment:</p>	<p>SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>

Perform Step: 9 5	<u>IF</u> the actual RCS Boron Concentration from line A.1 is less than the required boron concentration from line B.1 <u>OR</u> there are stuck RCCAs (A.4 > 0), <u>THEN</u> continue with Step 6.
Standard:	DETERMINED A.1 is less than B.1 and CONTINUED with Step 6.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Perform Step: 10 6	REVIEW the limitations of Section 5.2.1 to determine the appropriate source for Xenon and Samarium Worth <u>AND</u> SELECT the appropriate source (NDR or "PC" for BEACON).
Standard:	REVIEWED the limitations of Section 5.2.1 and SELECTED NDR as the source for Xenon and Samarium Worth.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Perform Step: 11 7 & C.1	<u>IF</u> the NDR will be utilized for the source of Xenon and Samarium, <u>THEN</u> : <ul style="list-style-type: none"> ENTER the Shutdown Date/Time <u>AND</u> Duration.
Standard:	RECORDED 9/22/21, 1200 and 8 hours since time of the trip on OPT-301-9, Step C.1.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Perform Step: 12 7 & C.2	<u>IF</u> the NDR will be utilized for the source of Xenon and Samarium, <u>THEN</u> : <ul style="list-style-type: none"> ENTER Power / Power at Trip as follows: <ul style="list-style-type: none"> For a SUBCRITICAL Calculation, select "Power at Trip" <u>AND</u> enter the current Reactor power level at the time of the Reactor trip.
Standard:	CHECKED "Power at Trip" box and RECORDED 100% on OPT-301-9, Step C.2.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 13 7 & C.3	<p><u>IF</u> the NDR will be utilized for the source of Xenon and Samarium, <u>THEN</u>:</p> <ul style="list-style-type: none"> • SELECT “NDR” as the source of Xenon <u>AND</u> ENTER the Xenon value as follows: <ul style="list-style-type: none"> • The Xenon value should be entered as a NEGATIVE (-) number (C.3 should ALWAYS be negative). • Obtain Xenon values from the NDR Table indicated below: <ul style="list-style-type: none"> • XENON WORTH (pcm) AS A FUNCTION OF TIME FOLLOWING REACTOR TRIP • “MOL” – NDR Table 5.19 • For a Subcritical Calculation, determine the Xenon value based on: <ul style="list-style-type: none"> • 1) The power level answered in C.2. • 2) The minimum magnitude value of Xenon from a shutdown duration of [C.1] to [C.1 + 4 hours].
Standard:	DETERMINED the minimum value of xenon is at [C.1 + 4 hours] and PLOTTED 100% vs 12 hours [8 hours since S/D + 4 hours] on NDR Table 5.19 and RECORDED -4980 pcm on OPT-301-9, Step C.3.
Comment: <div style="float: right; border: 1px solid black; padding: 2px;"> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> </div>	

Perform Step: 14 7 & C.4	<p><u>IF</u> the NDR will be utilized for the source of Xenon and Samarium, <u>THEN</u>:</p> <ul style="list-style-type: none"> • SELECT “NDR” as the source of Samarium <u>AND</u> ENTER the Samarium value as follows: <ul style="list-style-type: none"> • The Samarium value should be entered as a NEGATIVE (-) number (C.4 should ALWAYS be negative). • <u>IF</u> Samarium is NOT in equilibrium (per step 3.13 or 5.2.1.D), <u>THEN</u> conservatively utilize a value of 0 pcm for Samarium worth. • <u>IF</u> the Burnup input is less than 30 EFPD, <u>THEN</u> conservatively utilize a value of 0 pcm Samarium worth. • Obtain Samarium values from the NDR Table indicated below: <ul style="list-style-type: none"> • EFFECTIVE SAMARIUM WORTH (pcm) AS A FUNCTION OF TIME FOLLOWING REACTOR TRIP • “MOL” – NDR Table 5.22 • For a SUBCRITICAL <u>OR</u> CRITICAL Calculation, utilize Samarium values for 100% RTP equilibrium condition (t=0)
Standard:	REFERRED to NDR Table 5.22 and CHOSE the “t=0” value for 100% power and RECORDED -1086 pcm on OPT-301-9, Step C.4.
Comment: <div style="float: right; border: 1px solid black; padding: 2px;"> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> </div>	

Perform Step: 15 9 & D.1	Determine the Shutdown Margin boron concentration as described in this section. <ul style="list-style-type: none"> • DETERMINE the Integral Boron Worth at a boron concentration of [B.1] from the NDR Table indicated below, using a temperature of [A.2 - 10°F]. Enter as a NEGATIVE (-) number (D.1 should ALWAYS be negative): • ARI INTEGRAL BORON WORTH (pcm) AS A FUNCTION OF BORON CONCENTRATION AND CORE AVERAGE TEMPERATURE • "MOL" – NDR Table 5.8
Standard:	REFERRED to NDR Table 5.8 and PLOTTED 1491 ppm vs 525°F and INTERPOLATED between the values at 1450 ppm and 1500 ppm and RECORDED -12876 pcm on OPT-301-9, Step D.1.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 16 9 & D.2	Determine the Shutdown Margin boron concentration as described in this section. <ul style="list-style-type: none"> • DETERMINE most reactive RCCA worth from NDR Table 6.1, SUMMARY OF REACTIVITY REQUIREMENTS AND SHUTDOWN MARGIN, and enter as a positive (+) number (D.2 should ALWAYS be positive). • Select the <u>highest</u> value for 'Stuck Rod' from MOST REACTIVE RCCA STUCK OUT.
Standard:	REFERRED to NDR Table 6.1 and DETERMINED most reactive stuck rod worth at EOL and RECORDED +1430 pcm on OPT-301-9, Step D.2.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 17 9 & D.3	Determine the Shutdown Margin boron concentration as described in this section. <ul style="list-style-type: none"> • CALCULATE the worth correction: <ul style="list-style-type: none"> • $C.3 + C.4 + (A.4 \times D.2) = D.3$
Standard:	ADDED -4980 pcm + -1086 pcm + (0 x 1430 pcm) = -6066 pcm and RECORDED -6066 pcm on OPT-301-9, Step D.3.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 18 9 & D.4	Determine the Shutdown Margin boron concentration as described in this section. <ul style="list-style-type: none"> • DETERMINE the boron correction factor using NDR Figure 5.35, BORON CORRECTION FACTOR AS A FUNCTION OF XENON AND EFFECTIVE SAMARIUM WORTH. • Xe + Sm Worth = <u>C.3</u> + <u>C.4</u> = ____ • Boron Correction Factor from NDR Figure 5.35 at the above value = _____
Standard:	PLOTTED -6066 ± 10 pcm on NDR Figure 5.35 and RECORDED 0.913 ± 0.002 on OPT-301-9, Step D.4.
Comment: <div style="float: right; border: 1px solid black; padding: 2px;"> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> </div>	
Perform Step: 19 9 & D.5	Determine the Shutdown Margin boron concentration as described in this section. <ul style="list-style-type: none"> • CALCULATE the integral boron worth for minimum Shutdown Margin: • $(\underline{D.1} - \underline{D.3}) / (\underline{D.4}) = \underline{D.5}$
Standard:	$-12876 - (-6066) / 0.913 = -7459$ and RECORDED -7459 ± 40 pcm on OPT-301-9, Step D.5.
Comment: <div style="float: right; border: 1px solid black; padding: 2px;"> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> </div>	
Perform Step: 20 ^v 9 & D.6	Determine the Shutdown Margin boron concentration as described in this section. <ul style="list-style-type: none"> • DETERMINE the Shutdown Margin boron concentration at [D.5] from the NDR Table indicated below • IF D.3 is less than or equal to zero, THEN use a temperature of [A.2 - 10°F] • ARI INTEGRAL BORON WORTH (pcm) AS A FUNCTION OF BORON CONCENTRATION AND CORE AVERAGE TEMPERATURE • "MOL" – NDR Table 5.8
Standard:	PLOTTED 525°F and -7459 ± 40 pcm on NDR Table 5.8 and INTERPOLATED between the 800 ppm and 850 ppm values and RECORDED 831 ± 10 ppm on OPT-301-9, Step D.6.
Comment: <div style="float: right; border: 1px solid black; padding: 2px;"> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> </div>	

Perform Step: 21 10 & 1 st bullet	The calculation of the subcritical margin is optional and may be determined as described in this section. <ul style="list-style-type: none"> • <u>IF</u> this section is not performed, <u>THEN</u> N/A Section E and proceed to Step 11.
Standard:	DETERMINED Subcritical Margin calculation not required per the Initial Conditions and CHECKED the N/A box on OPT-301-9, Step E.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 22 11	REVIEW the results to ensure accuracy of the input values.
Standard:	REVIEWED the results to ensure accuracy of the input values.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 23^v 12, 12.A, 12.B, & 12.C	<u>IF</u> the calculation is being performed to satisfy the TS requirement for Shutdown Margin (Acceptance Criteria F.1), <u>THEN</u> PERFORM the following: <ul style="list-style-type: none"> • DETERMINE if SDM Acceptance Criteria is satisfied per the relationships identified on OPT-301-9. • CIRCLE the appropriate result of the SDM determination, (“YES” or “NO”) <u>AND</u> IDENTIFY initials for completion of Acceptance Criteria check. • <u>IF</u> the Acceptance Criteria F.1 is <u>NOT</u> satisfied, <u>THEN</u> INITIATE boration in accordance with ABN-107 <u>AND</u> NOTIFY the Shift Manager.
Standard:	COMPARED current RCS Boron concentration of 800 ppm to required Boron concentration of 831 ± 10 ppm , and <ul style="list-style-type: none"> • DETERMINED Shutdown Margin is <u>NOT</u> being met. CIRCLED the NO box on OPT-301-9, Step F.1. • ENTERED statement “INITIATE Boration per ABN-107, Emergency Boration and NOTIFY the Shift Manager” in the COMMENTS section of OPT-301-9.
Terminating Cue:	This JPM is complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- At 1200 on 09/22/2021 the Unit 1 Reactor was tripped from 100% power
- RCS average Tave is 535°F
- Safety Injection has NOT been blocked
- At 1930, boron concentration by sample was 800 ppm
- No additional borations or dilutions have occurred since the 1930 sample
- All control rods were fully inserted on the trip
- Core Burnup is 9,000 MWD/MTU
- Unit 1 was stable at 100% power for 200 days prior to the trip
- A Subcritical Margin Calculation is NOT required (Step 10 of OPT-301, Attachment 1)
- Time now is 2000 on 09/22/2021

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

- CALCULATE Shutdown Margin per OPT-301, Reactor Shutdown Margin Verification, Attachment 1, Manual Generation of OPT-301-9 Shutdown Margin
 - SDM Boron Concentration _____ ppm
 - SDM Acceptance Criteria Satisfied YES / NO (CIRCLE one)
 - Comment(s), if any, entered in COMMENTS Section of OPT-301-9

Initial Conditions: Given the following conditions:

- At 1200 on 09/22/2021 the Unit 1 Reactor was tripped from 100% power
- RCS average Tave is 535°F
- Safety Injection has NOT been blocked
- At 1930, boron concentration by sample was 800 ppm
- No additional borations or dilutions have occurred since the 1930 sample
- All control rods were fully inserted on the trip
- Core Burnup is 9,000 MWD/MTU
- Unit 1 was stable at 100% power for 200 days prior to the trip
- A Subcritical Margin Calculation is NOT required (Step 10 of OPT-301, Attachment 1)
- Time now is 2000 on 09/22/2021

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

- CALCULATE Shutdown Margin per OPT-301, Reactor Shutdown Margin Verification, Attachment 1, Manual Generation of OPT-301-9 Shutdown Margin
 - SDM Boron Concentration 831 +/- 10 ppm
 - SDM Acceptance Criteria Satisfied YES / **NO** (CIRCLE one)
 - Comment(s), if any, entered in COMMENTS Section of OPT-301-9 **INITIATE Boration per ABN-107 and NOTIFY SM.**

SHUTDOWN MARGIN
MAKE-UP CPNPP 2021 NRC JPM SA2 Key

Unit 1 Cycle 22 MODE 3 Date 9/22/21 Time 2000

A. PLANT CONDITIONS		
A.1	RCS Boron <u>800</u> ppm @ Date <u>9/22/21</u> Time <u>1930</u>	A.3 Burnup <u>9,000</u> MWD/MTU [] BOL [X] MOL [] EOL
A.2	Tave <u>535</u> °F	A.4 No. of Stuck RCCAs <u>0</u>
A.5	COLR Shutdown Margin Requirement (should be positive)	<u>1300</u> pcm
B.1	UNCORRECTED MIN BORON FOR SDM at A.2 and A.3	<u>1491</u> ppm
C. XENON AND SAMARIUM WORTH [] N/A		
C.1	Shutdown: Date <u>9/22/21</u> Time <u>1200</u> Duration <u>8</u> hours	
C.2	[] Power [X] Power at Trip	<u>100</u> %RTP
C.3	Xenon Worth (1) [X] NDR [] PC (should be negative)	<u>-4980</u> pcm
C.4	Samarium Worth [X] NDR [] PC (should be negative)	<u>-1086</u> pcm
D. SHUTDOWN MARGIN BORON CONCENTRATION [] N/A		
D.1	IBW at B.1 (should be negative)	<u>-12876</u> pcm
D.2	Most Reactive RCCA Worth (should be positive)	<u>+1430</u> pcm
D.3	Worth Correction [C.3 + C.4 + (A.4 * D.2)]	<u>-6066</u> pcm
D.4	Boron Correction Factor at C.3 + C.4	<u>0.913 +/- 0.002</u>
D.5	IBW for Minimum SDM [(D.1 - D.3) / D.4]	<u>-7459 +/- 40</u> pcm
D.6	SDM Boron Concentration at D.5	<u>831 +/- 10</u> ppm
E. SUBCRITICAL MARGIN [X] N/A		
E.1	IBW at A.1 (should be negative)	_____ pcm
E.2	Total Worth [(E.1 * D.4) + C.3 + C.4 + (A.4 * D.2)]	_____ pcm
E.3	Subcritical Margin (D.1 + A.5 - E.2)	_____ pcm
F. ACCEPTANCE CRITERIA	SATISFIED	INITIALS
F.1	A.1 > B.1 AND A.4 = 0 OR A.1 >= D.6	YES NO
F.2	A.1 > _____ ppm (200 deg Xe-Free Crit B) (ref OPT-301 5.1.2)	YES NO N/A (N/A if SI is not blocked)

(1) When credit is taken for non-equilibrium xenon worth, Shutdown Margin should be recalculated every 4 hours. When credit is taken for equilibrium xenon or samarium worth following a reactor down-power, Shutdown Margin should be reverified on a reactor power increase.

Comments: **INITIATE Boration per ABN-107 and NOTIFY the Shift Manager.**

A.1 and B.1 adjusted to remove excess B-10 conservatism. See attached description.

Performed By (CPE or RO): _____ Date: _____
Reactor Operator Review: _____ Date: _____

Forward a copy of completed form to Core Performance Engineering Manager (Mail Code M34).

Unit Supervisor: _____ Date: _____
Operations Management: _____ Date: _____

Facility: CPNPP JPM # NRC SA3 Task # SO1101 K/A # 2.2.44 4.4

Title: Determine Loss of RHR Impact on Indication and Adequate Hot Leg Vent Path

Examinee (Print): _____

Testing Method:

Simulated Performance:	<u>X</u>	Classroom:	<u>X</u>
Actual Performance:	_____	Simulator:	_____
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>M</u>	Emerg:	_____ EN: _____

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 to support emergent mid-cycle work
- The Reactor was shut down 320 hours ago
- Pressurizer Manway is removed (No FME cover is installed)
- A repair is in progress on 1-03 SI Accumulator Check Valve with the bonnet and check valve internals removed (RCS open to atmosphere)
- Reactor Vessel water level was inadvertently lowered to 53" above top of Upper Core Plate before the drain path could be located and isolated
- A Loss of all Residual Heat Removal cooling occurred
- Initial RCS temperature was 100°F

Current conditions:

- RCS temperature increased to 180°F
- Reactor Vessel water remains stable at 53" on 1-LI-3615A, RX VSL LVL (NR) and 1-LI-3615B, RX VSL LVL (WR)

- Initiating Cue: The Shift Manager directs you to PERFORM the following:
- Determine per ABN-104, Residual Heat Removal System Malfunction, Attachment 5, Time to Saturation and Time to Core Uncovery for Loss of All RHR with the RCS at Reduced Inventory and Attachment 16, Actual Versus Indicated Reactor Vessel Level:
 - Time to Saturation from initial RCS temperature _____
 - Time to Core Uncovery _____
 - Actual Reactor Vessel water level for current conditions:
 - 1-LI-3615A, RX VSL LVL (NR) _____
 - 1-LI-3615B, RX VSL LVL (WR) _____
 - Evaluate the given conditions above and determine the following in accordance with IPO-010A, Reactor Coolant System Reduced Inventory Operations:
 - Based on CURRENT plant conditions, does an Adequate RCS Hot Leg Vent Path exist? (Circle correct choice)
 YES NO

Task Standard: Utilizing ABN-104, DETERMINED Time to Saturation from initial conditions, Time to Core Uncovery, and actual RCS level using both narrow range and wide range level indicators following Loss of the Residual Heat Removal System. Utilizing IPO-010A, DETERMINED an adequate Hot Leg Vent Path for a Cold Leg Opening DOES NOT exist. Values of items above must be calculated within the accuracy of the attached key.

Required Materials: ABN-104, Residual Heat Removal System Malfunction (Rev. 9 - 11)
 IPO-010A, Reactor Coolant System Reduced Inventory Operations (Rev. 20 - 0)

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:

- **ABN-104, Residual Heat Removal Malfunction.**
 - **Attachment 5, Time to Saturation and Time to Core Uncovery for Loss of All RHR with the RCS at Reduced Inventory (pages 75-76) (orange paper).**
 - **Attachment 16, Actual Versus Indicated Reactor Vessel Level (pages 108-109) (orange paper).**
 - **IPO-010A, Reactor Coolant System Reduced Inventory Operations (all pages) (orange paper).**

PROVIDE the examinee a Straightedge or ruler.

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following steps are from ABN-104, Attachment 5.	
Perform Step: 1 √	Determine Time to Saturation : <ul style="list-style-type: none"> Find Time to Saturation from Attachment 5, Page 1. 	
Standard:	REFERRED to Page 1 of Attachment 5 and DETERMINED the intersection of Time After Shutdown (320 hours) and Initial Temp (100°F) and DETERMINED: TIME TO SATURATION = 20 ± 1 minutes .	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	The following steps are from ABN-104, Attachment 5.	
Perform Step: 2 √	Determine Time to Core Uncovery : <ul style="list-style-type: none"> Find Time to Core Uncovery from Attachment 5, Page 2. 	
Standard:	REFERRED to Page 2 of Attachment 5 and DETERMINED the intersection of Time After Shutdown (320 hours/24 hrs = 13.3 days) and Initial Level (53 inches) and DETERMINED: TIME TO CORE UNCOVERY = 2.2 ± 0.05 hours .	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	The following step is from ABN-104, Attachment 16.	
Perform Step: 3 √	Determine Actual Reactor Vessel Level : <ul style="list-style-type: none"> Find Actual Reactor Vessel Level from Attachment 16, Page 2 for 1-LI-3615A. 	
Standard:	REFERRED to Page 2 of Attachment 16 and DETERMINED the intersection of Indicated Level (53 inches) and Current Temperature (180°F) and DETERMINED: ACTUAL LEVEL = 60.5 ± 0.5 inches .	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	The following step is from ABN-104, Attachment 16.	
Perform Step: 4 √	Determine Actual Reactor Vessel Level : <ul style="list-style-type: none"> Find Actual Reactor Vessel Level from Attachment 16, Page 1 for 1-LI-3615B. 	
Standard:	REFERRED to Page 1 of Attachment 16 and DETERMINED the intersection of Indicated Level (53 inches) and Current Temperature (180°F) and DETERMINED: ACTUAL LEVEL = 60.5 ± 1.0 inches .	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	The following is from IPO-010A, Attachment 15.	
Perform Step: 5√	Does an Adequate RCS Hot Leg Vent Path exist for existing conditions?	
Standard:	<p>REFERRED to IPO-010A, Attachment 15 and CIRCLED NO:</p> <ul style="list-style-type: none"> • Attachment 15, page 1 of 5 classifies a disassembled SI accumulator check valve as an Open RCS Cold Leg penetration. • Attachment 15, page 3 of 5 table for Open RCS Cold Leg Penetration Hot Leg Vent Path states that a Pressurizer Manway Removed is adequate provided the Pressurizer surge line is not obstructed (RCS level less than 58 inches above core plate). In this case, actual RCS level is above the surge line (approximately 60.5 inches) thus obstructing the vent path. 	
Terminating Cue:	JPM complete.	
Comment:	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> </div>	

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 5 to support emergent mid-cycle work
- The Reactor was shut down 320 hours ago
- Pressurizer Manway is removed (No FME cover is installed)
- A repair is in progress on 1-03 SI Accumulator Check Valve with the bonnet and check valve internals removed (RCS open to atmosphere)
- Reactor Vessel water level was inadvertently lowered to 53" above top of Upper Core Plate before the drain path could be located and isolated
- A Loss of all RHR cooling occurred
- Initial RCS temperature was 100°F

Current conditions:

- RCS temperature increased to 180°F
- Reactor Vessel water remains stable at 53" on 1-LI-3615A, RX VSL LVL (NR) and 1-LI-3615B, RX VSL LVL (WR)

Initiating Cue:

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

- Determine per ABN-104, Residual Heat Removal System Malfunction, Attachment 5, Time to Saturation and Time to Core Uncovery for Loss of All RHR with the RCS at Reduced Inventory and Attachment 16, Actual Versus Indicated Reactor Vessel Level:
 - Time to Saturation from initial RCS temperature _____
 - Time to Core Uncovery _____
 - Actual Reactor Vessel water level for current conditions:
 - 1-LI-3615A, RX VSL LVL (NR) _____
 - 1-LI-3615B, RX VSL LVL (WR) _____
- Evaluate the given conditions above and Determine the following in accordance with IPO-010A, Reactor Coolant System Reduced Inventory Operations:
 - Based on CURRENT plant conditions, does an Adequate RCS Hot Leg Vent Path exist? (Circle correct choice)

YES
NO

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 5 to support emergent mid-cycle work
- The Reactor was shut down 320 hours ago
- Pressurizer Manway is removed (No FME cover is installed)
- A repair is in progress on 1-03 SI Accumulator Check Valve with the bonnet and check valve internals removed (RCS open to atmosphere)
- Reactor Vessel water level was inadvertently lowered to 53" above top of Upper Core Plate before the drain path could be located and isolated
- A Loss of all RHR cooling occurred
- Initial RCS temperature was 100°F

Current conditions:

- RCS temperature increased to 180°F
- Reactor Vessel water remains stable at 53" on 1-LI-3615A, RX VSL LVL (NR) and 1-LI-3615B, RX VSL LVL (WR)

Initiating Cue:

The Shift Manager directs you to PERFORM the following:

- Determine per ABN-104, Residual Heat Removal System Malfunction, Attachment 5, Time to Saturation and Time to Core Uncovery for Loss of All RHR with the RCS at Reduced Inventory and Attachment 16, Actual Versus Indicated Reactor Vessel Level:
 - Time to Saturation from initial RCS temperature 20 ± 1 mins
 - Time to Core Uncovery 2.2 ± 0.05 hrs
 - Actual Reactor Vessel water level for current conditions:
 - 1-LI-3615A, RX VSL LVL (NR) 60.5 ± 0.5 inches
 - 1-LI-3615B, RX VSL LVL (WR) 60.5 ± 1.0 inches
- Evaluate the given conditions above and determine the following in accordance with IPO-010A, Reactor Coolant System Reduced Inventory Operations:
 - Based on CURRENT plant conditions, does an Adequate RCS Hot Leg Vent Path exist? (Circle correct choice)

YES

NO

Facility: CPNPP JPM # NRC SA4 Task # SO1002 K/A # 2.3.6 3.8

Title: Review a Containment Release Permit

Examinee (Print): _____

Testing Method:

Simulated Performance:	_____	Classroom:	<u>X</u>
Actual Performance:	<u>X</u>	Simulator:	_____
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>B</u>	Emerg:	_____ EN: _____

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 at 100% power
- Today is September 22nd, 2021 at 0800
- Containment Pressure is 1.25 psig
- Containment Temperature is 100°F
- A Containment Release Permit has just been received in the Control Room to reduce containment pressure
- Containment Pressure is to be reduced to 0.0 psig
- 1-RE-5503 (CAG-197), Unit 1 Containment Air Gas Radiation Detector declared INOPERABLE 2 hours ago
- A Containment air sample was completed 1 hour ago
- Unit 2 is currently in a refueling outage

Initiating Cue:

The Shift Manager directs you to PERFORM the following:

- REVIEW the completed Containment Release Permit and DETERMINE the following:
 - What requirements MUST be met to perform the release with CAG-197 out of service?

- What Date and Time does the Containment Air Sample expire?

- LCO entry condition(s), if applicable and any required action(s).

Task Standard:

Utilizing Technical Specifications, STA-603, and form STA-603-15, reviewed the Containment Release Permit and Determined a noble gas monitor on each stack shall be OPERABLE to perform the release, the containment sample expires September 24th, at time 0700, and LCO 3.3.6 CONDITION A and ACTION A.1 are applicable. Values of items above must be calculated within the accuracy of the attached key.

Required Materials:

CPNPP Units 1 & 2 Technical Specifications Manual (Amd. 179)
 CPNPP Units 1 & 2 Technical Specifications Bases Manual (Rev. 82)
 CPNPP Units 1 & 2 Offsite Dose Calculation Manual (Rev. 34)
 STA-603, Control of Station Radioactive Effluents (Rev. 22 - 0)
 STA-603-15, Containment Radioactive Effluent Release Data Sheet (Rev. 17)
 CLI-744-3, Containment Gaseous Release DRMS Setpoint Data Sheet (Rev. 4)

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:

- **Technical Specifications & Bases manuals (All pages) (Use books out Simulator)**
- **Offsite Dose Calculation Manual (All pages) (Use book out of Simulator)**
- **STA-603, Control of Station Radioactive Effluents (All pages) (Orange paper)**
- **COMPLETE STA-603-15, Containment Radioactive Effluent Release Data Sheet up to the Shift Manager review (Both pages) (Orange paper)**
- **COMPLETE CLI-744-3, Containment Gaseous Release DRMS Setpoint Data Sheet (One page) (Orange paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Perform Step: 1 √	Review Release Permit, STA-603-15, Containment Radioactive Effluent Release Data Sheet.
Standard:	<p>REVIEWED STA-603-15, Release Permit and DETERMINED the following:</p> <ul style="list-style-type: none"> What requirements MUST be met to perform the release with CAG-197 out of service? <p>A noble gas monitor on each stack SHALL be OPERABLE to perform the release due to CAG-197 being INOPERABLE.</p>
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 2 √	Review Release Permit, STA-603-15, Containment Radioactive Effluent Release Data Sheet.
Standard:	<p>Review Release Permit, STA-603-15, and DETERMINED the following:</p> <ul style="list-style-type: none"> What Date and Time would the Containment Air Sample expire? <p>Release from Containment should be initiated within 48 hours of completion of sampling. The sample expires September 24th, 2021 at Time 0700.</p>
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 3 √	Review Release Permit, STA-603-15, Containment Radioactive Effluent Release Data Sheet.
Standard:	<p>Review Release Permit, STA-603-15, and DETERMINED the following:</p> <ul style="list-style-type: none"> LCO entry conditions and actions, if applicable. <p>LCO 3.3.6 CONDITION A – One radiation monitoring channel Inoperable. ACTION A.1 – Restore the affected channel to OPERABLE status within 4 hours.</p>
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:

Initial Conditions: Given the following conditions:

- Unit 1 at 100% power
- Today is September 22nd, 2021 at 0800
- Containment Pressure is 1.25 psig
- Containment Temperature is 100°F
- A Containment Release Permit has just been received in the Control Room to reduce containment pressure
- Containment Pressure is to be reduced to 0.0 psig
- 1-RE-5503 (CAG-197), Unit 1 Containment Air Gas Radiation Detector declared INOPERABLE 2 hours ago
- A Containment air sample was completed 1 hour ago
- Unit 2 is currently in a refueling outage

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

- REVIEW the completed Containment Release Permit and DETERMINE the following:
 - What requirements MUST be met to perform the release with CAG-197 out of service?

- What Date and Time does the Containment Air Sample expire?

- LCO entry condition(s), if applicable and any required action(s).

Initial Conditions: Given the following conditions:

- Unit 1 at 100% power
- Today is September 22nd, 2021 at 0800
- Containment Pressure is 1.25 psig
- Containment Temperature is 100°F
- A Containment Release Permit has just been received in the Control Room to reduce containment pressure
- Containment Pressure is to be reduced to 0.0 psig
- 1-RE-5503 (CAG-197), Unit 1 Containment Air Gas Radiation Detector declared INOPERABLE 2 hours ago
- A Containment air sample was completed 1 hour ago
- Unit 2 is currently in a refueling outage

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

- REVIEW the completed Containment Release Permit and DETERMINE the following:
 - What requirements MUST be met to perform the release with CAG-197 out of service?

A noble gas monitor on each stack SHALL be OPERABLE to perform the release due to CAG-197 being INOPERABLE.

- What Date and Time does the Containment Air Sample expire?

Release from Containment should be initiated within 48 hours of completion of sampling. **The sample expires September 24th, 2021 at Time 0700.**

- LCO entry condition(s), if applicable and any required action(s).

LCO 3.3.6 CONDITION A – One radiation monitoring channel inoperable. ACTION A.1 – Restore the affected channel to OPERABLE status within 4 hours.

Facility: CPNPP JPM # NRC SA5 Task # SO1136 K/A # 2.4.41 4.6
 Title: Classify an Emergency Plan Event

Examinee (Print): _____

Testing Method:

Simulated Performance:	_____	Classroom:	<u>X</u>
Actual Performance:	<u>X</u>	Simulator:	_____
Alternate Path:	_____	Plant:	_____
Time Critical:	<u>X</u>	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>M</u>	Emerg:	_____ EN: _____

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:

- Both Units are at 100% Rated Thermal power
- Unit 1 Train B Containment Spray Pumps are out-of-service for cleaning of the bearing lube oil coolers
- A Main Steam Line break occurs on Steam Generator 1-03 inside Unit 1 containment resulting in a Safety Injection and MSL isolation
- SG 1-03 blows down to 0% wide range level and containment pressure stabilizes at 19 psig
- Train A Containment Spray heat exchanger outlet valve binds when opening, tripping its supply breaker
- Train A Containment Spray flow indicates less than 500 gpm combined for both pumps
- 20 minutes later the FSS reports the valve will not move from its present position locally

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

- DETERMINE the Emergency Action Level Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation

Task Standard: Utilizing EPP-201, determined the Emergency Action Level Event Classification as SU8.1 using the Emergency Action Level Hot, Common, and Cold Classification Charts within 15 minutes. Values of items above must be calculated within the accuracy of the attached key.

Ref. Materials: EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation (Rev. 13 - 0)
 EPP-201, Emergency Action Level Technical Bases Document (Rev. 1 - 0)
 CPNPP Emergency Action Level Hot, Common, and Cold Classification Charts (Rev. 13)

Validation Time: 10 minutes Time Critical: 15 minutes Completion Time: _____
minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

CLASSROOM SETUP**Handout:**

MAKE the following available in the classroom:

- **EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation (orange paper)**
- **EPP-201, Emergency Action Level Technical Bases Document (orange paper)**
- **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 Hot.	
Perform Step: 1	DETERMINE the Event Category.	
Performance Standard:	REFERRED to CPNPP Emergency Action Levels Hot, Common, and Cold and DETERMINED the following chart is applicable: <ul style="list-style-type: none"> • CPNPP EAL HOT Conditions (RCS > 200°F) 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 2	MATCH plant conditions in the EAL Group / Category.	
Performance Standard:	IDENTIFIED EAL Group / Category as System Malfunction (S) .	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 3	MATCH plant conditions in the selected EAL Subcategory.	
Performance Standard:	IDENTIFIED EAL Subcategory as CMT Failure (8) .	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:

Candidate should refer to \ EPP-201, Emergency Action Level Technical Bases document for clarification regarding the event classification. The following notes are from Pages 196-197 of 259.

SU8.1 Unusual Event

Any penetration is not isolated within 15 min. of a VALID containment isolation signal
OR

Containment pressure greater than 18 psig with **neither** Containment Spray system operating per design for greater than or equal to 15 min.

(Note 1)

Note 1: The Emergency Coordinator should declare the event promptly upon determining that time limit has been exceeded, or will likely be exceeded.

The second condition addresses a condition where containment pressure is greater than the setpoint at which containment energy (heat) removal systems are designed to automatically actuate, and less than one full train of equipment is capable of operating per design. The 15-minute criterion is included to allow operators time to manually start equipment that may not have automatically started, if possible. The inability to start the required equipment indicates that containment heat removal/depressurization systems (e.g., containment) are either lost or performing in a degraded manner.

This event would escalate to a Site Area Emergency in accordance with IC FS1 if there were a concurrent loss or potential loss of either the Fuel Clad or RCS fission product barriers.

CPNPP Basis Reference(s):

1. FSAR Section 6.2.2
2. FRC-Z.1A/B Response to High Containment Pressure
3. NEI 99-01 SU7

Perform Step: 4√	Classify the event.
<p>EAL Identifier</p> <p>XXX.X</p> <p>Category (R, H, E, S, F, C) Sequential number within subcategory/classification</p> <p>Emergency classification (G, S, A, U) Subcategory number (1 if no subcategory)</p>	
Performance Standard:	CLASSIFIED the event as an Unusual Event (SU8.1) within 15 minutes.
Terminating Cue:	This JPM is complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- **Both Units are at 100% Rated Thermal power**
- **Unit 1 Train B Containment Spray Pumps are out-of-service for cleaning of the bearing lube oil coolers**
- **A Main Steam Line break occurs on Steam Generator 1-03 inside Unit 1 containment resulting in a Safety Injection and MSL isolation**
- **SG 1-03 blows down to 0% wide range level and containment pressure stabilizes at 19 psig**
- **Train A Containment Spray heat exchanger outlet valve binds when opening, tripping its supply breaker**
- **Train A Containment Spray flow indicates less than 500 gpm combined for both pumps**
- **20 minutes later the FSS reports the valve will not move from its present position locally**

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

- **DETERMINE the Emergency Action Level Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation**

EAL Identifier: _____

THIS JPM IS TIME CRITICAL. INFORM THE PROCTOR WHEN YOU HAVE COMPLETED THE CLASSIFICATION.

Initial Conditions: Given the following conditions:

- Both Units are at 100% Rated Thermal power
- Unit 1 Train B Containment Spray Pumps are out-of-service for cleaning of the bearing lube oil coolers
- A Main Steam Line break occurs on Steam Generator 1-03 inside Unit 1 containment resulting in a Safety Injection and MSL isolation
- SG 1-03 blows down to 0% wide range level and containment pressure stabilizes at 19 psig
- Train A Containment Spray heat exchanger outlet valve binds when opening, tripping its supply breaker
- Train A Containment Spray flow indicates less than 500 gpm combined for both pumps
- 20 minutes later the FSS reports the valve will not move from its present position locally

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

- DETERMINE the Emergency Action Level Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation

EAL Identifier: SU8.1

THIS JPM IS TIME CRITICAL. INFORM THE PROCTOR WHEN YOU HAVE COMPLETED THE CLASSIFICATION.

Facility: CPNPP 1 & 2		Date of Examination: September 2021	
Exam Level: RO SRO(U)		Operating Test Number: NRC	
Control Room Systems (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)			
	System / JPM Title	Type Code*	Safety Function
S-1	003 – Dropped Control Rod (RO1024) Respond to Control Rod Misalignment (RO ONLY)	D, S	1
S-2	006 – Emergency Core Cooling System (RO1406) Place the RHR System in Standby Readiness	A, D, L, S	2
S-3	011 – Large Break Loss of Coolant Accident (RO1507) Transfer RHR Pumps and SI Pumps to Hot Leg Recirculation	A, D, EN, L, S	4P
S-4	045 – Main Turbine Generator System (RO3113) Perform Pre-Startup Turbine Trip Checks	A, D, L, S	4S
S-5	062 – AC Electrical Distribution System (RO4204) Transfer from Preferred to Alternate Power (6.9 KV) – Swap from XST2 to XST1	A, D, S	6
S-6	059 – Main Feedwater System (RO1833) Respond to Feedwater Flow Instrument Failure	D, S	7
S-7	067 – Plant Fire On Site (RO4405) Respond to a Fire in the Safeguards Building	A, L, M, S	8
S-8	060 – Accidental Gaseous Radwaste Release (RO4103) Respond to Control Room Ventilation Radiation Alarms	EN, M, S	9
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
P-1	001 – Control Rod Drive System (AO6216) Startup One Rod Drive MG Set	D, L, R	1
P-2	062 – Loss of Nuclear Service Water (AO6503) Align Alternate Cooling to Emergency Diesel Generators	A, E, EN, L, M, R	4S
P-3	033 – Spent Fuel Pool Cooling System (AO5301) Respond to SFP Cooling Water Pump Trip (Level Instrument)	E, N, R	8

<p>* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>	
*Type Codes	Criteria for RO / SRO-U
(A)lternate path	4-6 (6) / 2-3 (3)
(C)ontrol room	
(D)irect from bank	≤ 9 (7) / ≤ 4 (3)
(E)mergency or abnormal in-plant	≥ 1 (2) / ≥ 1 (2)
(EN)gineered safety feature	≥ 1 (3) / ≥ 1 (2) (control room system)
(L)ow-Power / Shutdown	≥ 1 (6) / ≥ 1 (2)
(N)ew or (M)odified from bank including 1(A)	≥ 2 (4) / ≥ 1 (2)
(P)revious 2 exams	≤ 3 (0) / ≤ 2 (0) (randomly selected)
(R)CA	≥ 1 (3) / ≥ 1 (3)
(S)imulator	(8) (3)

NRC JPM Examination
Summary Description

- S-1 The applicant will perform actions to recover a dropped Control Rod in accordance with ABN-712, Rod Control System Malfunction. Actions include, transferring the Control Rod Bank Select switch to the affected bank position, moving the bank outward to the next DRPI position, placing the lift coil disconnect switches in disconnect for all unaffected rods in the bank, withdrawing the affected rod until aligned with DRPI indication, reconnecting all lift coils, moving the bank back to the original position, and placing rod control back in manual. This is a direct from bank JPM. This JPM is under the Reactivity Control Safety Function. This will be an RO only JPM. (K/A APE 003 AA1.02 – IR 3.6 / 3.4)
- S-2 The applicant will place RHR Train B in Standby Readiness from Shutdown Cooling Mode in accordance with SOP-102A, Residual Heat Removal System. The actions will require the applicant to vent RHR Pump 1-02 suction pressure when it is determined be greater than 60 psig locally. This is a direct from bank JPM. This JPM is under the Reactor Coolant System Inventory Control Safety Function. (K/A 006 A4.07 – IR 4.4 / 4.4)
- S-3 The applicant will transfer RHR Pumps and SI Pumps from Cold Leg Recirculation to Hot Leg Recirculation in accordance with EOS-1.4A, Transfer to Hot Leg Recirculation. The applicant will identify SI Pump 1-01 cannot be transferred from Cold Leg to Hot Leg Recirculation due to the failure of 1/1-8802A, SI Pumps to RCS Hot Leg Valve to open. The applicant will then restore SI Pump 1-01 to Cold Leg Recirculation. This is a direct from bank JPM. This JPM is under the Heat Removal from Reactor Core – Primary Systems Safety Function. (K/A 011 EA1.11 – IR 4.2 / 4.2)
- S-4 The applicant will use OPT-410A, Pre-Startup Turbine Trip Checks to perform the task. This is an Alternate Path JPM as the Turbine speed will increase above the allowable procedural guidance while the HP Stop Valves are opening. This speed increase requires that the turbine be tripped in accordance with OPT-410A. The critical steps will include resetting the turbine trip, latching the turbine, opening the HP Stop Valves and tripping the turbine when speed increases. This is a direct from bank JPM under the Main Turbine Generator System – Heat Removal from Reactor Core Secondary Systems Safety Function. (K/A 045 A4.01 - IR 3.1 / 2.9)
- S-5 The applicant will transfer 6.9 KV Safeguards Bus 1EA2 from the normal Unit 1 source of power, XST2 Transformer, to the alternate Unit 1 source of power XST1 Transformer. Actions are taken in accordance with SOP-603A, 6900 V Switchgear. During the swap when the 1EA2-2 breaker is closed, the 1EA2-1 breaker will fail to automatically open as designed. The applicant will manually open the 1EA2-1 breaker and continue the procedure. This is a direct from bank JPM. This JPM is under the Electrical Safety Function. (K/A 062 A4.01 – IR 3.3 / 3.1)

- S-6 The applicant will respond to a failure of Main Feedwater Flow Transmitter, FT-520 on SG 1-02. Actions will be taken in accordance the Alarm Response Manual and ABN-708, Feedwater Flow Instrument Malfunction. Actions include establishing manual control of SG 1-02 water level, aligning the alternate Feedwater Flow Transmitter, and restoring SG 1-02 level control to automatic. This is a direct from bank JPM. This JPM is under the Instrumentation Safety Function. (K/A 059 A2.11 – IR 3.0 / 3.3)
- S-7 The applicant will take control room actions for a fire in the Safeguards Building in accordance with ABN-804A, Response to a Fire in the Safeguards Building. Actions include isolating the RCP Seal Water Return path and realigning the running CCP suction source to the RWST due to cavitation of the CCP. This is a modified bank JPM. This JPM is under the Plant Service Systems Safety Function. (K/A 067 AA2.16 – IR 3.3 / 4.0)
- S-8 The applicant will respond to Control Room Ventilation Radiation alarms in accordance with ABN-902, Release of Radioactive/Toxic Gas. ABN-902 will refer to SOP-802, Control Room Ventilation System to verify Control Room Ventilation has properly shifted to Emergency Recirculation. After verification complete, the applicant will then shift to single train operation with Train B in service. This is a modified bank JPM. This JPM is under the Radioactivity Release Safety Function. (K/A 060 AA1.02 – IR 2.9 / 3.1)
- P-1 The applicant will place Rod Drive MG Set 2-01 in service in accordance with SOP-702B, Rod Control System. Actions include setting the MG Voltage Adjust potentiometer to 5.0, placing the Ammeter to position 'A', placing the Voltmeter to position 'A-B', closing the Motor Circuit Breaker Control Switch, depressing and holding the Field Flash pushbutton until generator voltage stabilized at 255 Volts then releasing the button, adjusting generator Line Volts from 255 to 260 Volts, closing the generator Circuit Breaker. This is a direct from bank JPM. This JPM is under the Reactivity Control Safety Function. (K/A 001 A4.08 – IR 3.7 / 3.4)
- P-2 During a Blackout condition on Unit 2, the applicant will establish Fire Protection Water to Diesel Generator 2-01 utilizing ABN-501, Service Water System Malfunction, Attachment 1, Fire Protection Water Alignment to Diesel Generators. During alignment, the first selected Fire Protection Water supply the applicant selects will be unsuccessful due to a stuck drain valve cap. The applicant will proceed to the alternate Fire Protection supply and complete the alignment. This is a modified bank JPM. This JPM is under the Heat Removal from Reactor Core Secondary Systems Safety Function. (K/A 062 AA1.06 – IR 2.9 / 2.9)
- P-3 The applicant will locally RESTART SFP Cooling Water Pump 01 in accordance with ABN-909, Spent Fuel Pool/Refueling Cavity Malfunction, after a failure of the Level Instruments have caused the pump to trip. Actions include opening the discharge path isolation valve, closing the pump discharge valve, locally starting SFP Cooling Water Pump 01, re-opening the pump discharge valve, and throttling discharge path isolation valve to obtain 3600 gpm flow. This is a new JPM. This JPM is under the Plant Service Systems Safety Function. (K/A 033 A2.02 – IR 2.7 / 3.0)

Facility: CPNPP JPM # NRC P-1 (U2) Task # AO6216 K/A # 001 A4.08 3.7 / 3.4 SF-1
 Title: Startup One Rod Drive MG Set

Examinee (Print): _____

Testing Method:

Simulated Performance:	<u> X </u>	Classroom:	_____
Actual Performance:	_____	Simulator:	_____
Alternate Path:	_____	Plant:	<u> X </u>
Time Critical:	_____	Low Pwr:	<u> X </u> RCA: <u> X </u>
Bank / Mod / New:	<u> B </u>	Emerg:	_____ EN: _____

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 desires to place the Control Rod Drive MG Sets in service
- SOP-702B, Rod Control System Section 2.0 Prerequisites have been completed

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

- Place MG Set 2-01 in service per SOP-702B, Rod Control System Section 5.1.1, Startup of One MG Set

Task Standard: Utilizing SOP-702B, Rod Control System, PLACED MG Set 2-01 in service at 260 volts by performing the following: SET the MG Voltage Adjust potentiometer to 5.0, PLACED the Ammeter to position 'A', PLACED the Voltmeter to position 'A-B', CLOSED the Motor Circuit Breaker Control Switch, DEPRESSED and HELD the Field Flash pushbutton until generator voltage stabilized at 255 Volts then RELEASED the button, ADJUSTED generator Line Volts from 255 to 260 Volts, CLOSED the generator Circuit Breaker.

Required Materials: SOP-702B, Rod Control System Section (Rev. 6 – PCN 5)

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP**EXAMINER:**

PROVIDE the examinee with the following:

- **SOP-702B, Rod Control System, Section 5.1.1, Startup of One MG Set, with Prerequisites and Step 5.1.1.A marked complete (Pages 1-10) (Orange Paper)**
- **WHEN examinee is checking 1KS ground switch indication per Examiner Cue, PROVIDE the examinee Make-up CPNPP 2021 NRC JPM P-1 (U2) Attachment 1 and Make-up CPNPP 2021 NRC JPM P-1 (U2) Attachment 2 (Blue Paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	Remind examinee to simulate all steps of this JPM. This is a high ambient noise area when motor-generators are in service.
Examiner Note:	The following steps are from SOP-702B, Section 5.1.1.
Perform Step: 1 5.1.1.A	ENSURE prerequisites in Section 2.0 are met.
Standard:	DETERMINED from Initial Conditions prerequisites are met and step has been CHECKED complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	Provide Cue when examinee looks at Generator Voltage Adjust potentiometer: Generator 1 Generator Voltage Adjust potentiometer indicates 6.5.
Perform Step: 2 √ 5.1.1.B 1 st bullet	SET the desired MG Set VOLTAGE ADJUST potentiometer to 5.0: <ul style="list-style-type: none"> • GENERATOR 1 GENERATOR VOLTAGE ADJUST
Standard:	LOOSENED set screw and ADJUSTED knob (LEFT) such that 5 aligns with WHITE setpoint line.
Examiner Cue:	Generator 1 Generator Voltage Adjust potentiometer indicates 5.0.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

NOTE: Only one GENERATOR SYNCHRONIZE SELECTOR SWITCH can be placed in ON. The handswitch handle cannot be removed from the switch while it is in the ON position.

Examiner Note:	With only one Synchronize Selector Switch J-handle, the examinee may simulate moving the handle from one handswitch to the other to check switch position.
Examiner Cue:	Provide Cue when examinee checks selector switch position: <ul style="list-style-type: none"> • SS-2ELPS1 is positioned UP (OFF) • SS-2ELPS2 is positioned UP (OFF)
Perform Step: 3 5.1.1.C	ENSURE BOTH SYNCHRONIZE GENERATOR SELECTOR SWITCHES are OFF: <ul style="list-style-type: none"> • SS-2ELPS1, GENERATOR 1 SYNCHRONIZE GENERATOR SELECTOR SWITCH • SS-2ELPS2, GENERATOR 2 SYNCHRONIZE GENERATOR SELECTOR SWITCH
Standard:	DETERMINED switches were in OFF and MARKED step complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	Provide Cue when examinee looks at MG Set Ammeter selector switch: <ul style="list-style-type: none"> • MG Set 1 Ammeter selector switch is in the “B” position
Perform Step: 4√ 5.1.1.D 1 st bullet	PLACE desired MG Set AMMETER selector switch to “A”: <ul style="list-style-type: none"> • GENERATOR 1
Standard:	TURNED MG Set 1 Ammeter selector switch LEFT to “A”.
Examiner Cue:	MG Set 1 Ammeter selector switch is in the “A” position.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	Provide Cue when examinee looks at MG Set 1 Voltmeter selector switch: <ul style="list-style-type: none"> • MG Set 1 Voltmeter selector switch is in the “B-C” position
Perform Step: 5√ 5.1.1.E 1 st bullet	PLACE desired MG Set VOLTMETER selector switch to “A-B”: <ul style="list-style-type: none"> • GENERATOR 1
Standard:	TURNED MG Set 1 Voltmeter selector switch LEFT to “A-B”.
Examiner Cue:	MG Set 1 Voltmeter selector switch is in the “A-B” position.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	Provide Cue when examinee looks at MG Set Generator Circuit Breaker Control Switch: <ul style="list-style-type: none"> MG SET 2-01 GENERATOR CKT BKR CONTROL SWITCH is in "Center Position" with "Green flag" visible and Green light is ON
Perform Step: 6 5.1.1.F 1 st bullet	ENSURE desired MG Set GENERATOR CIRCUIT BREAKER CONTROL SWITCH is in NEUTRAL AFTER TRIP: <ul style="list-style-type: none"> 1/2-MGPS1, MG SET 2-01 GENERATOR CKT BKR CONTROL SWITCH
Standard:	DETERMINED selector switch in Neutral After Trip and MARKED step complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	DO NOT Allow examinee to Open the Generator Cabinet door. Proper performance of the next two steps should be explained by the examinee, but should not be simulated inside the cabinet.
Examiner Cue:	When examinee indicates check of Ground switch 1KS, PROVIDE Make-up CPNPP 2021 NRC JPM P-1 (U2) Attachment 1 and Make-up CPNPP 2021 NRC JPM P-1 (U2) Attachment 2 to examinee. 1KS is checked OPEN by opening Generator 2 Control Panel Door and observing knife switch is OPEN.
Perform Step: 7 5.1.1.G	ENSURE the ground switch, 1KS (inside Generator 2 cabinet), is OPEN.
Standard:	CHECKED ground switch 1KS open.
Examiner Cue:	Ground Switch 1KS is positioned as indicated in Attachment 2 (all three phases OPEN).
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	DO NOT Allow examinee to Open the Generator Cabinet door. Proper performance of the next step should be explained by the examinee, but should not be simulated inside the cabinet.
Examiner Note:	Circuit breaker 1CB is checked CLOSED by opening Generator 2 Control Panel Door and observing the breaker is ON (up position).
Perform Step: 8 5.1.1.H	ENSURE the circuit breaker, 1CB (inside Generator 2 cabinet), is CLOSED.
Standard:	CHECKED circuit breaker 1CB is ON (up position).
Examiner Cue:	Circuit Breaker 1CB is positioned as indicated in Attachment 2 [up in ON (CLOSED) position].
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

NOTE: An overcurrent trip on the Motor Circuit Breaker may only be reset by placing the handswitch in the PULL LAMP CUTOUT position.

Examiner Cue:	Provide Cue when examinee looks at the MG Set 1 relays: <ul style="list-style-type: none"> • No Red flags are showing in the Directional Overcurrent A and C Relay glass windows • No Red flags are showing in the Ground Protective Relay glass window
Perform Step: 9 5.1.1.I	IF the red flag is showing, <u>THEN</u> PLACE the Motor Circuit Breaker handswitch in the PULL LAMP CUTOUT position <u>AND</u> VERIFY the “Ground Protective Relay” <u>AND</u> the “Direction Overcurrent Relay(s)” mounted on the enclosure doors are RESET.
Standard:	DETERMINED no red flags are showing and MARKED step as N/A.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

NOTE: The motor circuit breaker should close and the MG set will begin accelerating. Allow 15 seconds to obtain full rated speed.

Perform Step: 10√ 5.1.1.J 1 st bullet	PLACE desired MG Set MOTOR CIRCUIT BREAKER CONTROL SWITCH to CLOSE: <ul style="list-style-type: none"> 1/2-ELPS1, HANDSWITCH MOTOR 2-01 STARTING BREAKER
Standard:	TURNED 1/2-ELPS1 RIGHT to CLOSE.
Examiner Cue:	Red light – LIT Green light – DARK Red Flag indicated Motor Speed - Increasing
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 11√ 5.1.1.K 1 st bullet	DEPRESS <u>AND</u> HOLD until voltage stabilizes, <u>THEN</u> RELEASE the desired MG Set GEN. FIELD FLASH pushbutton: <ul style="list-style-type: none"> MG SET 1
Standard:	DEPRESSED and HELD GEN FIELD FLASH pushbutton until voltage stabilized.
Examiner Cue:	Generator Line Volts have stabilized at 255 volts on all phases.
Standard:	RELEASED Generator Field Flash pushbutton.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

NOTE: Voltage indication between the phases may differ when selected on the voltmeter.

Perform Step: 12√ 5.1.1.L 1 st bullet	ADJUST the Generator Line Volts on the desired MG Set to 260 volts: <ul style="list-style-type: none"> GENERATOR 1 GENERATOR VOLTAGE ADJUST
Standard:	ADJUSTED Generator 1 Generator Voltage Adjust RIGHT to raise voltage.
Examiner Cue:	Generator Line Volts have stabilized at 260 volts on all phases.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

NOTE: Both MG Set Generator Circuit Breakers must be in CONNECT before either one will close from the handswitch.

Perform Step: 13 5.1.1.M 1 st bullet	PLACE the desired MG Set GENERATOR CIRCUIT BREAKER control switch in CLOSE: <ul style="list-style-type: none"> 1/2-MGPS1, MG SET 2-01 GENERATOR CKT BKR CONTROL SWITCH
Standard:	TURNED 1/2-MGPS1 RIGHT to CLOSE.
Examiner Cue:	Red light – LIT Green light – DARK Red flag Indicated
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 14 5.1.1.N	VERIFY 2-ALB-6D, 4.9, "CRDM MG TRBL" is OFF.
Standard:	CONTACTED Control Room to verify annunciator is clear.
Examiner Cue:	2-ALB-6D, 4.9 is OFF.
Terminating Cue:	JPM complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:

Initial Conditions: Given the following conditions:

- Unit 2 desires to place the Control Rod Drive MG Sets in service
- SOP-702B, Rod Control System Section 2.0 Prerequisites have been completed

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

- Place MG Set 2-01 in service per SOP-702B, Rod Control System Section 5.1.1, Startup of One MG Set

Facility: CPNPP JPM # NRC P-2 (U2) Task # AO6503 K/A # 062.AA1.06 2.9 / 2.9 SF-4S
 Title: Align Alternate Cooling To Emergency Diesel Generators

Examinee (Print): _____

Testing Method:

Simulated Performance:	<u> X </u>	Classroom:	<u> </u>
Actual Performance:	<u> </u>	Simulator:	<u> </u>
Alternate Path:	<u> X </u>	Plant:	<u> X </u>
Time Critical:	<u> </u>	Low Pwr:	<u> X </u> RCA: <u> X </u>
Bank / Mod / New:	<u> M </u>	Emerg:	<u> X </u> EN: <u> X </u>

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 Train A Emergency Diesel Generator is needed to respond to a Blackout condition.
- Service Water is unavailable to 2-01 Emergency Diesel Generator.
- ABN-501, Station Service Water System Malfunction Attachment 1 is being performed.
- Fire Protection system is available and in a normal alignment.
- All necessary hoses and connections have been obtained and staged by Field Support Supervisor.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:
 Establish Fire Protection Water to Diesel Generator 2-01 utilizing ABN-501 Attachment 1 Fire Protection Water Alignment to Diesel Generators beginning with Step B.

Task Standard: Utilizing ABN-501 Attachment 1, ESTABLISHED Fire Protection Water to Diesel Generator 2-01 by performing the following: CLOSED 2SW-0335 SSW inlet isolation valves to JW heat exchanger, CLOSED 2-HV-4393 SSW return isolation valve, REMOVED drain cap from 2SW-0424, CONNECTED adapter to 2SW-0424, and CONNECTED 2-1/2" hose to adapter, REMOVED drain cap from XFP-0585 or 2FP-0566A (one cap will be stuck requiring alternate valve to be selected), CONNECTED 2-1/2" hose to XFP-0585 or 2FP-0566A drain line, OPENED 2-HV-4393 SSW return isolation valve, OPENED 2SW-0424, and OPENED selected drain valve XFP-0585 or 2FP-0566A to initiate flow to Diesel Generator 2-01.

Required Materials: ABN-501 Attachment 1, Fire Protection Water Alignment to Diesel Generators (Rev 10-0).

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

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP

EXAMINER:

PROVIDE the examinee with the following:

- **ABN-501, Station Service Water System Malfunction, Attachment 1, Fire Protection Water Alignment to Diesel Generators with Step A appropriately marked (pages 1, 28-32) (orange paper)**
- **Make-up CPNPP 2021 NRC JPM P-2 (U2) Attachment 1 and Make-up CPNPP 2021 NRC JPM P-2 (U2) Attachment 2 of this JPM (orange paper)**

√ - Check Mark Denotes Critical Step

START TIME:

--

Examiner Cue:	Remind examinee to simulate all steps of this JPM.
Perform Step: 1 √ Step B.1 3rd bullet	Align DG cooling as follows: <ul style="list-style-type: none"> • Close SSW inlet isolation valves to applicable JW heat exchanger. • 2SW-0335, DG 2-01 JKT WTR CLR SSW IN ISOL VLV (SG 810 Rm 2-084)
Standard:	REMOVED locking device and ROTATED handwheel for 2SW-0335, DG 2-01 JKT WTR CLR SSW IN ISOL VLV in clockwise direction until CLOSED.
Examiner Cue:	When 2SW-0335 is manipulated in the CLOSED direction: <ul style="list-style-type: none"> • Valve handwheel turns and valve position indicator begins to move clockwise. • Valve position indicator at “CLOSED” and handwheel will no longer turn.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	This valve is located in the Safeguards Building Elev. 810' (West of the entrance to the U2 Train A Switchgear Room).
Examiner Note:	If examinee contacts the Control Room to close the valve, respond “Control Room reports no power to 2-HS-4393, DG 1 CLR SSW RET VLV.”
Perform Step: 2 √ Step B.2. DG 2-01 a.	Align DG cooling as follows: <ul style="list-style-type: none"> • CLOSE the applicable SSW return isolation valves and OPEN the supply breaker. • 2-HS-4393, DG 1 CLR SSW RET VLV
Standard:	DEPRESSED clutch lever for 2-HV-4393, DG 1 JKT WTR CLR SSW RET VLV and ROTATED handwheel in clockwise direction until CLOSED.
Examiner Cue:	When 2-HV-4393 is manipulated in the CLOSED direction: <ul style="list-style-type: none"> • Valve handwheel turns and valve position indicator begins to move counter-clockwise from “O” position. • Valve handwheel becomes hard to turn. • Position indicator at “C” and valve handwheel will no longer turn.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	This breaker is located in the Safeguards Building Elev. 790 (U2 North-South Hall West Wall). Another operator is available to operate the following switch.
Examiner Cue:	Inform examinee “Another operator is available in Safeguards Building Elev. 790 to perform alignment at the MCC.”
Perform Step: 3 Step B.2. DG 2-01 b.	Align DG cooling as follows: <ul style="list-style-type: none"> • CLOSE the applicable SSW return isolation valves and OPEN the supply breaker • 2EB3-1/5J/DSW, DIESEL GEN 2-01 COOLER SSW RETURN VALVE 4393 MOTOR FUSED SWITCH (SG 790 Rm 2-070)
Standard:	Requested operator to PLACE 2EB3-1/5J/DSW, DIESEL GEN 2-01 COOLER SSW RETURN VALVE 4393 MOTOR FUSED SWITCH in OFF position.
Examiner Cue:	2EB3-1/5J/DSW, DIESEL GEN 2-01 COOLER SSW RETURN VALVE 4393 MOTOR FUSED SWITCH is in LEFT (OFF) position.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	Accident Mitigation Equipment (AME) has been pre-staged according to the cue. The examinee should complete remaining actions assuming tools, fittings and hoses are at hand. Adapter and hose connections are illustrated on JPM Attachments 1 & 2.
Perform Step: 4 ✓ Step B.3 3rd bullet	Align DG cooling as follows: <ul style="list-style-type: none"> • Connect a 2-1/2" FP hose between each inlet drain on the applicable DG JW HX and the listed FP connections below. <ul style="list-style-type: none"> • 2-01 DG 2SW-0424, DG 2-01 JKT WTR CLR 2-01 SERV WTR DRN VLV 0424, attach adapter, then attach 2-1/2" hoses
Standard:	<p>REMOVED drain valve cap from 2SW-0424 by rotating counterclockwise.</p> <p>ATTACHED adapter to 2SW-0424 drain valve by rotating adapter clockwise on to drain connection.</p> <p>ATTACHED 2-1/2" hose to adapter by rotating swivel on adapter clockwise on to the hose. hose .</p>
Examiner Cue:	<p>Drain cap rotates counterclockwise and disconnects from threads.</p> <p>Adapter rotates clockwise on to 2SW-0424 drain connection, becomes harder to turn, and then stops.</p> <p>Adapter swivel rotates clockwise on to the 2-1/2" hose, becomes harder to turn, and then stops.</p>
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	XFP-0585, Fire Protection Valve is located in Safeguards Building Elev. 810', North End Across Hall from entrance to U2 Train A Switchgear Room.
Examiner Note:	2FP-0566A, Fire Protection Valve is located in Safeguards Building Elev. 810', South of the entrance to U2 Train A Switchgear Room.
Examiner Note:	The examinee will choose to connect to either XFP-0585 or 2FP-0566A. The first connection point selected by the examinee will NOT work because the associated valve cap is corroded and cannot be removed, requiring the examinee to connect to the alternate valve.
Examiner Note:	The Alternate Path portion of this JPM begins here.
Perform Step: 5 ✓ Step B.3 3rd bullet	Align DG cooling as follows: <ul style="list-style-type: none"> • Connect a 2-1/2" FP hose between each inlet drain on the applicable DG JW HX and the listed FP connections below. <ul style="list-style-type: none"> • 2 -01 DG attach 2-1/2" hoses to XFP-0585, U2 SFGD BLDG EL 810 FP SPLY HDR DRAIN VLV 0585 (200 ft) <p style="text-align: center;"><u>OR</u></p> 2FP-0566A, U2 SFGD BLDG EL 810 TRN A SWGR RM FP DELUGE VLV MN DRN VLV (200 ft).
Standard:	ATTEMPTED to REMOVE drain cap from drain valve XFP-0585 <u>OR</u> 2FP-566A by rotating cap counterclockwise. DETERMINED selected Fire Protection supply source is UNAVAILABLE and PROCEEDED to ALIGN alternate source.
Examiner Cue:	Selected drain valve cap will not rotate.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	XFP-0585, Fire Protection Valve is located in Safeguards Building Elev. 810', North End Across Hall from entrance to U2 Train A Switchgear Room.
Examiner Note:	2FP-0566A, Fire Protection Valve is located in Safeguards Building Elev. 810', South of the entrance to U2 Train A Switchgear Room.
Examiner Note:	The examinee will choose to connect to either XFP-0585 or 2FP-0566A. The first connection point selected by the examinee will NOT work because the associated valve cap is corroded and cannot be removed, requiring the examinee to connect to the alternate valve.
Perform Step: 6 ✓ Step B.3 3rd bullet	Align DG cooling as follows: <ul style="list-style-type: none"> • Connect a 2-1/2" FP hose between each inlet drain on the applicable DG JW HX and the listed FP connections below. <ul style="list-style-type: none"> • 2 -01 DG attach 2-1/2" hoses to XFP-0585, U2 SFGD BLDG EL 810 FP SPLY HDR DRAIN VLV 0585 (200 ft) <p style="text-align: center;"><u>OR</u></p> 2FP-0566A, U2 SFGD BLDG EL 810 TRN A SWGR RM FP DELUGE VLV MN DRN VLV (200 ft).
Standard:	REMOVED drain cap from drain valve XFP-0585 <u>OR</u> 2FP-566A by rotating cap counterclockwise. ATTACHED 2-1/2" hose to drain valve by rotating swivel on hose clockwise (the other end is already connected to 2SW-0424).
Examiner Cue:	Drain valve cap rotates counterclockwise and disconnects from threads on drain line. 2-1/2" hose swivel rotates clockwise on to drain line, becomes harder to turn, and then stops.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 7 ✓ Step B.4 3rd bullet	Align DG cooling as follows: <ul style="list-style-type: none"> • OPEN SSW return isolations to each applicable DG: <ul style="list-style-type: none"> • 2-HV-4393, DG 2-01 JKT WTR CLR SSW RET VLV
Standard:	OPENED 2-HV-4393, DG 2-01 JKT WTR CLR SSW RET VLV by DEPRESSING de-clutch handle and ROTATING handwheel counter-clockwise.
Examiner Cue:	When 2-HV-4393 is manipulated in the OPEN direction: <ul style="list-style-type: none"> • Valve handwheel turns and valve position indicator begins to rotate clockwise from “C” position. • Valve handwheel becomes hard to turn. • Position indicator indicates “O” and handwheel will no longer turn.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 8 ✓ Step B.5 3rd bullet	Align DG cooling as follows: <ul style="list-style-type: none"> • OPEN drain valve(s) on each HX to be supplied water. <ul style="list-style-type: none"> • 2-01 2SW-0424, DG 2-01 JKT WTR CLR 2-01 SERV WTR DRN VLV 0424 (SG 810 Rm 2-084)
Standard:	OPENED 2-01 2SW-0424, DG 2-01 JKT WTR CLR 2-01 SERV WTR DRN VLV 0424 by rotating handwheel counter-clockwise.
Examiner Cue:	When 2SW-0424 is manipulated in the OPEN direction: <ul style="list-style-type: none"> • Valve handwheel turns and valve stem begins to move up. • Valve handwheel becomes hard to turn. • Valve stem is in the fully up (top) position and handwheel will no longer turn.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The examinee will choose to connect to either XFP-0585 or 2FP-0566A. The first connection point selected by the examinee will NOT work because the associated valve cap is corroded and cannot be removed, requiring the examinee to connect to the alternate valve.
Perform Step: 9 ✓ Step B.6	Align DG cooling as follows: <ul style="list-style-type: none"> • OPEN FP isolation to hose supplying the DG, initiate and verify water flow.
Standard:	OPENED XFP-0585 <u>or</u> 2FP-0566A, FP Isolation Valve by ROTATING handwheel counter-clockwise and OBSERVED hose pressurizing with flow noise present.
Examiner Cue:	When selected Fire Protection Drain Valve is manipulated in OPEN direction: <ul style="list-style-type: none"> • Valve handwheel turns and valve stem begins to move up. • Valve handwheel becomes hard to turn. • Valve stem is in the fully up (top) position and handwheel will no longer turn. • Flow noise is heard and hose is filling.
Terminating Cue:	JPM Complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:

INITIAL CONDITIONS:

Given the following conditions:

- Unit 2 Train A Emergency Diesel Generator is needed to respond to a Blackout condition.
- Service Water is unavailable to 2-01 Emergency Diesel Generator.
- ABN-501, Station Service Water System Malfunction Attachment 1 is being performed.
- Fire Protection system is available and in a normal alignment.
- All necessary hoses and connections have been obtained and staged by Field Support Supervisor.

INITIATING CUE:

The Unit Supervisor directs you to **PERFORM** the following:
Establish Fire Protection Water to Diesel Generator 2-01 utilizing ABN-501 Attachment 1 Fire Protection Water Alignment to Diesel Generators beginning with Step B.

Facility: CPNPP JPM # NRC P-3 (X-01) Task # AO5301 K/A # 033.A2.02 2.7 / 3.0 SF-8
 Title: Respond to SFP Cooling Water Pump Trip (Level Instrument)

Examinee (Print): _____

Testing Method:

Simulated Performance:	<u> X </u>	Classroom:	_____		
Actual Performance:	_____	Simulator:	_____		
Alternate Path:	_____	Plant:	<u> X </u>		
Time Critical:	_____	Low Pwr:	_____	RCA:	<u> X </u>
Bank / Mod / New:	<u> N </u>	Emerg:	<u> X </u>	EN:	_____

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:

- SFP Cooling Water Pump X-02 is out-of-service due to a bearing failure
- SFP Cooling Water Pump X-01 and SFP HX X-01 are aligned to cool both SFPs per SOP-506, Spent Fuel Pool Cooling and Cleanup System
- Both SFP X-01 level instruments failed causing SFP Cooling Water Pump X-01 to trip

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

- Locally restart SFP Cooling Water Pump X-01 to cool both Spent Fuel Pools utilizing ABN-909, Section 4.0 Level Instrument Malfunction beginning with Step 3
- When directed by the procedure, THROTTLE XSF-0009-RO, SFP HX X-01 OUT TO SFP X-01 ISOL VLV RMT OPER, to obtain a COMBINED flow of 3600 gpm as indicated on the following:
 - X-FIS-4847B, SFP HEAT EXCHANGER/DEMINERALIZER X-01 RETURN TO UNIT 2 SFP FLOW IND SW
 - X-FIS-4848A, SFP HEAT EXCHANGER/DEMINERALIZER X-01 RETURN TO UNIT 1 SFP FLOW IND SW

Task Standard: Utilizing ABN-909 Section 4.0, RESTARTED SFP Cooling Water Pump X-01 and ESTABLISHED combined flow to X-01 and X-02 SFPs at 3600 gpm by performing the following actions: OPENED XSF-0009, CLOSED XSF-0005, OPENED XSF-0005, THROTTLED XSF-0009 to obtain 3600 gpm flow.

Required Materials: ABN-909, Spent Fuel Pool/Refueling Cavity Malfunction (Rev. 9 – PCN 1)

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

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

PLANT SETUP**EXAMINER:**

PROVIDE the examinee with the following:

- **ABN-909, Spent Fuel Pool Cooling Malfunction, Section 4.0, Level Instrument Malfunction with Steps 1 through 2 appropriately marked (pages 1, 23-31) (orange paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	Remind examinee to simulate all steps of this JPM.
Examiner Note:	This valve is located in the Fuel Building Elev. 810' Room X-249B Spent Fuel Pool Panel Area. The valve is positioned using a reverse-operated remote operator.
Perform Step: 1 √ Step 3 1st bullet	Open affected discharge path isolation valve. (FB 810 Rm X-249B) <ul style="list-style-type: none"> • XSF-0009-RO, SFP HX X-01 OUT TO SFP X-01 ISOL VLV RMT OPER
Standard:	OPENED XSF-0009-RO, SFP HX X-01 OUT TO SFP X-01 ISOL VLV RMT OPER by rotating remote-operator handwheel CLOCKWISE.
Examiner Cue:	When XSF-0009-RO is manipulated in the OPEN direction: <ul style="list-style-type: none"> • Valve remote operator handwheel turns clockwise. • After several revolutions, remote operator handwheel becomes harder to turn, and then handwheel will no longer turn and position indication indicates "OPEN."
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The MCC is located in Auxiliary Building Elev. 852' Room X-241 in Auxiliary Building 852' Corridor. Another operator is available to operate the following switch.
Examiner Note:	If examinee contacts the Control Room to communicate information in the Caution below, respond "Control Room reports Technical Specifications have been addressed and appropriate LCOARs have been entered."

CAUTION: Local start of the SFPCW Pump defeats the SIS or BOS load shed capability of the pump and renders the train associated DGs inoperable. Defeating the automatic transfer capability of the common MCC isolates the condition to only the Unit currently supplying power to the common MCC.

Examiner Cue:	Inform examinee "Another operator is available in Auxiliary Building Elev. 852' to perform alignment at the MCC."
Perform Step: 2 Step 4 1st bullet	Place the affected MCC's Operational Mode Selector switch (1SS switch) to OFF to defeat automatic transfer of the SFPCW Pump's MCC (AB 852' Rm X-241): <ul style="list-style-type: none"> • SFPCW Pump X-01: MCC XEB3-2.
Standard:	Requested operator to PLACE Operational Mode Selector switch (1SS switch) to OFF position.
Examiner Cue:	Operational Mode Selector switch (1SS switch) is in OFF position.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	This valve is located the Fuel Building Elev. 810' Spent Fuel Pool Pump X-01 Room.	
NOTE: Starting a SFPCW Pump with the discharge valve closed then slowly opening the valve limits the rise in pressure of downstream piping, preventing the lifting of system reliefs. Ref: EV-CR-2018-002021-4		
Perform Step: 3 ✓ Step 5 1st bullet	Close the affected Spent Fuel Pool Cooling Pump discharge valve: <ul style="list-style-type: none"> • XSF-0005, SFP CLG WTR PMP X-01 DISCH VLV 	
Standard:	CLOSED XSF-0005, SFP CLG WTR PMP X-01 DISCH VLV by rotating handwheel clockwise.	
Examiner Cue:	When XSF-0005 is manipulated in the CLOSED direction: <ul style="list-style-type: none"> • Valve handwheel turns and valve stem begins to move down. • Valve handwheel becomes hard to turn. • Valve stem is in the fully down (bottom) position and handwheel will no longer turn. 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	The handswitch is located on MCC XEB3-2 Compartment 3M Auxiliary Building Elev. 852' in Auxiliary Building 852' Corridor. Another operator is available to operate the following switch.	
Examiner Cue:	Inform examinee "Another operator is available in Auxiliary Building Elev. 852' to perform alignment at the MCC."	
NOTE: Minimize the time a SFPCW Pump operates with its discharge valve closed		
Perform Step: 4 Step 6 1st bullet	Locally start affected Spent Fuel Pool Cooling Pump by taking local handswitch to - LOCAL/START: <ul style="list-style-type: none"> • X-HS-4829A, SFP CLG WATER PUMP 01 (XEB3-2/3M-AB 852' Rm X-241) 	
Standard:	Requested operator to PLACE handswitch in LOCAL/START.	
Examiner Cue:	SFP CLG WATER PUMP 01 LOCAL/START handswitch is in the right (LOCAL/START) position. Pump motor shaft begins to rotate and flow noise increases.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	This valve is located the Fuel Building Elev. 810' Spent Fuel Pool Pump X-01 Room.
Perform Step: 5 ✓ Step 7 1st bullet	Slowly open affected Spent Fuel Pool Cooling Pump discharge valve: <ul style="list-style-type: none"> • XSF-0005, SFP CLG WTR PMP X-01 DISCH VLV.
Standard:	OPENED XSF-0005, SFP CLG WTR PMP X-01 DISCH VLV by rotating handwheel counter-clockwise.
Examiner Cue:	When XSF-0005 is manipulated in the OPEN direction: <ul style="list-style-type: none"> • Valve handwheel turns and valve stem begins to move up. • Valve handwheel becomes hard to turn. • Valve stem is in the fully up (top) position and handwheel will no longer turn. • Flow noise increases as valve is opened.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	This valve is located in the Fuel Building Elev. 810' Room X-249B Spent Fuel Pool Panel Area. The valve is positioned using a reverse-operated remote operator. Flow indicators are located on Fuel Building 839' Room X-264 and X-265. Another operator is available to monitor flow.
Perform Step: 6 ✓ Step 8 2nd and 3rd bullets	Throttle discharge path isolation valve opened in step 3 to obtain proper flow for present configuration: <ul style="list-style-type: none"> • X-FIS-4847B, SFP HEAT EXCHANGER/DEMINERALIZER X-01 RETURN TO UNIT 2 SFP FLOW IND SW (FB 839 X-264). • X-FIS-4848A, SFP HEAT EXCHANGER/DEMINERALIZER X-01 RETURN TO UNIT 1 SFP FLOW IND SW (FB 839 X-265)
Standard:	THROTTLED CLOSED XSF-0009-RO, SFP HX X-01 OUT TO SFP X-01 ISOL VLV RMT OPER by rotating handwheel COUNTER-CLOCKWISE until combined flow on two flow indicators is approximately 3600 gpm.
Examiner Cue:	Inform examinee, "Another operator will monitor flow indicators." As XSF-0009 is closed report the following: FIRST REPORT <ul style="list-style-type: none"> • X-FIS-4847B 2350 gpm and lowering • X-FIS-4848A 2400 gpm and lowering SECOND REPORT <ul style="list-style-type: none"> • X-FIS-4847B 1750 gpm and lowering • X-FIS-4848A 1850 gpm and lowering
Terminating Cue:	JPM Complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:	
-------------------	--

- Initial Conditions:** Given the following conditions:
- SFP Cooling Water Pump X-02 is out-of-service due to a bearing failure
 - SFP Cooling Water Pump X-01 and SFP HX X-01 are aligned to cool both SFPs per SOP-506, Spent Fuel Pool Cooling and Cleanup System
 - Both SFP X-01 level instruments failed causing SFP Cooling Water Pump X-01 to trip
- Initiating Cue:** The Unit Supervisor directs you to **PERFORM** the following:
- Locally restart SFP Cooling Water Pump X-01 to cool both Spent Fuel Pools utilizing ABN-909, Section 4.0 Level Instrument Malfunction beginning with Step 3
 - When directed by the procedure, **THROTTLE XSF-0009-RO, SFP HX X-01 OUT TO SFP X-01 ISOL VLV RMT OPER**, to obtain a **COMBINED** flow of 3600 gpm as indicated on the following:
 - X-FIS-4847B, SFP HEAT EXCHANGER/DEMINERALIZER X-01 RETURN TO UNIT 2 SFP FLOW IND SW
 - X-FIS-4848A, SFP HEAT EXCHANGER/DEMINERALIZER X-01 RETURN TO UNIT 1 SFP FLOW IND SW

Facility: CPNPP JPM # NRC S-1 Task # RO1024 K/A # APE.003.AA1.02 3.6 / 3.4
 Title: Respond to Control Rod Misalignment

Examinee (Print): _____

Testing Method:

Simulated Performance:	_____	Classroom:	_____
Actual Performance:	<u>X</u>	Simulator:	<u>X</u>
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>B</u>	Emerg:	_____ EN: _____

CUE THE EXAMINEE

Provide the Initial Conditions and Initiating Cue to the Examinee. Any special conditions or instructions should be contained on this sheet.

Initial Conditions: Given the following conditions:

- Unit 1 is operating at 100% power
- Control Rod H8 is at 204 steps as indicated on DRPI, all other rods in Control Bank D indicate 216 steps
- Demand counters for Control Bank D are indicating 215 steps
- All necessary verifications, repairs, and determinations have been made in accordance with ABN-712
- Technical Specifications have been referenced
- An NEO is standing by at the P/A Converter AUTO/MANUAL Selector Switch
- Control Rod H8 has been misaligned for 15 minutes

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

- REALIGN Control Rod H8 with Control Bank D at the normal withdrawal rate per ABN-712, Rod Control System Malfunction, Section 3.3, Dropped or Misaligned Rod in MODE 1 or 2, STARTING at Step 14
- DESIRED DRPI light for Step 14.c is 222 Steps
- It is NOT desired to reset affected group step counter to the DRPI indicated position of Control Rod H8 at Step 14.e

Task Standard: Realigned Control Rod H8 with Control Bank D per ABN-712, Rod Control System Malfunction by performing the following actions: Transferred the Control Rod Bank Select switch to the CBD position, moved Control Bank D rods outward until the unaffected rods in the bank indicated 222 steps by DRPI indication, placed the lift coil disconnect switches for control rods D4, M12, D12, and M4 in the disconnect position, withdrew the affected control rod (H8) outward to a position of 222 steps by DRPI indication, placed the lift coil disconnect switches for control rods D4, M12, D12, and M4 back to the connect position, cleared the control rod urgent failure alarm, moved control bank D rods back to a position of 215 steps as indicated on the unaffected group step counter (Bank D Group 1), reset the affected group step counter (Bank D Group 2) to 215 steps, and placed the Control Rod Bank Select Switch back to the Manual position.

Required Materials: ABN-712, Rod Control System Malfunction (Rev. 14 - 0)

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

Comments:

Result: SAT  UNSAT 

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP**SIMULATOR OPERATOR:**

INITIALIZE to IC-64 and Load Scenario File: Make-up – CPNPP 2021 NRC JPM S-1

OR

INITIALIZE to IC-18 or any at power Initial Condition and PERFORM the following:

- **EXECUTE the following malfunctions:**
 - **RD13H8, Control Bank D Rod H8 @ 202 Steps**
- **PLACE Simulator in RUN**
- **PLACE 1/1-RBSS, Control Rod Bank Select in MANUAL**
- **DELETE malfunction RD13H8, Control Bank D Rod H8 @ 202 steps**
- **PLACE Simulator in FREEZE**
- **When contacted, EXECUTE remote function RDR03, P/A Converter to MANUAL**

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-712, Rod Control System Malfunction**
 - **Section 3.3, Dropped or Misaligned Rod in MODE 1 or 2, appropriately marked through Step 13 (Pages 1, 2, 11-26) (Orange paper)**

√ - Check Mark Denotes Critical Step

START TIME:

--

Examiner Note:	The following steps are from ABN-712, Section 3.3.		
<p>CAUTION:</p> <ul style="list-style-type: none"> ● Affected rod withdrawal should only be performed after fuel conditioning requirements have been met unless approved by Engineering. ● Do <u>NOT</u> withdraw an RCCA that has been misaligned for greater than 4 hours during power operation without Engineering guidance. 			
<p>Note:</p> <ul style="list-style-type: none"> ● The last movement of affected rod should be in the <u>SAME</u> direction as the last movement of affected group. ● When recovering a dropped rod using the DRPI method the group with the dropped rod should initially be moved outward to the next DRPI step up vice in so as not to drive the misaligned rod further into the core. Positive reactivity will be added during recovery. 			
Examiner Cue:	If asked by examinee, "Fuel conditioning requirements have been met."		
Perform Step: 1 3.3.14 & 3.3.14.a	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> ● Transfer 1/<u>u</u>-RBSS, CONTROL ROD BANK SELECT to affected bank. 		
Standard:	ROTATED 1/1-RBSS, CONTROL ROD BANK SELECT to Bank CBD position.		
Comment:			SAT ☞ UNSAT ☞
Perform Step: 2 3.3.14, 3.3.14.b & 1 st line	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> ● RECORD positions for affected Rod: Affected Rod (DRPI) _____ 		
Standard:	RECORDED Rod H8 DRPI at 204 Steps.		
Comment:			SAT ☞ UNSAT ☞
Perform Step: 3 3.3.14, 3.3.14.b & 2 nd line	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> ● RECORD positions for affected Rod: Bank (DRPI) _____ 		
Standard:	RECORDED Bank CBD DRPI at 216 Steps.		
Comment:			SAT ☞ UNSAT ☞



Perform Step: 4 3.3.14, 3.3.14.b & 3 rd line	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> RECORD positions for affected Rod: Group 1 step counter _____
Standard:	OBSERVED 1-SC-CBD1, CTRL BANK D GROUP 1 and RECORDED at 215 Steps.
Comment:	SAT ☞ UNSAT ☞



Perform Step: 5 3.3.14, 3.3.14.b & 3 rd line	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> RECORD positions for affected Rod: Group 2 step counter _____
Standard:	OBSERVED 1-SC-CBD2, CTRL BANK D GROUP 2 and RECORDED at 215 Steps.
Comment:	SAT ☞ UNSAT ☞



Perform Step: 6√ 3.3.14 & 3.3.14.c	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> MOVE affected group outward to the desired DRPI Light.
Standard:	PLACED 1/1-FLRM, CONTROL ROD MOTION CTRL in OUT position until DRPI lights for Bank D indicated 222 Steps.
Comment:	SAT ☞ UNSAT ☞









CAUTION: Do NOT make any changes in plant operations during realignment of the affected rod that would require a change in bank position.



Perform Step: 7√ 3.3.14 & 3.3.14.d	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> PLACE all lift coil disconnect switches for affected bank, groups 1 <u>AND</u> 2, <u>EXCEPT</u> for affected rod to the UP (disconnected) position.
Standard:	At rear of Control Board, PLACED Lift Coil Disconnect Switches for Rods D4, M12, D12, and M4 in ROD DISCONNECTED (up) position.
Comment:	SAT ☞ UNSAT ☞

Perform Step: 8 3.3.14 & 3.3.14.e	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • IF desired, RESET affected group step counter to the DRPI indicated position of affected rod.
Standard:	DETERMINED from Initiating Cue it is NOT desired to RESET affected group step counter to the DRPI indicated position of Control Rod H8.
Comment:	SAT  UNSAT 



Examiner Cue:	When report received from Simulator Operator that P/A Converter is in Manual, inform examinee.
CAUTION: Do <u>NOT</u> allow P/A Converter Auto-Manual selector switch to spring return to automatic until directed by this procedure.	
Perform Step: 9 3.3.14 & 3.3.14.f	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • IF restoring a Control Bank rod, THEN Locally POSITION AND MAINTAIN P/A Converter Auto-Manual selector switch (SFGD 832 Rm 1-096) - MANUAL
Standard:	CONTACTED NEO to place P/A Converter in MANUAL
Simulator Operator:	When instructed, Actuate KEY 1 and report to the Examiner that the P/A Converter is in Manual.
Comment:	SAT  UNSAT 



Examiner Cue:	IF Necessary, Restate Stable Plant Conditions have been established. Other operators will adjust turbine load if required.
NOTE: <ul style="list-style-type: none"> • When moving affected rod, a CONTROL ROD CTRL URGENT FAIL alarm will be received in control room and at power cabinet containing the other group of affected bank. This is normal and will prevent the other group's step counter from operating. • At low RCS boron concentration, excessive boration may delay return to desired power level after rod recovery. 	
Perform Step: 10 3.3.14, 3.3.14.g.1) & all bullets	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • WHEN moving the affected rod for realignment, THEN PERFORM the following: <ul style="list-style-type: none"> • MAINTAIN T_{AVE} within 2°F of T_{ref} by controlling the following, as necessary: <ul style="list-style-type: none"> ○ Turbine Power/Steam Dumps/Boration/Dilution
Standard:	MONITORED T _{AVE} while moving Control Rod H8 in subsequent steps.
Comment:	SAT  UNSAT 



Perform Step: 11 3.3.14 & 3.3.14.g.2)	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • WHEN moving the affected rod for realignment, THEN PERFORM the following: <ul style="list-style-type: none"> • VERIFY that only affected Rod is moving.
Standard:	VERIFIED that only Control Rod H8 moved.
Comment:	SAT  UNSAT 
Perform Step: 12 3.3.14 & 3.3.14.g.3)	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • WHEN moving the affected rod for realignment, THEN PERFORM the following: <ul style="list-style-type: none"> • ENSURE last movement of affected rod is in same direction as last movement of affected bank.
Standard:	ENSURED last movement of Control Rod H8 is in same direction as last movement of Control Bank CBD as entire bank was moved outward.
Comment:	SAT  UNSAT 
Perform Step: 13 ^v 3.3.14 & 3.3.14.h	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • WITHDRAW the affected rod in controlled increments until aligned with its group by DRPI indication.
Standard:	PLACED 1/1-FLRM, CONTROL ROD MOTION CTRL in OUT position until DRPI light for Rod H8 indicated 222 Steps.
Comment:	SAT  UNSAT 
Examiner Cue:	When report received from Simulator Operator that P/A Converter is in Auto, inform examinee.
Perform Step: 14 3.3.14 & 3.3.14.i	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • IF operated in step 14f, THEN PLACE P/A Converter Auto-Manual selector switch - AUTO
Standard:	CONTACTED NEO to place P/A Converter in AUTO
Simulator Operator:	When instructed, MODIFY RDR03, to AUTO and report to the Examiner that the P/A Converter is in Auto.
Comment:	SAT  UNSAT 



Perform Step: 15 3.3.14 & 3.3.14.j	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> PLACE all lift coil disconnect switches to the DOWN (connected) position.
Standard:	At rear of Control Board, PLACED Lift Coil Disconnect Switches for Rods D4, M12, D12, and M4 in ROD CONNECTED (down) position.
Comment:	SAT  UNSAT 



CAUTION: Resetting the Urgent Failure Alarm removes the reduced current applied to movable and stationary grippers. IF cause of alarm has NOT been corrected, THEN resetting alarm may result in dropping rod(s).



Perform Step: 16 3.3.14 & 3.3.14.k	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> VERIFY u-ALB-6D, 1.6, CONTROL ROD CTRL URGENT FAIL alarm - CLEAR
Standard:	DETERMINED 1-ALB-6D Window 1.6 – CONTROL ROD CTRL URGENT FAIL alarm is NOT CLEAR and PROCEEDED to RNO steps.
Comment:	SAT  UNSAT 



Examiner Cue:	When requested, inform examinee only the lift reg white light is LIT in power cabinet 1BD.
Perform Step: 17 3.3.14, 3.3.14.k & RNO a.	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> VERIFY u-ALB-6D, 1.6, CONTROL ROD CTRL URGENT FAIL alarm – CLEAR ENSURE only lift reg white light on designated circuit card in affected cabinet (See ALB-6D 1.6 logic diagram) - LIT
Standard:	DETERMINED only the lift reg white light was LIT in the affected power cabinet (1BD).
Comment:	SAT  UNSAT 

Perform Step: 18 3.3.14, 3.3.14.k & RNO b.	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> VERIFY u-ALB-6D, 1.6, CONTROL ROD CTRL URGENT FAIL alarm – CLEAR DEPRESS 1/u-RCAR, CONTROL ROD CTRL ALARM RESET
Standard:	DEPRESSED 1/1-RCAR, CONTROL ROD CTRL ALARM RESET pushbutton at CB-06.
Comment:	SAT  UNSAT 

Perform Step: 19 3.3.14, 3.3.14.k & RNO c.	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • VERIFY u-ALB-6D, 1.6, CONTROL ROD CTRL URGENT FAIL alarm – CLEAR • VERIFY u-ALB-6D, 1.6, CONTROL ROD CTRL URGENT FAIL alarm - CLEAR
Standard:	VERIFIED 1-ALB-6D, Window 1.6 – CONTROL ROD CTRL URGENT FAIL alarm was CLEAR.
Comment:	SAT  UNSAT 

Examiner Cue:	When requested, inform examinee ALL white lights are DARK on the reg circuit card in power cabinet 1BD.
Perform Step: 20 3.3.14, 3.3.14.k & RNO d.	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • VERIFY u-ALB-6D, 1.6, CONTROL ROD CTRL URGENT FAIL alarm – CLEAR • ENSURE ALL white lights on designated circuit card in affected cabinet (See ALB-6D 1.6 logic diagram) - DARK
Standard:	DETERMINED ALL white lights are DARK on the reg circuit card in power cabinet 1BD.
Comment:	SAT  UNSAT 

Perform Step: 21 √ 3.3.14 & 3.3.14.l	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • MOVE affected BANK inward to unaffected GROUP step counter position recorded in 14b AND If necessary, RESET affected GROUP step counter to value recorded in 14b.
Standard:	PLACED 1/1-FLRM, CONTROL ROD MOTION CTRL in the IN position until Control Bank D Group 1 (unaffected group) indicated 215 Steps. RESET Control Bank D Group 2 (affected group) step counter to 215 steps by depressing the “DN” pushbutton until 215 steps indicated.
Comment:	SAT  UNSAT 

Perform Step: 22 √ 3.3.14 & 3.3.14.m	RESTORE Rod to OPERABLE Status using DRPI realignment method: <ul style="list-style-type: none"> • PLACE 1/u-RBSS, CONTROL ROD BANK SELECT to MANUAL
Standard:	ROTATED 1/1-RBSS, CONTROL ROD BANK SELECT to MANUAL position.
Terminating Cue:	This JPM is complete.
Comment:	SAT  UNSAT 

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- Unit 1 is operating at 100% power
- Control Rod H8 is at 204 steps as indicated on DRPI, all other rods in Control Bank D indicate 216 steps
- Demand counters for Control Bank D are indicating 215 steps
- All necessary verifications, repairs, and determinations have been made in accordance with ABN-712
- Technical Specifications have been referenced
- An NEO is standing by at the P/A Converter AUTO/MANUAL Selector Switch
- Control Rod H8 has been misaligned for 15 minutes

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

- **REALIGN** Control Rod H8 with Control Bank D at the normal withdrawal rate per ABN-712, Rod Control System Malfunction, Section 3.3, Dropped or Misaligned Rod in MODE 1 or 2, **STARTING** at Step 14
- **DESIRED** DRPI light for Step 14.c is 222 Steps
- It is **NOT** desired to reset affected group step counter to the DRPI indicated position of Control Rod H8 at Step 14.e

Facility: CPNPP JPM # NRC S-2 Task # RO1406 K/A # 006.A4.07 4.4 / 4.4 SF-2
 Title: Place the RHR System in Standby Readiness

Examinee (Print): _____

Testing Method:

Simulated Performance: _____

Classroom: _____

Actual Performance: X

Simulator: X

Alternate Path: X

Plant: _____

Time Critical: _____

Low Pwr: X RCA: _____

Bank / Mod / New: B

Emerg: _____ EN: _____

CUE THE EXAMINEE

Provide the Initial Conditions and Initiating Cue to the Examinee. Any special conditions or instructions should be contained on this sheet.

Initial Conditions: Given the following conditions:

- Unit 1 is operating in MODE 5
- RHR Train A is aligned in shutdown cooling mode and supplying CVCS Letdown
- RHR Train B is still in shutdown cooling alignment but is not currently in operation
- The Train B RHR Heat Exchanger is at ambient temperature

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

- Place RHR Train B in Standby Readiness in accordance with SOP-102A, Residual Heat Removal System Section 5.11, Placing the RHRS in Standby Readiness for ECCS Injection. Begin with Step 5.11.B

Task Standard: PLACED Residual Heat Removal Train B in Standby Readiness in accordance with SOP-102A by performing the following actions: Placed RHRP 1-02 in Pull-Out, Closed both RHRP 1-02 HL Recirc Isolation Valves (8701B/8702B), Opened RHRP 1-02 X-Tie Valve (8716B). Determined RHRP 1-02 Suction Pressure > 60 psig and vented RHRP 1-02 Suction by opening the SI Test Header Return Isolation Valves (8871/8694), then Cycling the RHR to CL 3 & 4 Test Valve (8890B), then re-closing the SI Test Header Isolation Valves (8871/8694). Completed placing RHR Train B in Standby Readiness by Placing RHRP 1-02 in AUTO and then placing the RHR HX 2 Flow Control Valve (607) 100% Open.

Required Materials: SOP-102A, Residual Heat Removal System (Rev. 22 - 0)

Validation Time: 20 minutes

Completion Time: _____ minutes

Comments:

Result: SAT  UNSAT 

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP**SIMULATOR OPERATOR:**

INITIALIZE to IC-60 and LOAD Scenario File “Make-up – CPNPP 2021 NRC JPM S-2”

- **ENSURE RHR Train A is in SDC Mode in operation**
- **ENSURE RHR Train B is in SDC Mode NOT in operation**
- **ENSURE any indications of Train B RHR HX are at ambient temperature**





EXAMINER:



PROVIDE the examinee with a copy of:

- **SOP-102A, Residual Heat Removal System**
 - **Section 5.11 Placing the RHRS in Standby Readiness for ECCS Injection, with Step 5.11.A marked as completed (Pages 1-15, 89-98) (Orange Paper)**



√ - Check Mark Denotes Critical Step



START TIME:



Examiner Note:	The following steps are from SOP-102A, Section 5.11.	
<p>CAUTION: ● <u>IF</u> RHR will be aligned to the SI Test Header, <u>THEN</u> the SI Test Header must <u>NOT</u> be in use for other plant evolutions.</p> <p>● Before closing the RHR hot leg suction isolation valves, ENSURE that the RHR suction relief valves are <u>NOT</u> required to meet low temperature overpressure protection requirements. (TS 3.4.12)</p>		
Perform Step: 1 5.11 B	<p>ENSURE the breakers for the selected RHR pump hot leg recirculation isolation valves are ON:</p> <p><u>RHRP 1-02</u></p> <ul style="list-style-type: none"> ● 1EB3-2/9M/BKR-1, RHR PMP 1-02 HL 1-04 RECIRC OMB ISOL VLV 1-8701B PREF MOTOR BREAKER 1 ● 1EB3-2/9M/BKR-2, RHR PMP 1-02 HL 1-04 RECIRC OMB ISOL VLV 1-8701B PREF MOTOR BREAKER 2 ● 1EB4-2/8M/BKR-1, RHR PUMP 1-02 HL 1-04 RECIRC ISOLATION VALVE 1-8702B MOTOR BREAKER 1 ● 1EB4-2/8M/BKR-2, RHR PUMP 1-02 HL 1-04 RECIRC ISOLATION VALVE 1-8702B MOTOR BREAKER 2 	
Examiner Cue:	If examinee desires confirmation from the field, inform the examinee that “Field support has energized the RHRP 1-02 breakers listed in SOP-102A, Step 5.11.B.”	
Standard:	VERIFIED via light indication that breakers are energized.	
Comment:	SAT  UNSAT 	
Perform Step: 2 √ 5.11 C	<p>ENSURE selected RHR pump handswitch in PULL-OUT:</p> <ul style="list-style-type: none"> ● 1/1-APRH2, RHRP 2 	
Standard:	PLACED 1/1-APRH2, RHRP 2 in PULL-OUT	
Comment:	SAT  UNSAT 	



Perform Step: 3 5.11 D	ENSURE the selected RHR pump hot leg recirculation isolation valves are CLOSED: <u>RHRP 1-02</u> <ul style="list-style-type: none"> • 1/1-8701B, RHRP 2 HL RECIRC ISOL VLV • 1/1-8702B, RHRP 2 HL RECIRC ISOL VLV
Standard:	<ul style="list-style-type: none"> • PLACED 1/1-8701B in Close – Red light Dark, Green light Lit • PLACED 1/1-8702B in Close – Red light Dark, Green light Lit
Comment:	SAT  UNSAT 

CAUTION: ALIGNMENT of RHR Pump suction to the RWST with RWST level > 97.5% may result in RWST overflow. (CR-2009-006651)

Perform Step: 4 5.11 E	ENSURE the following valves are OPEN for the selected RHR Train: <u>RHRP 1-02</u> <ul style="list-style-type: none"> • 1/1-8809B, RHR TO CL 3 & 4 INJ ISOL VLV • 1/1-8716B, RHRP 2 XTIE VLV
Standard:	<ul style="list-style-type: none"> • VERIFIED 1/1-8809B is Open – Red light Lit, Green light Dark (Not Critical) • PLACED 1/1-8716B in Open – Red light Lit, Green light Dark (Critical)
Comment:	SAT  UNSAT 

Examiner Cue:	If examinee contacts Field Support inform them that 1-HV-4179 indicates Closed on 1-LV-08.
Perform Step: 5 5.11 F	VERIFY the selected train sampling isolation valve is CLOSED on 1-LV-08: <ul style="list-style-type: none"> • 1-HS-4179, RHR TRAIN B SMPL LINE ORC ISOL VLV
Standard:	VERIFIED via 1-MLB-1B2 (CB-02) that 1-HV-4179 is Closed.
Comment:	SAT  UNSAT 

Examiner Cue:	When examinee contacts Field Support inform them that 1-PI-0602, Residual Heat Removal Pump 1-02 Suction Pressure Indicates 310 psig.
Perform Step: 6 5.11 G	<p>VERIFY the selected RHR Pump suction pressure is \leq 60 psig at local pressure gauge OR VENT pressure per the next step:</p> <ul style="list-style-type: none"> • 1-PI-0602, RESIDUAL HEAT REMOVAL PUMP 1-02 SUCTION PRESSURE INDICATOR
Standard:	CONTACTED Field Support and DETERMINED that RHR Pump 1-02 suction pressure is greater than 60 psig.
Comment:	SAT  UNSAT 



Examiner Note:	The following steps constitute the Alternate Path of this JPM.
Perform Step: 7 5.11 H 1)	<p>IF selected RHR train suction pressure is > 60 psig, THEN PERFORM the following to vent pressure to the RWST via the Test Line:</p> <p>OPEN the following valves:</p> <ul style="list-style-type: none"> • 1/1-8871, SI TEST HDR RET ISOL VLV • 1/1-8964, SI TEST HDR RET ISOL VLV
Standard:	<ul style="list-style-type: none"> • PLACED 1/1-8871 in Open – Red light Lit, Green light Dark. • PLACED 1/1-8964 in Open – Red light Lit, Green light Dark.
Comment:	SAT  UNSAT 

Examiner Cue:	<p>If examinee opens 1/1-8890B then asks for the local reading of 1-PI-602 report indicator reads approximately 30 psig and stable.</p> <p>If examinee opens 1/1-8890A then asks for the local reading of 1-PI-602 report indicator reads approximately 310 psig and stable.</p>
Perform Step: 8√ 5.11 H 2)	<p>IF selected RHR train suction pressure is > 60 psig, THEN PERFORM the following to vent pressure to the RWST via the Test Line:</p> <p>CYCLE either of the following valves to vent pressure to < 60 psig:</p> <ul style="list-style-type: none"> • 1/1-8890A, RHR TO CL 1 & 2 TEST VLV (TRN A) OR • 1/1-8890B, RHR TO CL 3 & 4 TEST VLV (TRN B)
Standard:	<ul style="list-style-type: none"> • PLACED 1/1-8890B in Open – Red light Lit, Green light Dark. • Then PLACED 1/1-8890B in Close – Red light Dark, Green light Lit.
Comment:	SAT ☞ UNSAT ☞

Perform Step: 9√ 5.11 H 3)	<p>IF selected RHR train suction pressure is > 60 psig, THEN PERFORM the following to vent pressure to the RWST via the Test Line:</p> <p>Close the following valves:</p> <ul style="list-style-type: none"> • 1/1-8871, SI TEST HDR RET ISOL VLV • 1/1-8964, SI TEST HDR RET ISOL VLV
Standard:	<ul style="list-style-type: none"> • PLACED 1/1-8871 in Close – Red light Dark, Green light Lit. • PLACED 1/1-8964 in Close – Red light Dark, Green light Lit.
Comment:	SAT ☞ UNSAT ☞







CAUTION: ALIGNMENT of RHR Pump suction to the RWST with RWST level > 97.5% may result in RWST overflow (CR-2009-006651).



NOTE: Pressure transmitters 1PT-601A AND 1PT-602A are returned to service in the next step. Valves 1RH-8735C AND 1RH-8735D, which are the isolation valves for the RHR Pump Suction Pressure transmitters, are required to be OPEN in MODES 1 - 3 to allow for pump NPSH monitoring during accident conditions. Pressures above 100 psig could affect instrument calibration.



Perform Step: 10 5.11 I	OPEN the following valves for the selected Train: <u>TRAIN B</u> <ul style="list-style-type: none"> • 1/1-8812B, RWST TO RHRP 2 SUCT VLV • 1RH-8735D, RHR PMP 1-02 SUCT PRESS XMTR 0602A ISOL VLV
Standard:	<ul style="list-style-type: none"> • PLACED 1/1-8812B in Open – Red light Lit, Green light Dark (Critical) • CONTACTED Field Support to Open 1RH-8735D (NOT Critical)
Simulator Operator:	Execute KEY 1 to Open 1RH-8735D. [RHR14D]
Examiner Cue:	When 1-PI-0602A responds inform the examinee that 1RH-8735D is Open.
Comment:	SAT  UNSAT 



Examiner Note:	Step 5.11 J is for cooling the RHR Heat Exchanger. The Initial Conditions state that the heat exchanger is at ambient temperature. If the examinee struggles with whether to N/A the step, provide a cue that the Unit Supervisor states that performing the step is N/A.	
CAUTION: Cooling an RHR HX after removing the pump from service should be performed gradually to minimize thermal stress.		
Perform Step: 11 5.11 J	IF entering this section from sections 5.5 (RHR Shutdown) OR 5.6 (Alternating RHR Trains), THEN ENSURE RHR HX cooled by performing the following:	
Standard:	DETERMINED step is N/A as RHR HX is at ambient temperature per initial conditions	
Comment:	SAT ☞ UNSAT ☞	



Perform Step: 12 5.11 K 1)	PERFORM the following to disable the selected RHR pump hot leg recirculation valves: PLACE the following breakers for the selected RHR pump in OFF AND LOCK: <u>RHRP 1-02</u> <ul style="list-style-type: none"> • 1EB3-2/9M/BKR-1, RHR PMP 1-02 HL 1-04 RECIRC OMB ISOL VLV 1-8701B PREF MOTOR BREAKER 1 • 1EB4-2/8M/BKR-1, RHR PUMP 1-02 HL 1-04 RECIRC ISOLATION VALVE 1-8702B MOTOR BREAKER 1 	
Standard:	CONTACTED Field Support to place breakers in OFF and LOCK.	
Simulator Operator:	Execute KEY 2 to place breakers in correct configuration. [RHR08 and RHR07]	
Examiner Cue:	Field Support reports that the breakers are in OFF and LOCKED.	
Comment:	SAT ☞ UNSAT ☞	



Perform Step: 13 5.11 K 2)	PERFORM the following to disable the selected RHR pump hot leg recirculation valves: <u>RHRP 1-02</u> <ul style="list-style-type: none"> • 1EB3-2/9M/BKR-2, RHR PMP 1-02 HL 1-04 RECIRC OMB ISOL VLV 1-8701B PREF MOTOR BREAKER 2 • 1EB4-2/8M/BKR-2, RHR PUMP 1-02 HL 1-04 RECIRC ISOLATION VALVE 1-8702B MOTOR BREAKER 2
Examiner Cue:	Field Support reports that the breakers are OFF.
Standard:	CONTACTED Field Support to place breakers in OFF.
Comment:	SAT  UNSAT 
Perform Step: 14 5.11 K 3)	VERIFY the selected RHR pump hot leg recirculation isolation valves indicate CLOSED on the Plant Computer: <u>RHRP 1-02</u> <ul style="list-style-type: none"> • Y6912D, RHRP 2 HL RECIRC ISOL VLV (1-8701B) • Y6848D, RHRP 2 HL RECIRC ISOL VLV (1-8702B)
Standard:	VERIFIED on the Plant Computer that valves indicate Closed.
Comment:	SAT  UNSAT 
Perform Step: 15 5.11 L	ENSURE the alternate power supply breakers are OFF AND DANGER TAGGED for the RHR pump hot leg recirculation isolation valves: <u>RHRP 1-02</u> <ul style="list-style-type: none"> • 1EB4-2/1M/BKR-1, RHR PUMP 1-02 HOT LEG 1-04 RECIRC OMB ISOL VLV 1-8701B ALT MOT BKR 1 • 1EB4-2/1M/BKR-2, RHR PUMP 1-02 HOT LEG 1-04 RECIRC OMB ISOL VLV 1-8701B ALT MOT BKR 2
Standard:	CONTACTED Field Support to ensure that breakers are OFF and DANGER TAGGED.
Examiner Cue:	Field Support reports that the breakers are OFF and Danger Tagged.
Comment:	SAT  UNSAT 

Perform Step: 16 5.11 M	ENSURE that the selected RHR train valve is CLOSED AND LOCKED: <ul style="list-style-type: none"> • 1CC-0157, RHR HX 1-02 CCW SPLY ISOL VLV
Standard:	CONTACTED Field Support to CLOSE and LOCK 1CC-0157
Simulator Operator:	When contacted, Execute KEY 3. [CCR15]
Examiner Cue:	Field Support reports that 1CC-0157 is Closed and Locked
Comment:	SAT  UNSAT 

Perform Step: 17 5.11 N	ENSURE the selected RHRP SEAL CLR CCW RET FLO LO alarm is clear: <ul style="list-style-type: none"> • 1-ALB-3B, 4.7, RHRP2 SEAL CLR CCW RET FLO LO
Standard:	VERIFIED Alarm is Clear.
Comment:	SAT  UNSAT 

Perform Step: 18 √ 5.11 O	Place selected RHR pump handswitch in AUTO: <ul style="list-style-type: none"> • 1/1-APRH2, RHRP 2
Standard:	PLACED 1/1-APRH2 in Auto.
Comment:	SAT  UNSAT 

Perform Step: 19 √ 5.11 P	ENSURE following valves positioned as indicated for the selected RHR train: <u>TRAIN B</u> <ul style="list-style-type: none"> • 1-HC-607, RHR HX 2 FLO CTRL - OPEN (100%)
Standard:	ROTATED 1-HC-607 to 100% position.
Comment:	SAT  UNSAT 

Perform Step: 20 5.11 P	ENSURE following valves positioned as indicated for the selected RHR train: <u>TRAIN B</u> <ul style="list-style-type: none"> • 1-FK-619, RHR HX 2 BYP FLO CTRL - CLOSED (MANUAL 0%)
Standard:	PLACED 1-FK-619 in Manual at 0%.
Terminating Cue:	This JPM is complete.
Comment:	SAT  UNSAT 

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- **Unit 1 is operating in MODE 5**
- **RHR Train A is aligned in shutdown cooling mode and supplying CVCS Letdown**
- **RHR Train B is still in shutdown cooling alignment but is not currently in operation**
- **The Train B RHR Heat Exchanger is at ambient temperature**

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

- **Place RHR Train B in Standby Readiness in accordance with SOP-102A, Residual Heat Removal System Section 5.11, Placing the RHRS in Standby Readiness for ECCS Injection. Begin with Step 5.11.B**

Facility: CPNPP JPM # NRC S-3 Task # RO1507 K/A # 011.EA1.11 4.2 / 4.2 SF-4P
Title: Transfer Residual Heat Removal Pumps and Safety Injection Pumps to Hot Leg Recirculation

Examinee (Print): _____

Testing Method:

Simulated Performance: _____

Classroom: _____

Actual Performance: X

Simulator: X

Alternate Path: X

Plant: _____

Time Critical: _____

Low Pwr: X

RCA: _____

Bank / Mod / New: B

Emerg: _____

EN: X

READ TO THE EXAMINEE

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

Initial Conditions: Given the following conditions:

- A Large Break Loss of Coolant Accident occurred on Unit 1 three hours ago

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

- TRANSFER Residual Heat Removal Pumps and Safety Injection Pumps from Cold Leg Recirculation to Hot Leg Recirculation per EOS-1.4A, Transfer to Hot Leg Recirculation

Task Standard: Utilizing EOS-1.4A, TRANSFERRED Residual Heat Removal Pumps and SIP 1-02 from Cold Leg Recirculation to Hot Leg Recirculation and IDENTIFIED that Safety Injection Pump 1-01 cannot be transferred from Cold Leg Recirculation to Hot Leg Recirculation and RESTORED Safety Injection Pump 1-01 to Cold Leg Recirculation.

Required Materials: EOS-1.4A, Transfer to Hot Leg Recirculation (Rev. 9 - 0)

Validation Time: 15 minutes

Completion Time: _____ minutes

Comments:

Result: SAT  UNSAT 

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP**SIMULATOR OPERATOR:**

INITIALIZE to IC-61.

OR

INITIALIZE to IC-18 and PERFORM the following:

- **EXECUTE malfunction RC08C2, Hot Leg Loop 3 Large Break LOCA**
- **Perform Actions of EOP-0.0A, EOP-1.0A and EOS-1.3A to align ECCS for Cold Leg Recirculation and Containment Spray for Recirculation**
- **EXECUTE override DIS18802A, CB-02 1/1-8802A, SI Pumps to RCS Hot Leg Valve OPEN Switch - CLS**

SIMULATOR OPERATOR NOTE:



- **After each JPM, ensure that all Keys have been removed from the control boards and returned to the key box**



EXAMINER:



PROVIDE the examinee with a copy of EOS-1.4A, Transfer to Hot Leg Recirculation (All Pages) (Orange Paper).



√ - Check Mark Denotes Critical Step











START TIME:









Examiner Note:	The following steps are from EOS-1.4A.
Perform Step: 1 1.a.1)	Perform the following to align Train A RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> • Check RHR Train A Available.
Standard:	DETERMINED RHR Train A available by OBSERVING flow on 1-FI-618, RHR TO CL 1 & 2 INJ FLO @ ~3800 gpm.
Comment:	SAT  UNSAT 







Perform Step: 2 √ 1.a.2)	Perform the following to align Train A RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> • Close RHR TO CL 1 & 2 INJ ISOL VLV: 1/1-8809A
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • INSERTED key T-112, RHR System into 69/1-8809A POWER switch and TURNED to ON position then PLACED 1/1-8809A, RHR TO CL 1 & 2 INJ ISOL VLV in CLOSE (critical). • OBSERVED green CLOSE light LIT, red OPEN light DARK (NOT critical).
Comment:	SAT  UNSAT 









Perform Step: 3 √ 1.a.3)	Perform the following to align Train A RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> • Open RHRP 1 XTIE VLV: 1/1-8716A
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED 1/1-8716A, RHRP 1 XTIE VLV in OPEN (critical). • OBSERVED green CLOSE light DARK, red OPEN light LIT (NOT critical).
Comment:	SAT  UNSAT 









Perform Step: 4 √ 1.a.4)	Perform the following to align Train A RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> • Ensure RHR TO HL 2 & 3 INJ ISOL VLV is open: 1/1-8840
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • INSERTED key T-112, RHR System into 69/1-8840 POWER switch and TURNED to ON position then PLACED 1/1-8840, RHR TO HL 2 & 3 INJ ISOL VLV in OPEN (critical). • OBSERVED green CLOSE light DARK, red OPEN light LIT (NOT critical).
Comment:	SAT  UNSAT 

Perform Step: 5 1.a.5)	Perform the following to align Train A RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> Verify RHR TO HL 2 & 3 INJ FLO, 1-FI-988.
Standard:	OBSERVED 1-FI-988, RHR TO HL 2 & 3 INJ FLO @ ~3000 gpm.
Comment:	SAT  UNSAT 
Perform Step: 6 1.b.1)	Perform the following to align Train B RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> Check RHR Train B available.
Standard:	DETERMINED RHR Train B available by OBSERVING flow on 1-FI-619, RHR TO CL 3 & 4 INJ FLO @ ~4000 gpm.
Comment:	SAT  UNSAT 
Perform Step: 7 1.b.2)	Perform the following to align Train B RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> Close RHR TO CL 3 & 4 INJ ISOL VLV: 1/1-8809B
Standard:	PERFORMED the following: <ul style="list-style-type: none"> INSERTED key T-112, RHR System into 69/1-8809B POWER switch and TURNED to ON position then PLACED 1/1-8809B, RHR TO CL 3 & 4 INJ ISOL VLV in CLOSE (critical). OBSERVED green CLOSE light LIT, red OPEN light DARK (NOT critical).
Comment:	SAT  UNSAT 
Perform Step: 8 1.b.3)	Perform the following to align Train B RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> Open RHRP 2 XTIE VLV: 1/1-8716B
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-8716B, RHRP 2 XTIE VLV in OPEN (critical). OBSERVED green CLOSE light DARK, red OPEN light LIT (NOT critical).
Comment:	SAT  UNSAT 
Perform Step: 9 1.b.4)	Perform the following to align Train B RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> Ensure RHR TO HL 2 & 3 INJ ISOL VLV is open: 1/1-8840
Standard:	DETERMINED 1/1-8840, RHR TO HL 2 & 3 INJ ISOL VLV is OPEN.
Comment:	SAT  UNSAT 

Perform Step: 10 1.b.5)	Perform the following to align Train A RHR to Hot Leg Recirculation: <ul style="list-style-type: none"> • Verify RHR TO HL 2 & 3 INJ FLO, 1-FI-988.
Standard:	OBSERVED 1-FI-988, RHR TO HL 2 & 3 INJ FLO @ ~4100 gpm.
Comment:	SAT  UNSAT 
Perform Step: 11 2.a	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> • Check SI Train A available.
Standard:	OBSERVED SIP 1 red FAN and PUMP lights lit with 1-PI-919, SIP 1 DISCH PRESS and 1-FI-918, SIP 1 DISCH FLO @ ~1400 psig and 400 gpm.
Comment:	SAT  UNSAT 
Perform Step: 12 √ 2.b	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> • Stop SI pump 1.
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED 1/1-APSI1, SIP 1 handswitch in STOP (critical). • OBSERVED green PUMP light LIT, red PUMP light DARK (NOT critical).
Comment:	SAT  UNSAT 
Perform Step: 13 √ 2.c	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> • Close SIP 1 XTIE VLV: 1/1-8821A
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED 1/1-8821A, SIP 1 XTIE VLV in CLOSE (critical). • OBSERVED green CLOSE light LIT, red OPEN light DARK (NOT critical).
Comment:	SAT  UNSAT 

Examiner Note:	The following steps represent the Alternate Path of this JPM.	
Perform Step: 14 2.d	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> • Open SI TO HL 2 & 3 INJ ISOL VLV: 1/1-8802A 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • INSERTED key T-112, RHR System into 69/1-8802A POWER switch and TURNED to ON position. • PLACED 1/1-8802A, SI TO HL 2 & 3 INJ ISOL VLV in OPEN. • OBSERVED green CLOSE light remains LIT, red OPEN light remains DARK. 	
Examiner Cue:	If examinee informs the Unit Supervisor (US) that 1/1-8802A did not open, REPORT that US acknowledges.	
Comment:	SAT  UNSAT 	
Perform Step: 15 2.d RNO 1)	Perform the following: <ul style="list-style-type: none"> • Open SIP 1 XTIE VLV: 1/1-8821A 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED 1/1-8821A, SIP 1 XTIE VLV in OPEN (critical). • OBSERVED green CLOSE light DARK, red OPEN light LIT (NOT critical). 	
Comment:	SAT  UNSAT 	
Perform Step: 16 2.d RNO 2)	Perform the following: <ul style="list-style-type: none"> • Start SI pump 1 to re-establish Cold Leg Recirculation. Consult Plant Staff to evaluate long term core cooling. 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED 1/1-APSI1, SIP 1 handswitch in START (critical). • OBSERVED green PUMP light DARK, red PUMP light LIT (NOT critical). 	
Examiner Cue:	Plant Staff instructions are to Complete EOS-1.4A.	
Comment:	SAT  UNSAT 	

Perform Step: 17 2.d RNO 3)	Perform the following: <ul style="list-style-type: none"> Go to Step 2g.
Standard:	PROCEEDED to Step 2g.
Comment:	SAT  UNSAT 
Perform Step: 18 2.g	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> Check SI Train B available.
Standard:	OBSERVED SIP 2 red FAN and PUMP lights lit with 1-PI-923, SIP 2 DISCH PRESS and 1-FI-922, SIP 2 DISCH FLO @ ~1400 psig and 400 gpm.
Comment:	SAT  UNSAT 
Perform Step: 19 √ 2.h	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> Stop SI pump 2.
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-APSI2, SIP 2 handswitch in STOP (critical). OBSERVED green PUMP light LIT, red PUMP light DARK (NOT critical).
Comment:	SAT  UNSAT 
Perform Step: 20 √ 2.i	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> Close SIP 2 XTIE VLV: 1/1-8821B
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-8821B, SIP 2 XTIE VLV in CLOSE (critical). OBSERVED green CLOSE light LIT, red OPEN light DARK (NOT critical).
Comment:	SAT  UNSAT 

Perform Step: 21 2.j	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> Open SI TO HL 1 & 4 INJ ISOL VLV: 1/1-8802B
Standard:	PERFORMED the following: <ul style="list-style-type: none"> INSERTED key T-112, RHR System into 69/1-8802B POWER switch and TURNED to ON position (critical). PLACED 1/1-8802B, SI TO HL 1 & 4 INJ ISOL VLV in OPEN (critical). OBSERVED green CLOSE light DARK, red OPEN light LIT (NOT Critical).
Comment:	SAT  UNSAT 
Perform Step: 22 2.k	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> Start SI pump 2.
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-APSI2, SIP 2 handswitch in START (critical). OBSERVED green PUMP light DARK, red PUMP light LIT (NOT critical).
Comment:	SAT  UNSAT 
Perform Step: 23 2.l	Align SI Pumps Flow Path For Hot Leg Recirculation: <ul style="list-style-type: none"> Verify SI pump 2 discharge flow.
Standard:	OBSERVED 1-FI-922, SIP 2 DISCH FLO @ ~610 gpm.
Comment:	SAT  UNSAT 
Perform Step: 24 2.m.1)	Check if SI TO CL 1& 4 INJ ISOL VLV, 1/1-8835 should be closed: <ul style="list-style-type: none"> Check that NO SI pump is injecting into cold legs.
Standard:	OBSERVED SIP 1 injecting into cold legs.
Comment:	SAT  UNSAT 

Examiner Note:	It is critical that 1/1-8835 NOT be closed. However, the examinee may indicate by alternate methods such as Place Keeping or discussion with the examiner that they have completed EOS-1.4A.	
Perform Step: 25 2.m.1) RNO 1)	Check if SI TO CL 1& 4 INJ ISOL VLV, 1/1-8835 should be closed: <ul style="list-style-type: none"> • DO NOT close 1/1-8835. Go to Step 3. OBSERVE NOTE PRIOR TO STEP 3. 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • MAINTAINED 1/1-8835 OPEN (critical). • INFORMED US that EOS-1.4A is Complete (NOT critical). 	
Terminating Cue:	This JPM is complete.	
Comment:	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> SAT UNSAT </div>	

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- **A Large Break Loss of Coolant Accident occurred on Unit 1 three hours ago**

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

- **TRANSFER Residual Heat Removal Pumps and Safety Injection Pumps from Cold Leg Recirculation to Hot Leg Recirculation per EOS-1.4A, Transfer to Hot Leg Recirculation**

Facility: CPNPP JPM # NRC S-4 Task # RO3113 K/A # 045 A4.01 3.1 / 2.9 SF-4S
Title: Perform Pre-Startup Turbine Trip Checks

Examinee (Print): _____

Testing Method:

Simulated Performance: _____

Classroom: _____

Actual Performance: X

Simulator: X

Alternate Path: X

Plant: _____

Time Critical: _____

Low Pwr: X

RCA: _____

Bank / Mod / New: B

Emerg: _____

EN: _____

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 3

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

- Perform OPT-410A, Pre-Startup Turbine Trip Checks

Task Standard: In accordance with OPT-410A, latched the Turbine, commenced opening the HP and LP stop valves and then tripped the Turbine prior to the HP stop valves obtaining the full open position.

Ref. Materials: OPT-410A, Pre-Startup Turbine Trip Checks (Rev. 12 - 0)
OPT-410A-1, Pre-Startup Turbine Trip Checks Data Sheet (Rev. 9)

Validation Time: 10 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP**Simulator OPERATOR:**

INITIALIZE to IC-65

or

INITIALIZE to IC-6 and insert the following:

;Insert HP Control Valve leakage

{LOT CZL2414A_2.Value=1} IMF AOTC_JC01DA001_NT1 f:600 d:53 r:60

{LOT CZL2414A_2.Value=1} IMF AOTC_JC01DA001_NT2 f:600 d:53 r:60

{LOT CZL2414A_2.Value=1} IMF AOTC_JC01DA001_NT3 f:600 d:53 r:60

;Modify Control Valve Leakage when Turbine tripped

{DITCTCTRP.Value=1} MMF AOTC_JC01DA001_NT1 f:194 r:60

{DITCTCTRP.Value=1} MMF AOTC_JC01DA001_NT2 f:194 r:60

{DITCTCTRP.Value=1} MMF AOTC_JC01DA001_NT3 f:194 r:60

Handout:

PROVIDE the examinee with a copy of:

- **OPT-410A, Pre-Startup Turbine Trip Checks (All Pages) (Orange Paper)**
- **OPT-410A-1, Pre-Startup Turbine Trip Checks Data Sheet (All Pages) (Orange Paper)**

√ - Check Mark Denotes Critical Step



START TIME:

Examiner Note:	The following steps are from OPT-410A, Section 8.0.	
<div style="border: 1px solid black; padding: 5px;"> <p><u>NOTE:</u></p> <ul style="list-style-type: none"> ● Record all data on Form OPT-410A-1. ● Control Room indications may be used to verify component positions. </div>		
Perform Step: 1 Step 8.1 & 8.1.1	Latch the turbine as follows: On the TG Control Display, ensure the turbine is tripped, "Turbine Trip" Bar Red.	
Performance Standard:	DETERMINED that Turbine Trip bar was red.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	
Perform Step: 2 8.1 & 8.1.2	Latch the turbine as follows: Verify the following light indications on CB-04, 1-TSLB-3 are on: <ul style="list-style-type: none"> ● 1.7 - TURB TRIP FLUID LO 1-63AST 1 ● 2.7 - TURB TRIP FLUID LO 1-63AST 2 ● 3.7 - TURB TRIP FLUID LO 1-63AST 3 	
Performance Standard:	VERIFIED on 1-TSLB-3 that windows 1.7, 2.7 and 3.7 are LIT.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	
Perform Step: 3 8.1, 8.1.3 & 8.1.3A	Latch the turbine as follows: On the TG Control Display in the "Start-Up" Section, RESET the Turbine Trip as follows. <ul style="list-style-type: none"> ● Click the Turbine Latch Subgroup Controller to bring up the "Osd" 	
Performance Standard:	OPENED the Turbine Latch Subgroup Controller Osd.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 4 8.1, 8.1.3 & 8.1.3B	Latch the turbine as follows: On the TG Control Display in the “Start-Up” Section, reset the Turbine Trip as follows. <ul style="list-style-type: none"> IF the Turbine Latch Subgroup Controller is OFF (green/grey), THEN Click “1” THEN “←” (Execute)” to turn ON (green/red) the Controller.
Performance Standard:	CLICKED the “1” and THEN “←” (Execute)”. Subgroup Controller indicated ON (green/red).
Comment:	
SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 5 8.1, 8.1.3 & 8.1.3C	Latch the turbine as follows: On the TG Control Display in the “Start-Up” Section, reset the Turbine Trip as follows. <ul style="list-style-type: none"> On the TG Control Display in the Speed Control Section, verify Speed Target Controller lower or equal to actual speed.
Performance Standard:	VERIFIED speed target (134 RPM) is lower than actual speed (194 RPM).
Comment:	
SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

NOTE: The Subgroup Controller should start to blink when the following step is complete. It will continue to blink until the Stop Valves are open.

Perform Step: 6 8.1, 8.1.3 & 8.1.3D	Latch the turbine as follows: On the TG Control Display in the “Start-Up” Section, reset the Turbine Trip as follows. <ul style="list-style-type: none"> In the “Osd” click “Performance Standard:	CLICKED the “  Comment:
SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>		

Perform Step: 7 8.1, 8.1.4 & 1 st bullet	Latch the turbine as follows: Verify the following parameters: <ul style="list-style-type: none"> On the TG Display, verify the turbine trip is reset, "Turbine Trip" Bar white.
Performance Standard:	VERIFIED Turbine Trip Bar white.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 8 8.1, 8.1.4 & 2 nd bullet	Latch the turbine as follows: Verify the following parameters: <ul style="list-style-type: none"> 1-PI-6559, TURB L/O PRESS - greater than 25 PSIG
Performance Standard:	VERIFIED Turbine Lube Oil Pressure is approximately 42 psig.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 9 8.1, 8.1.4 & 3 rd bullet	Latch the turbine as follows: Verify the following parameters: <ul style="list-style-type: none"> 1-PI-6561, EHC FLUID PRESS - greater than 114 PSIG
Performance Standard:	VERIFIED EHC Fluid Pressure is approximately 170 psig.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 10 8.1, 8.1.4 & 4 th bullet	Latch the turbine as follows: Verify the following parameters: <ul style="list-style-type: none"> 1-PI-6566, HP EHC FLUID PRESS - approximately 455 PSIG
Performance Standard:	VERIFIED HP EHC Fluid Pressure is approximately 525 psig.
Examiner Cue:	If the applicant questions whether the HP EHC Fluid Pressure is close enough to 455 psig to continue; Provide the following cue: 'The Unit Supervisor directs you to continue with the Turbine Trip Checks.'
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 11 8.2	Verify the following light indications on CB-04, 1-TSLB-3 are on: <ul style="list-style-type: none"> • 1.6 - MSL 1 HP STOP VLV 4 CLOSE UV-2428A • 2.6 - MSL 2 HP STOP VLV 1 CLOSE UV-2429A • 3.6 - MSL 3 HP STOP VLV 3 CLOSE UV-2430A • 4.6 - MSL 4 HP STOP VLV 2 CLOSE UV-2431A
Performance Standard:	VERIFIED on 1-TSLB-3 that windows 1.6, 2.6, 3.6 and 4.6 are LIT.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 12 8.3	Verify HP stop valves are closed on CB-10: <ul style="list-style-type: none"> • 1-ZL-2429A, HPT STOP VLV 1 • 1-ZL-2431A, HPT STOP VLV 2 • 1-ZL-2430A, HPT STOP VLV 3 • 1-ZL-2428A, HPT STOP VLV 4
Performance Standard:	VERIFIED on CB-10 that Green light LIT and Red light DARK for each valve.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

CAUTION: The normal turning gear speed for the turbine may increase when the turbine stop valves are open due to some leakage through the control valves. The turbine RPM should not be allowed to increase more than 100 RPM above the original turning gear speed. If the speed continues to increase, the turbine should be tripped and the conditions should be evaluated.

Perform Step: 13 8.4 & 8.4.A	Perform the following: <ul style="list-style-type: none"> • CLOSE 1-HS-2417, HP CTRL VLV 1•4 BEF SEAT DRN VLV (1-CB-10)
Performance Standard:	PLACED 1-HS-2417 in CLOSE and VERIFIED Green lights LIT and Red lights DARK on CTRL VLVs 1-4 BEF SEAT DRN VLV ZLs on the vertical section of CB-10
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 14 8.4 & 8.4.B	Perform the following: <ul style="list-style-type: none"> • ENSURE the following HP and LP Control Valves are CLOSED (0%) on the EHC Detail Display: <ul style="list-style-type: none"> <u>HP</u> <ul style="list-style-type: none"> • CV1 • CV2 • CV3 • CV4 <u>LP1</u> <ul style="list-style-type: none"> • CV1 • CV2 <u>LP2</u> <ul style="list-style-type: none"> • CV1 • CV2
Performance Standard:	VERIFIED the HP and LP Control Valves were CLOSED on the EHC Display.
Comment: <div style="float: right; border: 1px solid black; padding: 2px;"> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> </div>	

Examiner Note:	The following steps represent the Alternate Path of this JPM.
Examiner Note:	The turbine speed will continue to increase to greater than 100 RPM above the original turning gear speed requiring a Turbine Trip.
Perform Step: 15^v 8.4 & 8.4.C	Perform the following: <ul style="list-style-type: none"> • On the TG Control Display in the “Start-Up” Section, turn ON the “Open Stop Valves” Subloop Controller to open the HP and LP stop valves.
Performance Standard:	On the TG Control Display, OPENED the “Start-Up” Section Osd. CLICKED the “1” and THEN “← (Execute)”. Subgroup controller turned red.
Comment: <div style="float: right; border: 1px solid black; padding: 2px;"> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> </div>	

Perform Step: 16 5.1 Precaution & Step 8.4 Caution	The normal turning gear speed for the turbine may increase when the turbine stop valves are open due to some leakage through the control valves. The turbine RPM should not be allowed to increase more than 100 RPM above the original turning gear speed. If the speed continues to increase, the turbine should be tripped and the conditions should be evaluated.
Performance Standard:	DEPRESSED 1-TTSW Pushbutton on CB-10 prior to ALL HP Stop Valves obtaining Full Open status on CB-10, Red light LIT and Green light DARK.
Terminating Cue:	This JPM is complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 3

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

- Perform OPT-410A, Pre-Startup Turbine Trip Checks

Facility: CPNPP JPM # NRC S-5 Task # RO4204 K/A # 062.A4.01 3.3 / 3.1 SF-6

Title: Transfer from Preferred to Alternate Power (6.9KV Bus) -Swap Power From XST2 to XST1.

Examinee (Print): _____

Testing Method:

Simulated Performance: _____

Classroom: _____

Actual Performance: X

Simulator: X

Alternate Path: X

Plant: _____

Time Critical: _____

Low Pwr: _____ RCA: _____

Bank / Mod / New: B

Emerg: _____ EN: _____

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 in Mode1 with all controls in automatic.

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

- Transfer Safeguards Bus 1EA2 from XST2 to XST1 per SOP-603A, 6900 V Switchgear, Section 5.3.3 beginning at Step 5.3.3.B

Task Standard: Transferred 1EA2 to XST1 and opened Incoming Breaker CS-1EA2-1 per SOP-603A, 6900 V Switchgear to eliminate the cross-tie between off-site power sources.

Required Materials: SOP-603A, 6900 V Switchgear (Rev. 20 - 0)

Validation Time: 5 minutes Completion Time: _____ minutes

Comments:

Result: SAT  UNSAT 

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP

SIMULATOR OPERATOR:
INITIALIZE to IC-62.

OR

PERFORM the following:

- Insert Malfunction ED20D, ANTI-PARALLEL INTERLOCK FAILURE BKR 1EA2-2

EXAMINER:

Provide the examinee with a copy of:

- SOP-603A 6900 V Switchgear, Section 5.3.3, Transferring a 6.9 KV Safeguards Bus from Startup Transformer XST2 or XST2A to Startup Transformer XST1 or XST1A with Step 5.3.3.A and Prerequisites marked complete for 1EA2 (Pages 1-6, 42-45) (Orange Paper)

√ - Check Mark Denotes Critical Step

START TIME:

CAUTION: Removing the associated Diesel Generator AND Safeguards Sequencer from service will prevent undesired equipment operation should a breaker malfunction occur during the transfer attempt. Failure of the bus to transfer may cause the Safeguards Bus to become DEENERGIZED, resulting in Diesel Generator START AND Blackout Sequencer operation.

Perform Step: 1

5.3.3.B

IF the plant is in Mode 5, 6 OR defueled with the selected bus INOPERABLE AND it is desired to prevent inadvertent equipment operation, THEN PERFORM the following:

Standard:

DETERMINED that Unit is not in Mode 5, 6 or defueled and MARKED the step as N/A.

Examiner Cue:**Comment:**SAT  UNSAT 

NOTE: Proper phasing AND frequency is indicated by both Synchroscope indicating lights being DARK when the synchroscope is turned on. IF either light is lit, THEN a bus transfer should NOT be attempted. IF the bus transfer is required immediately, THEN the preferred feeder breaker may be OPENED. This will cause the alternate feeder breaker to close and the Blackout Sequencer to actuate.

Perform Step: 2

5.3.3.C

Turn synchroscope ON for the selected Bus Feeder Breaker AND ENSURE both Synchroscope lights are dark.



- SS-1EA2-2, BKR 1EA2-2 SYNCHROSCOPE



Standard:

SELECTED SS-1EA2-2, BKR 1EA2-2 SYNCHROSCOPE (1-CB-11) to ON and OBSERVED synchroscope to be stationary at the 12 o'clock position.



Comment:SAT  UNSAT 



NOTE: Closing an incoming feeder breaker will cause the other incoming breaker for the bus to automatically trip OPEN.



Perform Step: 3√ 5.3.3.D	Close the selected Bus Feeder Breaker from the Startup Transformer XST1 OR XST1A. <ul style="list-style-type: none"> CS-1EA2-2, INCOMING BKR 1EA2-2
Standard:	PLACED CS-1EA2-2, INCOMING BKR 1EA2-2 (1-CB-11) in CLOSE position and VERIFIED red light ON and green light OFF for CS-1EA2-2.
Comment:	SAT  UNSAT 



Examiner Note:	The following step represents the alternate path.
Perform Step: 4√ 5.3.3.E	Ensure the Bus Feeder Breaker from Startup Transformer XST2 OR XST2A to the bus being transferred trips OPEN. <ul style="list-style-type: none"> CS-1EA2-1, INCOMING BKR 1EA2-1
Standard:	OBSERVED CS-1EA2-1, INCOMING BKR 1EA2-1 did not trip – Red light remains LIT. PLACED CS-1EA2-1, INCOMING BKR 1EA2-1(1-CB-11) in TRIP and VERIFIED Green light LIT and Red light DARK.
Comment:	SAT  UNSAT 

NOTE: Steps F. 1) AND F. 2) may be reperformed as needed to check voltages on all three phases.

Examiner Note:	Perform Steps 5 and 6 will be performed three times.
Perform Step: 5 5.3.3.F.1)	Check energized bus voltage normal by performing the following: 1) Position applicable switch to check phase voltage: <ul style="list-style-type: none"> VS-1EA2-1, BUS 1EA2 VOLT SELECT
Standard:	SELECTED VS-1EA2-1, BUS 1EA2 VOLT SELECT (1-CB-11) to each phase.
Comment:	SAT  UNSAT 

Perform Step: 6 5.3.3.F.1)	Verify approximately 6900 VOLTS on the applicable indication (6480-7150 volts required). <ul style="list-style-type: none"> V-1EA2-1, BUS 1EA2 VOLT
Standard:	VERIFIED voltage on V-1EA2-1 (1-CB-11) is between 6480 and 7150 volts for each phase.
Comment:	SAT  UNSAT 

Perform Step: 7 5.3.3.G	Match handswitch target by placing the selected breaker, for the bus transferred, in NEUTRAL-AFTER-TRIP. <ul style="list-style-type: none"> CS-1EA2-1, INCOMING BKR 1EA2-1
Standard:	PLACED CS-1EA2-1(1-CB-11) in TRIP position momentarily and allow it to spring return to neutral and VERIFY a green flag.
Examiner Cue:	
Comment:	SAT  UNSAT 

Perform Step: 8 5.3.3.H	Turn synchroscope OFF for the selected breaker. <ul style="list-style-type: none"> SS-1EA2-2, BKR 1EA2-2 SYNCHROSCOPE
Standard:	PLACED SS-1EA2-2 (1-CB-11) in OFF.
Terminating Cue:	This JPM is complete.
Comment:	SAT  UNSAT 

STOP TIME:	
-------------------	--

Initial Conditions: Unit 1 is in Mode1 with all controls in automatic.

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

- Transfer Safeguards Bus 1EA2 from XST2 to XST1 per SOP-603A, 6900 V Switchgear, Section 5.3.3 beginning at Step 5.3.3.B

Facility: CPNPP JPM # NRC S-6 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:	<u>X</u>	Simulator:	<u>X</u>
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>B</u>	Emerg:	_____ EN: _____

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:

- You are Unit 1 BOP
- Unit 1 is operating at 100% power with all controls in AUTOMATIC

Initiating Cue: The Unit Supervisor directs you to RESPOND to plant conditions

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 by taking manual control of 1-FK-520 SG 2 FW FLO CTRL and adjusting for current plant conditions, aligned the Alternate Channel by placing 1-FS-520C, SG 2 FW FLO CHAN SELECT in FY-521B position, and restored SG 2 level control to AUTO by placing 1-FK-520 in automatic.

Required Materials: ALM-0081A, 1-ALB-8A, Window 2.8 – SG 2 STM & FW FLO MISMATCH (Rev. 8 - 10)
ABN-708, Feedwater Flow Instrument Malfunction (Rev. 7 - 0)

Validation Time: 6 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP**SIMULATOR OPERATOR:**

INITIALIZE to IC-18 or any full power Initial Condition and LOAD Scenario File “Valdez – CPNPP 2021 NRC JPM S-6”

OR

PERFORM the following:

- ENSURE FY-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%

SIMULATOR 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 (All Pages) (Green Paper)
- Allow examinee to utilize 1-ALB-8A blue annunciator book as desired (Blue Paper)

√ - 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.
Simulator 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 <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps are from 1-ALB-8A, Window 2.8.
Perform Step: 2 1, 1.A, & bullets	<p>Monitor steam generator water level:</p> <ul style="list-style-type: none"> • 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 <p>If one channel is indicating > 5% difference between remaining operable channels, go to ABN-710.</p>
Standard:	<p>MONITORED Steam Generator water level instruments:</p> <ul style="list-style-type: none"> • 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 <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A <input type="checkbox"/>

Perform Step: 3 1.B	If level is <u>NOT</u> maintained at approximately 67%, transfer Steam Generator Water Level Control to manual and maintain level. <ul style="list-style-type: none"> 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 (▲) <u>or</u> 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 <u>or</u> transition to ABN-708, Feedwater Flow Instrument Malfunction. ABN-708 actions begin at JPM Step 12.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A <input type="checkbox"/>
Perform Step: 4 2	Stop all secondary system power changes.
Standard:	DETERMINED no secondary system power changes are in progress.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A <input type="checkbox"/>
Perform Step: 5 3 & bullets	Verify a FWP in service. <ul style="list-style-type: none"> 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 <u>all</u> Stop Valve positions: <ul style="list-style-type: none"> 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 <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A <input type="checkbox"/>

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. <ul style="list-style-type: none"> 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 <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A <input type="checkbox"/>

Perform Step: 10 7 & 7.A	Monitor 1-FI-520A, SG 2 FW FLO and 1-FI-521A, SG 2 FW FLO. <ul style="list-style-type: none"> 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 <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A <input type="checkbox"/>

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 <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	This action may have already been performed at JPM Step 3.
Perform Step: 12 ^v 2.3.2	Manually control affected FCV to maintain SG level at program. <ul style="list-style-type: none"> 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 <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	The Unit Supervisor desires automatic level control for SG 1-02.	
Perform Step: 13 2.3.3 & 2.3.3.a	Verify automatic SG level control – DESIRED. <ul style="list-style-type: none"> • 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 <input type="checkbox"/> UNSAT <input type="checkbox"/>	

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. <ul style="list-style-type: none"> • Automatic level control desired, as determined by Unit Supervisor. 	
Standard:	DETERMINED the Unit Supervisor desires automatic level control.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 15 √ 2.3.4 & 2 nd bullet	Select an alternate channel: <ul style="list-style-type: none"> • <u>u</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 <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 16 2.3.5	Verify affected Steam Generator level is stable at program level.	
Standard:	DEPRESSED 1-FK-520, SG 2 FW FLO CTRL red RAISE (▲) or green LOWER (▼) pushbuttons as required to manually CONTROL feedwater flow to ensure Steam Generator level stable at program.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 17 √ 2.3.6	Place Feedwater Flow Control Valve in automatic <u>AND</u> 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 <input type="checkbox"/> UNSAT <input type="checkbox"/>	

STOP TIME:

Initial Conditions: Given the following conditions:

- You are Unit 1 BOP
- Unit 1 is operating at 100% power with all controls in AUTOMATIC

Initiating Cue: The Unit Supervisor directs you to RESPOND to plant conditions

Facility: CPNPP JPM # NRC S-7 Task # RO4405 K/A # 067.AA2.16 3.3 / 4.0 SF-8
 Title: Respond to a Fire in the Safeguards Building

Examinee (Print): _____

Testing Method:

Simulated Performance: _____

Classroom: _____

Actual Performance: X

Simulator: X

Alternate Path: X

Plant: _____

Time Critical: _____

Low Pwr: X RCA: _____

Bank / Mod / New: M

Emerg: _____ EN: _____

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-804A, Response to a Fire in the Safeguards Building, is in progress
- Other operators are performing ABN-804A, Attachments 5 and 6, which include isolation of Letdown flow

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

- RESPOND to a fire in the Safeguards Building per ABN-804A, Response to a Fire in the Safeguards Building, Section 5.0, Fire Affecting Safeguards Building Fire Area 1SD
- START at Step 5.3.7

Task Standard: Utilizing ABN-804A, responded to a fire in the Safeguards Building, closed the RCP Seal Water Return Isolation Valve, stopped CCP 1-02 due to cavitation, transferred Charging Pump suction to the RWST, re-started CCP 1-02.

Required Materials: ABN-804A, Response to Fire in the Safeguards Building (Rev. 7 - 0)

Validation Time: 5 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP**SIMULATOR OPERATOR:**

INITIALIZE to IC-63.

OR

PERFORM the following:

- **Create Scenario file (as labeled above) with the following conditional:**
 - **{LOCVHS112E_2.Value=1 && LOCVHS112C_1.Value=1} DMF CV30**
- **ALARM ON for Safeguards Fire Protection Panel annunciators:**
 - **AFP09_16 for Window 4.2 – 810' SWGR RM TRN A**
 - **AFP09_17 for Window 5.2 – 810' SWGR RM TRN A WTR FLO**
- **PLACE 1/1-PCV-455A and 1/1-PCV-456 in CLOSE**
- **Insert ED05H to simulate a loss of Train A Safeguards Bus on an 86-1 fault (fire in Train A Switchgear with sprinkler activation)**
- **Start Train B CCP**
- **Initiate Cavitation on Train B CCP (CV30 to 97%)**
- **Silence all alarms FREEZE Simulator and SNAP IC**

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-804A, Response to a Fire in the Safeguards Building**
 - **Section 5.0, Fire Affecting Safeguards Building Fire Area 1SD marked complete thru Step 6 (Start at Step 7) (Pages 1-5, 26-33) (Orange Paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following is from ABN-804A, and Section 5.0, Step 5.3.7.
Perform Step: 1 5.3.7	CLOSE 1/1-8100, RCP SEAL WTR RET ISOL VLV
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-8100, RCP SEAL WTR RET ISOL VLV in CLOSE (critical) OBSERVED green CLOSE light LIT (NOT critical)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	If examinee attempts to perform actions to secure CCP 1-02 due to cavitation prior to performing actions of ABN-804A, inform examinee to continue the actions of ABN-804A.
Examiner Cue:	If examinee attempts to isolate Letdown prior to performing the actions of ABN-804A, inform examinee other operators are performing those actions and to continue ABN-804A.
Examiner Note:	The following steps represent the Alternate Path of this JPM.
Perform Step: 2 5.3.8 & 5.3.8.a	Transfer Charging Pump suction to the RWST: <ul style="list-style-type: none"> IF charging pump performance indicates possible cavitation, THEN STOP charging pump until below valves manually repositioned.
Standard:	PERFORMED the following: <ul style="list-style-type: none"> OBSERVED fluctuating Charging Flow on 1-FI-121A, CHRG FLO (NOT critical) OBSERVED fluctuating Charging Header Pressure on 1-PI-120A, CHRG HDR PRESS (NOT critical) STOPPED CCP 1-02 by placing 1/1-APCH2, CCP 2 in the STOP position (critical) OBSERVED green PUMP light LIT (NOT critical)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	1/1-LCV-112E has power available.	
Perform Step: 3 5.3.8 & 5.3.8.b	Transfer Charging Pump suction to the RWST: <ul style="list-style-type: none"> • Ensure 1/1-LCV-112D <u>OR</u> 1/1-LCV-112E, RWST TO CHRGM PMP SUCT VLV – OPEN. 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED 1/1-LCV-112E, RWST TO CHRGM PMP SUCT VLV in OPEN (critical). • OBSERVED red OPEN light LIT (NOT critical). 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	1/1-LCV-112C has power available.	
Perform Step: 4 5.3.8 & 5.3.8.c	Transfer Charging Pump suction to the RWST: <ul style="list-style-type: none"> • Ensure 1/1-LCV-112B <u>OR</u> 1/1-LCV-112C, VCT TO CHRGM PMP SUCT VLV - CLOSED. 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED 1/1-LCV-112C, VCT TO CHRGM PMP SUCT VLV in CLOSE (critical). • OBSERVED green CLOSE light LIT (NOT critical). 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	1/1-ZL-8220 will remain OPEN as interlocks have NOT been made for it to close.	
Perform Step: 5 5.3.8 & 5.3.8.d	Transfer Charging Pump suction to the RWST: <ul style="list-style-type: none"> • Verify 1-ZL-8220 <u>OR</u> 1-ZL-8221, CHRGM PMP SUCT HI POINT VENT VLV - CLOSED. 	
Standard:	OBSERVED 1-ZL-8221, CHRGM PMP SUCT HI POINT VENT VLV green CLOSE light LIT.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 6 5.3.8 & 5.3.8.e	Transfer Charging Pump suction to the RWST: <ul style="list-style-type: none"> • Ensure 1/1-8202A <u>AND</u> 1/1-8202B, VENT VLV – CLOSED. 	
Standard:	VERIFIED 1/1-8202A <u>and</u> 1/1-8202B, VENT VLVs in CLOSE and OBSERVED green CLOSE lights LIT.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 7√ 5.3.9	Ensure 1/1-APCH2, CCP 2 – RUNNING.					
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED 1/1-APCH2, CCP 2 in START (critical). • OBSERVED red PUMP and FAN lights LIT (NOT critical). 					
Terminating Cue:	This JPM is complete.					
Comment:	<table border="1" style="float: right;"> <tr> <td>SAT</td> <td><input type="checkbox"/></td> <td>UNSAT</td> <td><input type="checkbox"/></td> </tr> </table>		SAT	<input type="checkbox"/>	UNSAT	<input type="checkbox"/>
SAT	<input type="checkbox"/>	UNSAT	<input type="checkbox"/>			

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- **ABN-804A, Response to a Fire in the Safeguards Building, is in progress**
- **Other operators are performing ABN-804A, Attachments 5 and 6, which include isolation of Letdown flow**

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

- **RESPOND to a fire in the Safeguards Building per ABN-804A, Response to a Fire in the Safeguards Building, Section 5.0, Fire Affecting Safeguards Building Fire Area 1SD**
- **START at Step 5.3.7**

Facility: CPNPP JPM # NRC S-8 Task #RO4103 K/A 060 AA1.02 2.9 / 3.1 SF-9
 Title: Respond to Control Room Ventilation Radiation Alarms

Examinee (Print): _____

Testing Method:

Simulated Performance:	_____	Classroom:	_____
Actual Performance:	<u>X</u>	Simulator:	<u>X</u>
Alternate Path:	_____	Plant:	_____
Time Critical:	_____	Low Pwr:	_____ RCA: _____
Bank / Mod / New:	<u>M</u>	Emerg:	_____ EN: <u>X</u>

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 4
- The following alarms were received 1 minute ago
 - CRV053, CR HVAC, N. VENT (X-RE-5895A) in RED Alarm
 - CRV054, CR HVAC, N. VENT (X-RE-5895B) in RED Alarm

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

- Respond to the RED (High) Radiation condition per ABN-902, Release of Radioactive/Toxic Gas, Section 2.0, Release of Radioactive Gas

Task Standard: Using ABN-902, section 2, applicant will determine that CR ventilation did not realign for the required conditions of high radiation as required and will establish Train B Control Room ventilation for Emergency recirculation per SOP-802.

Required Materials: ABN-902, Release of Radioactive/Toxic Gas (Rev. 7 - 0)
 SOP-802, Control Room Ventilation System (Rev. 13 - 5)

Validation Time: 12 minutes Time Critical: No Completion Time: _____ minutes

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP**SIMULATOR OPERATOR:**

INITIALIZE to IC-66

OR

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

INSERT malfunction RM053, Process Radiation Monitor

X-RE-5895A/CVR04 @ 5×10^{-4}

INSERT malfunction RM054, Process Radiation Monitor

X-RE-5895B/CVR05 @ 5×10^{-4}

ENSURE Control Room Ventilation has automatically shifted to Recirculation Mode

EXAMINER:

PROVIDE the examinee with a copy of:

- **ABN-902, Release of Radioactive/Toxic Gas, Section 2.0, Release of Radioactive Gas (Pages 1-11) (Orange Paper)**

When required, PROVIDE the examinee with a copy of:

- **SOP-802, Control Room Ventilation System, Section 5.3.1, Emergency Recirculation Automatic Initiation (Pages 1-8, 14-16, 55-56) (Blue Paper)**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following steps are from ABN-902, "Release of Radioactive/Toxic Gas, Section 2.0"	
Perform Step: 1 Step 2.3.1.a	Verify Containment air radiation alarms – CLEAR: <ul style="list-style-type: none"> • CAP<u>u</u>98 (<u>u</u>-RE-5502), CNTMT AIR PIG PART • CAG<u>u</u>97 (<u>u</u>-RE-5503), CNTMT AIR PIG GAS 	
Standard:	OBSERVED PC-11 and DETERMINED the following: <ul style="list-style-type: none"> • CAP198 (1-RE-5502), CNTMT AIR PIG PART is NOT in alarm • CAP197 (1-RE-5503), CNTMT AIR PIG GAS is NOT in alarm 	
Examiner Cue:		
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	
Perform Step: 2 Step 2.3.1.b	Verify the following radiation alarms – CLEAR: <ul style="list-style-type: none"> • PVF684 (X-RE-5570A), S. WRGM EFFLUENT • PVF685 (X-RE-5570B), N. WRGM EFFLUENT • ABV089 (X-RE-5701), AUX BLDG VENT DUCT 	
Standard:	OBSERVED PC-11 and DETERMINED the following: <ul style="list-style-type: none"> • PVF684 (X-RE-5570A), S. WRGM EFFLUENT is NOT in alarm • PVF685 (X-RE-5570B), N. WRGM EFFLUENT is NOT in alarm • ABV089 (X-RE-5701), AUX BLDG VENT DUCT is NOT in alarm 	
Examiner Cue:		
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	
Perform Step: 3 Step 2.3.1.c	Verify the following radiation alarms – CLEAR: <ul style="list-style-type: none"> • CRV053 (X-RE-5895A), CR HVAC, N VENT • CRV054 (X-RE-5895B), CR HVAC, N VENT • CRV091 (X-RE-5896A), CR HVAC, S VENT INTK • CRV092 (X-RE-5896B), CR HVAC, S VENT 	
Standard:	OBSERVED PC-11 and DETERMINED the following: <ul style="list-style-type: none"> • CRV053 (X-RE-5895A), CR HVAC, N VENT is in HIGH alarm • CRV054 (X-RE-5895B), CR HVAC, N VENT is in HIGH alarm 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 4 2.3.1.c RNO c.1)	Perform the following: <ul style="list-style-type: none"> Ensure Emergency Recirculation Automatic Initiation has occurred (X-ZL-5877A/B, CR EMER RECIRC)
Standard:	DETERMINED Control Room Ventilation shifted to Emergency Recirculation Mode and OBSERVED the following on Panel CV-03: <ul style="list-style-type: none"> X-ZL-5877A & X-ZL-5877B, CR EMER RECIRC, red lights LIT
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 5 2.3.1.c RNO c.2)	Perform the following: <ul style="list-style-type: none"> Ensure the Emergency Filtration and Pressurization Unit fans shifted to single train operation per SOP-802
Standard:	REFERRED to SOP-802, Control Room Ventilation System, Section 5.3.1, Emergency Recirculation Automatic Initiation.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps are from SOP-802, Section 5.3.1.
<p>NOTE: One train of the Control Room Ventilation System must be in operation at all times. The Control Room Ventilation System will shift from Normal Operation Mode to Emergency Recirculation Mode on a Safety Injection or Black-out Signal or if the setpoints of the following monitoring equipment are exceeded:</p> <ul style="list-style-type: none"> X-RE-5895A, North Intake X-RE-5895B, North Intake X-RE-5896A, South Intake X-RE-5896B, South Intake 	

Perform Step: 6 5.3.1.A	Do NOT ALLOW both Pressurization units or both Filtration Units to run in parallel for greater than 1 hour, under blackout, SI or high radiation conditions. (Based on Control Room dose rate calculations)
Standard:	DETERMINED from Initiating Cue the high radiation condition occurred 1 minute ago and both the Filtration and Pressurization Units have been running less than 1 hour
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	The Unit Supervisor directs you to shutdown Train A.	
Perform Step: 7 5.3.1.B 1 st bullet	MOMENTARILY PLACE the reset switch in RESET for the train to be shutdown. <ul style="list-style-type: none"> • X-HS-5877A, EMER RECIRC RESET (TRN A) 	
Standard:	PLACED X-HS-5877A, EMER RECIRC RESET handswitch in RESET position.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Cue:	2 minutes have elapsed.	
Perform Step: 8 5.3.1.C Train A	After approximately 1 to 3 minutes STOP the selected operating Emergency Filtration and Pressurization Unit fans AND ENSURE the handswitches are in AUTO with the associated inlet damper closed. <p><u>Train A</u></p> <ul style="list-style-type: none"> • X-HS-5831A, CR EMER PRZN FN 5 (X-HV-5831 on X-HS-5831D) • X-HS-5845, CR EMER FILT FN 23 & FILT IN DMPR 41 (X-HV-5839) 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> • PLACED X-HS-5831A momentarily in STOP and back to AUTO (critical) <ul style="list-style-type: none"> • OBSERVED Green light LIT and Red light DARK on CR EMER PRZN FN 5 (X-HS-5831A) (NOT critical) • OBSERVED Green light LIT and Red light DARK on CR EMER PRZN FN 5 FILT IN DMPR 22 (X-HS-5831D) (NOT critical) • PLACED X-HS-5845 momentarily to STOP and back to AUTO (critical) <ul style="list-style-type: none"> • OBSERVED Green FAN and DMPR lights LIT with Red FAN and DMPR lights DARK on CR EMER FILT FN 23 & FILT IN DMPR 41 (X-HS-5845) (NOT critical) 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	<p>ALL CR A/C Units Auto Start on SI and BO signals (either Unit). In this case no SI or BO signals exist, therefore, the CR A/C units that were running before the High Rad event occurred will remain the only units running.</p> <p>The operator should leave the CR A/C units running as they are currently aligned.</p>
<p>NOTE: The Control Room Ventilation System should be operated by train, except for the A/C units. Any combination of the four A/C units may be used with either train of ventilation.</p>	
Perform Step: 9 5.3.1.D	ENSURE air conditioning units NOT required are shutdown AND VERIFY the associated suction damper is closed.
Standard:	DETERMINED CR A/C Units 1 & 3 have remained running with 2 & 4 in Standby
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	When/if dispatched to check status of breakers, REPORT all breakers are ON.
Examiner Note:	Examinee may utilize light indications on CV-03 to determine the status of breakers.
Perform Step: 10 5.3.1.E	<p>ENSURE power supply breakers for the following fans are ON (manually reset breakers, as required):</p> <p><u>480V MCC XEB1-1 (AB 852')</u></p> <ul style="list-style-type: none"> • XEB1-1/4E/BKR, CONTROL ROOM MAKEUP AIR SUPPLY FAN X-37 MOTOR BREAKER • XEB1-1/1J/BKR, CONTROL ROOM EXHAUST FAN X-01 MOTOR BREAKER • XEB1-1/1M/BKR, CONTROL ROOM KITCHEN & TOILET EXHAUST FAN X-03 MOTOR BREAKER <p><u>480V MCC XEB2-1 (ECB 854')</u></p> <ul style="list-style-type: none"> • XEB2-1/3E/BKR, CONTROL ROOM MAKEUP AIR SUPPLY FAN X-38 MOTOR BREAKER • XEB2-1/6J/BKR, CONTROL ROOM EXHAUST FAN X-02 MOTOR BREAKER • XEB2-1/6M/BKR, CONTROL ROOM KITCHEN AND TOILET EXHAUST FAN X-04 MOTOR BREAKER
Standard:	<p>DISPATCHED personnel to AB 852' and ECB 854' to check status of listed breakers.</p> <p>DETERMINED by light indication on CV-03 and/or by provided cue all breakers are ON.</p>
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Perform Step: 11 5.3.1.F	VERIFY X-ALB-13A, 4.3, CR EMER PRZN ANY SPLY FN/HTR TRIP is dark
Standard:	OBSERVED X-ALB-13A on CV-03 and DETERMINED alarm Window 4.3 was DARK
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 12 5.3.1.G 1 st bullet	CLOSE the intake damper for the shutdown train: <ul style="list-style-type: none"> X-HS-5837A, CR N INTK DMPR 14 (TRN A)
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED X-HS-5837A in CLOSE (critical) OBSERVED Green light LIT and Red light DARK on CR N INTK DMPR 14 (X-HS-5837A) (NOT critical)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 13 5.3.1.H	VERIFY proper train operation by observing light indication of Attachment 4.
Standard:	REFERRED to Attachment 4 of SOP-802 Page 2 of 2 and DETERMINED Train B was properly aligned for operation.
Terminating Cue:	This JPM is complete.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

STOP TIME:	
-------------------	--

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 4
- The following alarms were received 1 minute ago
 - CRV053, CR HVAC, N. VENT (X-RE-5895A) in RED Alarm
 - CRV054, CR HVAC, N. VENT (X-RE-5895B) in RED Alarm

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

- Respond to the RED (High) Radiation condition per ABN-902, Release of Radioactive/Toxic Gas, Section 2.0, Release of Radioactive Gas

Facility:	CPNPP 1 & 2	Scenario No.:	1	Op Test No.:	Make-Up CPNPP 2021 NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions: 100% power MOL - RCS Boron is 771 ppm					
Turnover: Maintain steady-state power conditions.					
Critical Tasks:					
CT-1 – Manually Trip Reactor due to Failure to Automatically Trip prior to exiting EOP-0.0A, Reactor Trip or Safety Injection.					
CT 2 – Trip reactor coolant pumps within 5 minutes upon a loss of Subcooling per EOP-0.0A, Reactor Trip or Safety Injection.					
CT-3 – Initiate Cooldown of the Reactor Coolant System in accordance with ECA-3.1A, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired, prior to commencing ECCS flow reduction.					
Event No.	Malf. No.	Event Type*	Event Description		
1	RP05D	I (RO, SRO) TS (SRO)	Cold Leg Loop 4 NR Temperature Transmitter Failure (TE-441B) Fails High		
2	RX04A	I (BOP, SRO) TS (SRO)	Steam Generator (1-01) Level Transmitter Failure (LI-551)		
3	Override	C (RO, SRO)	Letdown HX Outlet Flow Controller Failure (TK-130) Fails Low		
4	FW22	C (BOP, SRO) TS (SRO)	Station Service Water Pump 1-01 Trip		
5	TC08C	C (BOP, SRO)	High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed		
6	SG02C	M (RO, BOP, SRO)	Steam Generator 1-03 Tube Rupture		
7	RP15E	C (BOP, SRO)	Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4		
8	MS01C	M (RO, BOP, SRO)	S/G Main Steam Line Fault inside Containment		
*(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)
5	Abnormal events (2-4)
2	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
1	EOP contingencies requiring substantive actions (0-2)
3	Critical tasks (2-3)

SCENARIO SUMMARY Make-Up NRC Scenario 1

***Event 1 (Key 1)**

The crew will assume the watch at 100% power with no scheduled activities per IPO-003A, Power Operations. The first event is a failure high of a Reactor Coolant System Loop 4 Narrow Range Temperature (TE=441B) element. Crew actions are per ABN-704, T_c/N-16 Instrumentation Malfunction, Section 2.0. Section 2.0 is designated for T_c/N-16 Instrumentation Malfunction. Actions include placing the Control Rods in MANUAL and defeating the failed channel. Control Rods will be restored in Manual to their pre-failure position and remain in Manual until restored to Operable per ABN-704. The SRO will refer to Technical Specification LCO 3.3.1, Reactor Trip System Instrumentation (Functions 6 & 7); Condition E, One channel inoperable.

***Event 2 (Key 2)**

The next event is a failure low of S/G 1-01 LI-551 (controlling channel) causing 1-FK-510, SG 1 FW FLO CTRL, valve to open rising level in 1-01 S/G. This will cause level deviation alarms for 1-01 S/G. The crew will enter ABN-710, Steam Generator Level Instrumentation Malfunction. They will take manual control of 1-FK-510 and restore level to program in 1-01 S/G. The SRO will refer to Technical Specification LCO 3.3.1, Reactor Trip System Instrumentation (Function 14), LCO 3.3.2, ESF System Instrumentation (Function 6C), and LCO 3.3.3, Accident Monitoring Instrumentation (Function 13).

***Event 3 (Key 3)**

The next event is a failure of the Letdown Heat Exchanger Outlet Flow Controller, TK-130. The controller output will fail to zero demand and cause TCV-4646, LTDN HX OUT TEMP CTRL valve to close. This will result in Letdown Heat Exchanger High temperature alarms and Letdown flow to divert to the VCT on high temperature. The crew will respond per the ALM, take manual control of TK-130 and raise demand to establish Letdown Heat Exchanger Outlet temperature to approximately 95°F.

***Event 4 (Key 4)**

The next event is a trip of Station Service Water Pump 1-01. Crew actions are per ABN-501, Station Service Water System Malfunction, Section 2.0. Section 2.0 is designated for Station Service Water Pump Trip. Various equipment controls, as directed by ABN-501, are placed in PULL-OUT to prevent starting with no cooling water available. The SRO will refer to Technical Specification LCO 3.7.8, Station Service Water System; Condition B, One SSWS Train inoperable. The SRO will also refer to Technical Specification LCO 3.8.1, AC Sources – Operating; Condition B, One DG inoperable as DG 1-01 must be placed in PULL-OUT upon the loss of Train A Station Service Water.

***Event 5 (Key 5)**

The next event is High Pressure Turbine Stop Valve #3 fails closed. The crew will enter ABN-401, Main Turbine Malfunction, Section 9.0. Section 9.0 is designated for Inadvertent Closure of an HP or LP Stop or Control Valve. Actions include placing rod control in Auto to allow the rod control system to respond to the plant transient and reducing turbine load to allow all operable HP Control Valves to come off their full open seat.

***Event 6 – (Key 6)**

The major event is a Tube Rupture on SG 1-03. The Crew will diagnose the Tube Rupture due to multiple Radiation alarms and lowering Pressurizer Pressure and Level. The crew will enter EOP-0.0A, Reactor Trip or Safety Injection and transition to EOP-3.0A, Steam Generator Tube Rupture.

Scenario Event Description
Make-Up NRC Scenario 1

Critical Task Determination

Critical Task	Safety Significance	Cueing	Measurable Performance Indicators	Performance Feedback
CT-1 – Manually Trip Reactor due to Failure to Automatically Trip prior to exiting EOP-0.0A, Reactor Trip or Safety Injection.	Recognize a failure or an incorrect automatic actuation of an ESF system or component.	Procedural direction at EOP-0.0A Step 1 to determine if a reactor trip has occurred. Position indication of the Reactor Trip breakers and Reactor Power, Annunciator First out alarms.	The operator will attempt to manually trip the Reactor with the handswitches on both CB-07 and CB-10; however, the Reactor will fail to trip. The operator will then momentarily deenergize the 480V normal switchgear 1B3 and 1B4 to secure power to the Rod Drive MG sets.	De-energizing the Rod Drive MG sets will result in a loss of power to the Rod Drive Mechanisms and the Control Rods will insert into the core. Reactor Trip Breakers will remain closed, neutron flux will lower and rod bottom lights will be lit.
CT-2 – Trip reactor coolant pumps within 5 minutes upon a loss of Subcooling per EOP-0.0A, Reactor Trip or Safety Injection.	Take one or more actions that would prevent a challenge to the ability to cool the core during a SBLOCA.	Procedurally driven from EOP-0.0A and Foldout pages. Availability of Subcooling indication both on meters and computer.	The operator will secure ALL RCPs using the handswitches on CB-05.	Indication of pump stop including light indication, flow and motor current.
CT-3 - Initiate Cooldown of the Reactor Coolant System in accordance with ECA-3.1A, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired, prior to commencing ECCS flow reduction.	Prevent loss of Reactor Coolant and a release of radioactivity to the environment.	Procedurally driven from ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired. Indications include uncontrolled lowering pressure in the S/G	The operator will manually open intact S/G ARVs to dump steam and cooldown the RCS	RCS pressure and temperature will lower as steam is released from the ARVs
NOTE: (Per NUREG-1021, Appendix D) If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.				

Scenario Event Description
Make-Up NRC Scenario 1

UNIT: 1

PART I TO BE PREPARED BY THE OFF-GOING UNIT SUPERVISOR.

1.0 SHIFT ACTIVITIES:

1.1 **Activities Completed This Shift:** None

1.2 **Activities In-Progress:** None

1.3 **Planned Activities:** Maintain power 100%

2.0 PLANT AND EQUIPMENT STATUS:

2.1 Technical Specification Related Equipment Summary:
 None

2.2 Non-Technical Specification Equipment Summary:
 None

3.0 General Information: Maintain Steady State Conditions in accordance with IPO-003A, Power Operations. Diluted 60 gallons three times last shift.

4.0 END OF SHIFT REVIEW:

LOGS – RO/BOP	<u> X </u>	LOGS-NEO	<u> X </u>	CLOSED eLCOARs ARCHIVED	<u> X </u>
OPTS COMPLETED	<u> X </u>	DAILY ACTIVITIES LIST	<u> X </u>	LCOARs REVIEWED	<u> X </u>

PART II TO BE COMPLETED BY THE ON-COMING UNIT SUPERVISOR.

1.0 CRITICAL PARAMETERS:

MODE:	<u> 1 </u>	REACTOR POWER:	<u> 100% </u>	MWE:	<u> 1265 </u>
RCS TAVE:	<u> 585 </u> °F	CONTROL ROD POSITION	<u> 215 </u>	ON BANK	<u> D </u>
Cb:	<u> 771 </u> ppm	RCS PRESS:	<u> 2235 </u> psig		

Protected Train – Train A
 Risk Assessment - GREEN

Unit 2 is in Mode 1 at 100% power
 BAT C_B = 7447 ppm

Scenario Event Description
Make-Up NRC Scenario 1

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

INITIALIZE to IC-18 and LOAD Make-up – CPNPP 2021 NRC Simulator Scenario 1

EVENT	TYPE	MALF #	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
7	IMF	RP15E	Reactor Trip Breakers Jammed Closed - All	FAIL	K0
1	IMF	RP05D	Loop 4 Cold Leg Temperature (TE-441B) Failure	630°F	K1
2	IMF	RX04A	SG 1-01 Level Channel (LI-551) Failure	0 %	K2
3	IOR		Letdown HX Outlet Flow Controller Failure (TK-130) Fails Low	f:10	K3
4	IMF	SW01A	SSW Pump 1-01 Trip	TRIP	K4
4	IRF	CVR06	CCP 1-02 Aux Lube Oil Pump to Auto	AUTO	K11
4	IRF	CVR05	CCP 1-01 Aux Lube Oil Pump to Off	OFF	K12
5	IMF	TC08C	High Pressure Stop Valve #3 Fails Closed	CLOSE	K5
6	IMF	SG02C	SG 1-03 Tube Rupture	1	K6
7	IMF	RP15E	Reactor Trip Breakers Jammed Closed - All	FAIL	K0
7	IRF	RPR112 RPR113	Reactor Trip Breakers Locally Opened	OPEN	K13
8	IRF	EDR73	Reset IA Compressor 1-01	Reset	K9
8	IRF	EDR74	Reset IA Compressor 1-02	Reset	K10
8	IRF	IAR07	Reset IA Compressor X-01	Reset	K14
8	IMF	MS01C	SG 1-03 Main Steam Line Fault inside Containment	0.5	K6

```

IOR AICVTK130 f:10 k:3
{AOCVTK130.Value=0}IMF CV05 f:0
{AOCVTK130.Value=0}IOR LOCVTK130_1 f:1
{AOCVTK130.Value=0}IOR LOCVTK130_2 f:0
{AOCVTK130.Value=0}IOR DICVTK130_2 f:1
{AOCVTK130.Value=0}IOR DICVTK130_4 f:1
{DICVTK130_2.Value=1}DMF CV05
{DICVTK130_2.Value=1}DOR LOCVTK130_1
{DICVTK130_2.Value=1}DOR LOCVTK130_2
{DICVTK130_2.Value=1}DOR DICVTK130_2
{DICVTK130_2.Value=1}DOR DICVTK130_4
{DICVTK130_1.Value=1}IMF CV05 f:0

```

Scenario Event Description
Make-Up NRC Scenario 1

Simulator Operator: INITIALIZE to IC-18 and LOAD Make-up – CPNPP 2021 NRC Simulator Scenario 1
ENSURE all Simulator Annunciator Alarms are ACTIVE
ENSURE all Control Board Operator Aid Tags are removed
ENSURE Operator Aid Tags reflect current boron conditions (771 ppm)
ENSURE Rod Bank Update (RBU) is performed
ENSURE Turbine Load Rate set at 10 MWe/minute
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
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 \geq 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: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 1 </u>	Page <u> 9 </u> of <u> 44 </u>
Event Description: NR Cold Leg Loop 4 Temperature Instrument failure			
Time	Position	Applicant's Actions or Behavior	

**Simulator Operator: When directed, EXECUTE Event 1 (Key 1).
- NR Cold Leg Loop 4 TI (TE-441B) fails high.**

Indications Available:

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

	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE Control Rods inserting due to T _{COLD} failed high and Placed Control Rods in Manual.
	US	DIRECT performance of ABN-704, Tc / N-16 Instrumentation Malfunction, Section 2.0.
<div style="border: 1px solid black; padding: 10px;"> <p>NOTE:</p> <ul style="list-style-type: none"> ● 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. </div>		
	RO	PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in MANUAL. [Step 2.3.1]
	RO	VERIFY Pressurizer Level maintained at program. [Step 2.3.2] <ul style="list-style-type: none"> ● Manually controlled 1-LK-459, PRZR LVL CTRL OR 1-FK-121, CCP CHRG FLO CTRL to maintain level at program
	RO	SELECT the failed channel on: 1-TS-412T, Tave CHAN DEFEAT [Step 2.3.3] <ul style="list-style-type: none"> ● Selected Loop 4 on 1-TS-412T

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 1 </u>	Page <u> 10 </u> of <u> 44 </u>
Event Description: NR Cold Leg Loop 4 Temperature Instrument failure			
Time	Position	Applicant's Actions or Behavior	

	RO/BOP	VERIFY Steam Dump System is NOT actuated and NOT armed. [Step 2.3.4]
<u>Examiner Note:</u> The crew will conduct a Reactivity Brief and execute a Reactivity Plan to restore T_{AVE} to T_{REF}.		
	US/RO	RESTORE T _{AVE} to within 1°F of T _{REF} . [Step 2.3.5]
	RO/BOP	SELECT LOOP 4 on 1/1-JS-411E, N16 Power Channel Defeat. [Step 2.3.6]
	RO/BOP	ENSURE a valid N16 channel supplying recorder on 1/1-TS-411E, 1 TR 411 CHAN SELECT. [Step 2.3.7]
	RO/BOP	VERIFY PCIP, Window 3.4 – TURB LOAD REJ STM DMP ARMED C-7, not ARMED (DARK). [Step 2.3.8]
	US/BOP	VERIFY Steam Dumps were NOT blocked. [Step 2.3.9]
	BOP	Place 1-LK-459, PRZR LVL CTRL AND 1-FK-121, CCP CHRG FLO CTRL in AUTO [Step 2.3.10]
	US	Within 72 hours, HAVE I&C place bistable test switches for failed channel in CLOSED position per Attachments 1 and 2.
	US	EVALUATE Technical Specifications. [Step 2.3.13]
		<ul style="list-style-type: none"> • LCO 3.3.1.E, Reactor Trip System Instrumentation (Functions 6 & 7). • CONDITION E - One channel inoperable. • ACTION E.1 - Place channel in trip within 72 hours, <u>OR</u> • ACTION E.2 - Be in MODE 3 within 78 hours.
	US	INITIATE a work request per STA-606. [Step 2.3.12]

Operating Test: <u> NRC </u> Scenario # <u> 1 </u> Event # <u> 1 </u> Page <u> 11 </u> of <u> 44 </u>		
Event Description: NR Cold Leg Loop 4 Temperature Instrument failure		
Time	Position	Applicant's Actions or Behavior

	US	INITIATE a Condition Report per STA-421. [Step 2.3.13]
<i>When Technical Specifications are addressed, or at Lead Examiner discretion, proceed to Event 2.</i>		

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 2 </u>	Page <u> 12 </u> of <u> 44 </u>
Event Description: Steam Generator 1-01 Level transmitter failure low			
Time	Position	Applicant's Actions or Behavior	

**Simulator Operator: When directed, EXECUTE Event 2 (Key 2).
- RP04A, SG 1-01 Level Channel LI-551 Failure Low**

Indications Available:

8A-1.6 – SG 1 LVL LO
8A-1.8 – SG 1 STM & FW MISMATCH
8A-1.12 – SG 1 LVL LO
8A-1.14 – SG 1 1 of 4 LVL LO-LO
Feedwater flow rising
Feedwater pumps speed rising

	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE SG 1-01 LI-551 has failed low
	US	DIRECT performance of ABN-710, Steam Generator Level Instrumentation Malfunction
<u>Examiner Note:</u> The following steps are from ABN-710, Steam Generator Level Instrumentation Malfunction, Section 2.0 Steam Generator Level Instrument Malfunction		
	BOP	VERIFY controlling level channel - FAILED. [Step 2.3.1] <ul style="list-style-type: none"> 1-LI-551 has failed low
	BOP	Manually CONTROL the following, as necessary to maintain SG – AT PROGRAMMED LEVEL: [Step 2.3.2] <p>1-FK-510, SG 1 FW FLO CTRL</p> <ul style="list-style-type: none"> Took manual control of 1-FK-510, SG 1 FW FLO CTRL and matched feed flow and steam flow to restore program level
	BOP/US	VERIFY instruments on common instrument line – NORMAL (See Attachment 1) [Step 2.3.3] <ul style="list-style-type: none"> Wide Range Level LT-501 is consistent with other channels – No common instrument line failure

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 2 </u>	Page <u> 13 </u> of <u> 44 </u>
Event Description: <u> Steam Generator 1-01 Level transmitter failure low </u>			
Time	Position	Applicant's Actions or Behavior	

- 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.

BOP

VERIFY ALL other HI-HI level bistable windows on TSLB-3 for affected SG – DARK [Step 2.3.4]

- SG 1 (Channels 517, 518, and 519) windows 2.2, 3.2, and 4.2 are 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:
Alternate level control channel responding normally [Step 2.3.5a]

- 1-LI-519 responding normally

US

VERIFY automatic SG level control – DESIRED:
Automatic level control desired, as determined by Unit Supervisor [Step 2.3.5b]

- Automatic level control is desired

BOP

SELECT alternate channel: [Step 2.3.6]
1-LS-519C, SG 1 LVL CHAN SELECT, LY-519 selected for control

BOP

VERIFY affected Steam Generator level is stable at program level [Step 2.3.7]

- S/G 1-01 level is stable at program level

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 2 </u>	Page <u> 14 </u> of <u> 44 </u>
Event Description: <u> Steam Generator 1-01 Level transmitter failure low </u>			
Time	Position	Applicant's Actions or Behavior	

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 Feedwater Flow OR Feedwater Bypass Control Valve in AUTOMATIC AND ENSURE proper control. [Step 2.3.8] <ul style="list-style-type: none"> Placed 1-FK-510, SG 1 FW FLO CTRL in auto
	US	Within 72 hours, HAVE an I&C Technician place bistable test switches for failed level channel in CLOSE utilizing Attachments 2 and 3. [Step 2.3.9] <ul style="list-style-type: none"> Notified I&C to place bistable test switches to close for the 1LI-551
	US	VERIFY appropriate Alarms AND Trip Status Lights LIT per Attachment 3 AND NOTE this verification in the Unit Log. [Step 2.3.10] <ul style="list-style-type: none"> Correct alarms and trip status lights are lit
	US	Evaluate Technical Specifications. [Step 2.3.11] <ul style="list-style-type: none"> LCO 3.3.1, Reactor Trip System Instrumentation (Function 14) <ul style="list-style-type: none"> CONDITION E - One channel inoperable LCO 3.3.2, ESF System Instrumentation (Function 5B and 6C) <ul style="list-style-type: none"> CONDITION I - One channel inoperable CONDITION D - One channel inoperable
	US	INITIATE a Condition Report per STA-421, as applicable. [Step 2.3.12]
<i>When Technical Specifications have been addressed, or at Lead Examiner discretion, PROCEED to Event 3.</i>		

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 3 </u>	Page <u> 15 </u> of <u> 44 </u>
Event Description: <u>Letdown HX Outlet Flow Controller Failure (TK-130) Fails Low</u>			
Time	Position	Applicant's Actions or Behavior	

Simulator Operator: When directed, EXECUTE Event 3 (Key 3).
- Override, LTDN HX Outlet Flow Controller Failure (TK-130) Fails Low.

Indications Available:

6A-1.3 – LTDN HX OUT TEMP HI
6A-2.3 – LTDN HX NORM OUT FLO DIVERT
1-TI-130, LTDN HX OUT TEMP Rising

	RO	RESPOND to Annunciator Procedure Alarms.
	RO	RECOGNIZE 1-TK-130, LTDN HX OUT TEMP CTRL has failed to 0% output and 1-TI-130, LTDN HX OUT TEMP is rising.
Examiner Note: The operator can take manual control of 1-TK-130 and open TCV-4646 as an automatic control system has malfunctioned, per ODA-102.		
	RO	Performs actions of ALM-0061A, Window 1.3
<p>NOTE: 1/1-TCV-129, LTDN DIVERT VLV diverts flow to the VCT if letdown temperature is >135°F or BTRS demineralizer inlet temperature is >155°F.</p>		
	RO	MONITOR 1-TI-130, LTDN HX OUT TEMP. [Step 1]
		IF temperature increases to $\geq 135^{\circ}\text{F}$, ensure 1/1-TCV-129, LTDN DIVERT VLV is diverted to the VCT. [Step 1.A]
	RO	MONITOR 1-TI-381, BTRS DEMIN IN TEMP. [Step 2]
		The BTRS system is NOT in service. [Step 2.A]
	RO	VERIFY charging flow is 12 gpm greater than letdown flow. [Step 3]
	RO	VERIFY 1-TI-127, REGEN HX LTDN OUT TEMP is $\leq 350^{\circ}\text{F}$. [Step 4]
		1-TI-127, REGEN HX LTDN OUT TEMP is NOT $> 350^{\circ}\text{F}$. [Step 4.A]
	BOP	VERIFY 1-ZL-4646, LTDN HX CCW RET VLV is OPEN. (1-CB-03) [Step 5]

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 3 </u>	Page <u> 16 </u> of <u> 44 </u>
Event Description: <u>Letdown HX Outlet Flow Controller Failure (TK-130) Fails Low</u>			
Time	Position	Applicant's Actions or Behavior	

	RO	Identify 1-ZL-4646 is CLOSED AND place 1-TK-130, LTDN HX OUT TEMP CTRL in manual AND adjust letdown heat exchanger outlet temperature to 95°F. [Step 5.A]
		The controller will respond appropriately in MANUAL to control letdown heat exchanger outlet temperature at 95°F. [Step 5.B]
	RO	ENSURE 1-TI-130, LTDN HX OUT TEMP is maintained < 125°F. [Step 6]
		<ul style="list-style-type: none"> • MAINTAIN Letdown heat exchanger outlet temperature < 125°F with 1-TK-130 in manual. [Step 6.A]
	US/RO	NOTIFY Chemistry and Radiation protection personnel that Letdown has diverted to the VCT. [Step 7]
	US	Correct the condition or initiate a work request per STA-606. [Step 8]
<i>When Letdown Heat Exchanger Outlet Temperature is appropriately controlled, or at Lead Examiner discretion, PROCEED to Event 4.</i>		

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 4 </u>	Page <u> 17 </u> of <u> 44 </u>
Event Description: <u> Station Service Water Pump 1-01 Trip </u>			
Time	Position	Applicant's Actions or Behavior	

**Simulator Operator: When directed, EXECUTE Event 4 (Key 4).
- SW01B, Station Service Water Pump 1-01 Trip.**

Indications Available:

01-1.8 – SSWP 1 / 2 OVRLOAD / TRIP
01-1.11 – CCP 1 L/O CLR SSW RET FLO LO
01-1.12 – SIP 1 L/O CLR SSW RET FLO LO
01-3.8 – CSP 1 & 3 BRG CLR SSW RET FLO LO
03B-4.5 – CCW HX ½ SPLY FLO LO

	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE 1-HS-4250A, Service Water Pump 1-01 amber MISMATCH and white TRIP lights illuminated.
	US	Enter/Direct actions of ABN-501, Station Service Water System Malfunction

Examiner Note: The following steps are from ABN-501, Station Service Water System Malfunction, Section 2.0 Station Service Water Pump Trip.

- 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 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.
 - Diamond step 1 denotes Initial Operator Actions.

Examiner Note: Diamond steps (◇) are Initial Operator Actions.

	◇ BOP ◇	PLACE CS-1DG1E, Train A Diesel Generator Emergency Start/Stop handswitch in PULLOUT. [Step 2.3.1]
	BOP	VERIFY Train B SSW Pump – RUNNING. [Step 2.3.2]

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 4 </u>	Page <u> 18 </u> of <u> 44 </u>
Event Description: Station Service Water Pump 1-01 Trip			
Time	Position	Applicant's Actions or Behavior	

NOTE: Opposite train's SSW Pump and CCW Pump DO NOT provide cooling to CCW loads from the Ultimate Heat Sink.

BOP	VERIFY Train B CCW Pump – RUNNING. [Step 2.3.3]
-----	---

Simulator Operator: When asked about status of SSW Pump breaker/motor, wait 2 minutes and REPORT that the SSW Pump 1-01 50/51 overcurrent relays on Phases B & C are tripped and the motor is hot, no fire.

CAUTION: With loss of SSW flow to the CCP oil cooler, CCP bearing damage will occur after approximately 13 minutes.

Examiner Note: Crew may start CCP 1-02 prior to placing 1-01 in PULL-OUT.

RO/BOP	VERIFY equipment on Train A not required for operation: [Step 2.3.4]
--------	--

- Centrifugal Charging Pump 1-01
- Diesel Generator 1-01
- Safety Injection Pump 1-01
- Containment Spray Pumps 1-01 & 1-03

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 A in PULL OUT. [Step 2.3.5]
--------	--

- Centrifugal Charging Pump 1-01 (after starting CCP 1-02)
- Station Service Water Pump 1-01 (may leave as is due to CAUTION)
- Safety Injection Pump 1-01
- Containment Spray Pumps 1-01 & 1-03

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 4 </u>	Page <u> 19 </u> of <u> 44 </u>
Event Description: <u> Station Service Water Pump 1-01 Trip </u>			
Time	Position	Applicant's Actions or Behavior	

	US	GO TO ABN-502, Section 2.0 to stop the CCW pump in the affected train while other qualified operators continue this procedure. [Step 2.3.6]
<u>Examiner Note:</u> The following steps are from ABN-502, Component Cooling Water System Malfunctions, Section 2.0 CCW Pump Trip.		
	US/BOP	VERIFY Train B CCW Pump – RUNNING [Step 1]
<u>NOTE:</u> Opposite train's SSW Pump and CCW Pump DO NOT provide cooling to CCW loads from the Ultimate Heat Sink.		
	US/BOP	VERIFY Train B SSW Pump – RUNNING [Step 2]
	BOP	VERIFY Train B Safety Chiller Recirc Pump – RUNNING [Step 3]
	BOP	VERIFY TOTAL CCW heat exchanger outlet flow – LESS THAN 17,500 gpm per HEAT EXCHANGER. [Step 4]
		<ul style="list-style-type: none"> • 1-FI-4536A, CCW HX 1 OUT FLO • 1-FI-4537A, CCW HX 2 OUT FLO
<u>Simulator Operator:</u> If contacted, INFORM the Unit Supervisor that Unit 2 operators will take care of Control Room A/C and UPS HVAC systems		
	US	VERIFY required equipment, for existing conditions, supplied by unaffected train – IN OPERATION: [Step 5]
		<ul style="list-style-type: none"> • Control Room A/C Units • Containment Spray System • UPS HVAC Unit • Excess Letdown • RHR System
	US/BOP	Shutdown equipment on the affected Train as necessary: [Step 6]
		<ul style="list-style-type: none"> • To prevent auto operation without necessary support, shutdown the following on the affected train: [Step 6a] • Containment Spray Pumps – 1-01 & 1-03 (Already in PULL OUT) • RHR Pump – 1-01 PULL OUT

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 4 </u>	Page <u> 20 </u> of <u> 44 </u>
Event Description: <u> Station Service Water Pump 1-01 Trip </u>			
Time	Position	Applicant's Actions or Behavior	

NOTE: Any condition isolating CCW safeguards trains (e.g., Containment Spray actuation, CCW surge Tank Low-Low level), will stop cooling to the affected train Safety Chilled Water.

US

- VERIFY Shift Manager approves continued operation of affected train components using Attachment 3. [Step 6b]

Simulator Operator: If contacted, INFORM the Unit Supervisor that Unit 2 operators will take care of the common systems. The Shift Manager does NOT approve of continued operation of the affected equipment.

US/BOP

- SHUTDOWN THE FOLLOWING [Step 6b RNO]
 - MDAFW Pump – 1-01 PULL OUT
 - SI Pump – 1-01 PULL OUT
 - CCP – 1-01 PULL OUT
 - Control Room A/C – OFF
 - UPS HVAC Unit – OFF
 - SFP Cooling – OFF
 - Electrical Area Fan Coolers – OFF

NOTE:

- With Safety Chiller out-of-service, Chilled Water temperature will gradually increase. Affected Chilled Water Recirculation Pump must be shut down to prevent lifting refrigerant reliefs on affected chiller.
- Step 6c is a continuous action step.

Simulator Operator: If contacted to verify Safety Chiller 1-05 is running, wait 2 minutes then report that 1-05 Safety Chiller is running satisfactorily.

BOP

- VERIFY affected train Safety Chiller – RUNNING. [Step 6c]

BOP

- ENSURE the following on the affected train: [Step 6d]
 - CCW Pump 1-01 – PULL OUT

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 4 </u>	Page <u> 21 </u> of <u> 44 </u>
Event Description: <u>Station Service Water Pump 1-01 Trip</u>			
Time	Position	Applicant's Actions or Behavior	

	US/BOP	VERIFY CCW HX outlet temperature did NOT exceed 122F with pump running by one or more of the following: [Step 7]
		<ul style="list-style-type: none"> • Temperature observed on 1-TI-4530 OR 1-TI-4534, CCW HX 1 OR CCW HX 2 OUT TEMP • Plant computer trend • ALB 3B-1.5 OR 2.5, CCW HX 1 OR HX 2 OUT TEMP HI – NOT LIT
	US	ENTER into Issue Reporting Program IAW STA-421. [Step 8]
	US	<p>REFER to the following Technical Specifications for LCOs: [Step 9]</p> <ul style="list-style-type: none"> • 3.4.6 • 3.4.7 • 3.5.2 • 3.5.3 • 3.6.6 • 3.7.7 • 3.7.11 • 3.7.19 • 3.7.20
	US	LCO 3.7.8.B, Station Service Water System.
		<ul style="list-style-type: none"> • CONDITION B – One SSWS Train inoperable. • ACTION B.1 – Restore SSWS Train to OPERABLE status within 72 hours.
	US	LCO 3.8.1.B, AC Sources – Operating.
		<ul style="list-style-type: none"> • CONDITION B – One DG inoperable. • ACTION B.1 – Perform SR 3.8.1.1 for the required offsite circuits within 1 hour <u>AND</u> once per 8 hours thereafter. • ACTION B.2 – Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable within four hours from discovery of Condition B concurrent within inoperability of redundant required feature(s). • ACTION B.3 – Determine OPERABLE DG(s) is not inoperable due to common cause failure within 24 hours.
<p><i>When Technical Specifications have been addressed, or at Lead Examiner discretion, PROCEED to Event 5.</i></p>		

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 5 </u>	Page <u> 22 </u> of <u> 44 </u>
Event Description: High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed			
Time	Position	Applicant's Actions or Behavior	

Simulator Operator: When directed, EXECUTE Event 5 (Key 5).
- TC08C, High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed.

Indications Available:

6D-1.10 – AVE TAVE TREF DEV

9A-3.6 – SG3 LVL LO

9A-3.8 – SG3 STM & FW FLO MISMATCH

9A-3.12 – SG3 LVL DEV

Main Generator Load Decreasing on Turbine Digital Display

Steam Dumps operating to control RCS Temperature

Various Heater Drain Alarms

	BOP	RESPOND to Annunciator Alarm Procedures
	BOP	RECOGNIZE High Pressure Turbine Stop Valve #3 has Failed Closed
	RO	Immediately PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in AUTO to allow the Rod Control System to Automatically respond to the plant transient.
Examiner Note: If Control Rods are not placed in Auto expeditiously, 1-PV-2286, LP HTR BYPASS VLV may open.		
	US	DIRECT performance of ABN-401, Main Turbine Malfuction, Section 9.0
<div style="border: 1px solid black; padding: 5px;"> <p>NOTE: The turbine should be unloaded and a rapid controlled shutdown initiated within <u>2 hours</u> if a closed LP stop or control valve can <u>NOT</u> be re-opened. The concern is a right/left thermal mismatch on the LP turbine casing which could initiate a rotor rub.</p> </div>		
	BOP	VERIFY operable HP Control Valves are \leq 98% open. [Step 9.3.1]
	RO/BOP	<ul style="list-style-type: none"> • PERFORM the following: <ul style="list-style-type: none"> • ENSURE 1/1-RBSS, CONTROL ROD BANK SELECT in AUTO. [Step 9.3.1 RNO a] • Reduce Turbine power to 50 MW less than current load target at a rate of 100 MW per minute. [Step 9.3.1 RNO b]
	BOP	SET Turbine Load Rate Setpoint Controller to 100 MWe/min on Load Rate Osd

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 5 </u>	Page <u> 23 </u> of <u> 44 </u>
Event Description: High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed			
Time	Position	Applicant's Actions or Behavior	

		<ul style="list-style-type: none"> • OPEN "Load Rate" OSD.
		<ul style="list-style-type: none"> • SELECT grey value box and ENTER 100 MWe/min.
		<ul style="list-style-type: none"> • CLOSE "Load Rate" OSD.
	BOP	SET Turbine Load Target to 50 MWe less than current load value on Load Target Osd
		<ul style="list-style-type: none"> • OPEN "Load Target" OSD. (green window)
		<ul style="list-style-type: none"> • SELECT grey value box ENTER appropriate MWe press enter
		<ul style="list-style-type: none"> • VERIFY "Load Target" changes to desired load.
		<ul style="list-style-type: none"> • CLOSE "Load Target" OSD.
<p>NOTE: Indications listed in Step 2 are only those used as inputs to the steam generator level control system.</p>		
	BOP	VERIFY Steam Generator levels at or trending to program. [Step 9.3.2]
	RO	VERIFY PR Delta Flux – (AFD) WITHIN LIMITS: [Step 9.3.3] <ul style="list-style-type: none"> • 1-NI-41C, PR DELTA FLUX CHAN I • 1-NI-42C, PR DELTA FLUX CHAN II • 1-NI-43C, PR DELTA FLUX CHAN III • 1-NI-44C, PR DELTA FLUX CHAN IV
	RO	VERIFY the Steam Dumps AND Rod Control System – RESPONDING TO MAINTAIN Tave to Tref. [Step 9.3.4] <ul style="list-style-type: none"> • 1-TI-412A, AVE Tave-Tref DEV
	RO	VERIFY Pressurizer Level – TRENDING TO PROGRAM LEVEL. [Step 9.3.5] <ul style="list-style-type: none"> • 1-LR-459, PRZR LVL/PRZR LVL STPT
	RO	VERIFY Pressurizer Pressure – TRENDING TO PROGRAM PRESSURE. [Step 9.3.6] <ul style="list-style-type: none"> • 1PR-455, PRESS

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 5 </u>	Page <u> 24 </u> of <u> 44 </u>
Event Description: <u>High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed</u>			
Time	Position	Applicant's Actions or Behavior	

	BOP	CHECK Steam Generator Feedwater Level AND Flow Control Valve status: [Step 9.3.7]
		<ul style="list-style-type: none"> • Steam Generator Levels – AT 67% [Step 9.3.7.a] <ul style="list-style-type: none"> • 1-LI-551/519, SG 1 LVL (NR) • 1-LI-552/529, SG 2 LVL (NR) • 1-LI-553/539, SG 3 LVL (NR) • 1-LI-554/549, SG 4 LVL (NR)
	BOP	<ul style="list-style-type: none"> • ALL Steam Generator Feedwater Flow Valves – IN AUTO [Step 9.3.7.b] <ul style="list-style-type: none"> • 1-FK-510, SG 1 FW FLO CTRL • 1-FK-520, SG 2 FW FLO CTRL • 1-FK-530, SG 3 FW FLO CTRL • 1-FK-540, SG 4 FW FLO CTRL
	BOP	RESET Steam Dump Valves [Step 9.3.8]
		<ul style="list-style-type: none"> • VERIFY ALL Steam Dumps – CLOSED [Step 9.3.8.a]
		<ul style="list-style-type: none"> • VERIFY 1-UI-500, STM DMP DEMAND – 0% [Step 9.3.8.b]
		<ul style="list-style-type: none"> • PLACE 43/1-SD, STM DMP MODE SELECT to RESET AND then TAVE position [Step 9.3.8.c]
	BOP	VERIFY Turbine Load – STABLE [Step 9.3.9] <ul style="list-style-type: none"> • GEN MEGAWATTS • GEN MEGAVARS
	BOP	VERIFY ALL operable HP Turbine Control Valves – INDICATE LESS THAN 100% OPEN: [Step 9.3.10] TG Control Display OR <ul style="list-style-type: none"> • 1-ZI-2429B, HPT CTRL VLV 1 POSN • 1-ZI-2431B, HPT CTRL VLV 2 POSN • 1-ZI-2430B, HPT CTRL VLV 3 POSN • 1-ZI-2428B, HPT CTRL VLV 4 POSN
Examiner Note: Control Rods may insert below the LO-LO Limit on this transient, if this occurs the Unit Supervisor should refer to TS 3.1.6, Control Bank Insertion Limits.		

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 5 </u>	Page <u> 25 </u> of <u> 44 </u>
Event Description: High Pressure Turbine Stop Valve #3 (UV-2430A) Fails Closed			
Time	Position	Applicant's Actions or Behavior	

	US	REFER to TS/TR listed in Section 10.1 [Step 9.3.11]
	BOP	RESET Turbine Runback per Section 8.0, if necessary (NOT required) [Step 9.3.12]
Examiner Note: The following steps are from ABN-401, Main Turbine Malfunction, Section 8.0, Turbine Reloading after Runback.		
		<ul style="list-style-type: none"> • VERIFY alarm 6D-1.9, ANY TURB RUNBACK EFFECTIVE – DARK. [Step 8.3.1]
		<ul style="list-style-type: none"> • In the Load Control Section, ENSURE Load Rate Setpoint Controller is SET to support reload or current plant conditions. [Step 8.3.2]
		<ul style="list-style-type: none"> • In the Load Control Section, ENSURE Load Target Setpoint Controller is set for actual MWe. [Step 8.3.3]
		<ul style="list-style-type: none"> • IF Manual Runback was used, THEN on the “TG Control” Display in the Manual Runbacks Section turn off the appropriate Subloop Controller. [Step 8.3.4]
		<ul style="list-style-type: none"> • VERIFY Runback is RESET. [Step 8.3.5]
		<ul style="list-style-type: none"> • VERIFY Runback – GREATER THAN 15% WITHIN ONE HOUR and CONTACT Chemistry. [Step 8.3.6]
		<ul style="list-style-type: none"> • CONTROL Turbine Load as required per IPO-003A. [Step 8.3.7]
When the plant has been stabilized, or at Lead Examiner discretion, PROCEED to Events 6, 7 & 8.		

Operating Test:	NRC	Scenario #	1	Event #	6, 7 & 8	Page	26	of	44
Event Description: SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment									
Time	Position	Applicant's Actions or Behavior							

Simulator Operator: When directed, EXECUTE Events 6, 7 and 8 (Key 6).
 - SG02C, SG 1-03 Tube Rupture
 - RP15E, RX Trip Breakers Jammed Closed – ALL
 - MS01C, SG 1-03 Main Steam Line Fault inside Containment

Indications Available:

6A-3.4 – CHRG FLO HI / LO
 5C-1.2 – PRZR LVL DEV LO
 5C-3.3 – PRZR PRESS LO BACKUP HTRS ON
 PC-11 – MSL-180 (1-RE-2327) is RED
 Main Steam Line Radiation level rising
 Pressurizer pressure lowering
 Containment pressure, temperature, and humidity rising
 Main Steam Line pressure lowering

	RO/BOP	RECOGNIZE lowering RCS temperature and pressure.
	RO/BOP	DETERMINE Reactor Trip/Safety Injection initiation required. Attempt to manually trip the reactor and manually initiate Safety Injection.
	US	DIRECT performance of EOP-0.0A, Reactor Trip or Safety Injection.
CRITICAL TASK STATEMENT		Manually Trip Reactor due to Failure to Automatically Trip prior to exiting EOP-0.0A, Reactor Trip or Safety Injection.
	◇ RO ◇	VERIFY Reactor Trip: [Step 1]
		<ul style="list-style-type: none"> VERIFY Reactor Trip Breakers – OPEN. [Step 1.a] VERIFY Neutron flux – DECREASING. [Step 1.a]
	◇ RO/BOP ◇	<ul style="list-style-type: none"> Manually trip reactor from both trip switches [Step 1.a RNO]
	◇ BOP ◇	<ul style="list-style-type: none"> IF reactor will not trip, THEN momentarily de-energize 480 V normal switchgear 1B3 and 1B4. [Step 1.a RNO]
CT-1	◇ BOP ◇	<ul style="list-style-type: none"> Momentarily places <u>BOTH</u> CS-1B3-1, INCOMING BKR 1B3-1 <u>AND</u> CS-1B4-1, INCOMING BKR 1B4-1 to TRIP and then back to CLOSE.
	◇ RO ◇	<ul style="list-style-type: none"> VERIFY all Control Rod Position Rod Bottom Lights – ON. [Step 1.b]

Operating Test:	NRC	Scenario #	1	Event #	6, 7 & 8	Page	27	of	44
Event Description: SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment									
Time	Position	Applicant's Actions or Behavior							

	◇ BOP ◇	VERIFY Turbine Trip: [Step 2]
		<ul style="list-style-type: none"> VERIFY all HP Turbine Stop Valves – CLOSED. [Step 2]
	◇ BOP ◇	VERIFY Power to AC Safeguards Buses: [Step 3]
		<ul style="list-style-type: none"> VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 3.a]
		<ul style="list-style-type: none"> VERIFY both AC Safeguards Buses – ENERGIZED. [Step 3.b]
	◇ RO ◇	CHECK SI status: [Step 4]
	◇ RO ◇	<ul style="list-style-type: none"> SI actuation as indicated on the First Out Annunciator 1-ALB-6C. [Step 4.a] SI Actuated blue status light – ON [Step 4.a] VERIFY Both Trains SI Actuated: [Step 4.b] SI Actuated blue status light – ON <u>NOT</u> FLASHING.
<p>Simulator Operator: If contacted to open the Reactor Trip Breakers, wait 2 minutes and Execute Key 13.</p>		
<div style="border: 2px solid black; padding: 10px;"> <p>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.</p> </div>		
<div style="border: 1px solid black; padding: 10px;"> <p>NOTE: Attachment 2 is required to be completed before FRGs are implemented unless directed by this procedure.</p> </div>		
<p>Examiner Note: EOP-0.0A, Attachment 2 steps performed by BOP begin on Page 37 of the scenario guide.</p>		
	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2. [Step 5]

Operating Test:	NRC	Scenario #	1	Event #	6, 7 & 8	Page	28	of	44
Event Description:	SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment								
Time	Position	Applicant's Actions or Behavior							

Examiner Note: Earlier in the scenario MDAFW Pump 1-01 may have been placed in pull out due to the loss of SSW pump 1-01. This will cause the crew to use the TDAFW Pump and 1-02 MDAFW Pump for feeding SG. MDAFW Pump 1-02 may have its flow control valves closed if not used.

The crew may stop AFW flow to SG 1-03 after it has been identified as Faulted / Ruptured. Foldout page in EOP-0.0, Reactor Trip or Safety Injection, will have them isolate a fault but feed a rupture until 43% (50%) NR. A CAUTION in EOP-3.0 will tell them to isolate AFW flow to any SG that is Faulted AND Ruptured.

	RO	VERIFY AFW Alignment: [Step *6]
		<ul style="list-style-type: none"> VERIFY both MDAFW Pumps – RUNNING. [Step 6.a] TDAFW Pump - RUNNING IF NECESSARY. [Step 6.b] VERIFY AFW total flow – GREATER THAN 460 GPM. [Step 6.c] VERIFY AFW valve alignment - PROPER ALIGNMENT. [Step 6.d]
	RO	VERIFY Containment Spray NOT Required: [Step *7]
		<ul style="list-style-type: none"> Containment pressure – HAS REMAINED LESS THAN 18.0 PSIG [Step 7.a] 1-ALB-2B, Window 1-8, CS ACT – NOT ILLUMINATED.
		-AND-
		<ul style="list-style-type: none"> 1-ALB-2B, Window 4-11, CNTMT ISOL PHASE B ACT – NOT ILLUMINATED.
		-AND-
		<ul style="list-style-type: none"> VERIFY Containment pressure – LESS THAN 18.0 PSIG. Verify Containment Spray AND Phase B Actuation initiated. IF NOT, THEN manually actuate [Step 7.a RNO a.1] Verify appropriate MLB indication for CNTMT SPRAY (BLUE WINDOWS) AND PHASE B (ORANGE WINDOWS). [Step 7.a RNO a.2] Verify containment spray flow. [Step 7.a RNO a.3]

Operating Test:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 & 8</u>	Page	<u>29</u>	of	<u>44</u>
Event Description: <u>SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment</u>									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Ensure CHEM ADD TK DISCH VLVs – OPEN [Step 7.a RNO a.4] 1-HS-4752 1-HS-4753
<u>Examiner Note:</u> RCPs may have already been stopped per foldout page due to subcooling being lost.		
	RO	<ul style="list-style-type: none"> Stop all RCPs [Step 7.a RNO a.5]
	US	<ul style="list-style-type: none"> Go to Step 8 [Step 7.a RNO a.6]
	RO	CHECK if Main Steam lines should be ISOLATED: [Step *8]
		<ul style="list-style-type: none"> VERIFY Containment pressure – GREATER THAN 6.0 PSIG. [Step 8.a] VERIFY Steam Line pressure – LESS THAN 610 PSIG. [Step 8.a] Verify main steam isolation complete: [Step 8.b] Main Steam isolation valves Before MSIV drippot isolation valves
<u>Examiner Note:</u> The RCS temperature will be lower than 557F here but there is no action the crew can take to stop the cooldown with a faulted SG. The intact SG ARVs (SGs 1, 2 and 4) may be set to control at 1092 psig, the steam pressure corresponding to the No load RCS average temperature of 557°F.		
	RO	CHECK RCS Temperature: [Step *9]
		<ul style="list-style-type: none"> RCS AVERAGE TEMPERATURE STABLE AT OR TRENDING TO 557°F [Step 9]
	RO	CHECK PRZR Valve Status: [Step 10]
		<ul style="list-style-type: none"> 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]

Operating Test:	NRC	Scenario #	1	Event #	6, 7 & 8	Page	30	of	44
Event Description: SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> VERIFY Block Valves – AT LEAST ONE OPEN. [Step 10.e]
Examiner Note: RCPs should have been stopped either due to Containment Spray Actuation steps or Foldout page steps.		
CRITICAL TASK STATEMENT	Trip reactor coolant pumps within 5 minutes upon a loss of Subcooling per EOP-0.0A, Reactor Trip or Safety Injection	
	RO	CHECK if RCPs Should Be Stopped: [Step 11]
		<ul style="list-style-type: none"> VERIFY RCS subcooling – LESS THAN 25°F (55°F FOR ADVERSE CONTAINMENT). [Step 11.a]
		<ul style="list-style-type: none"> ECCS pumps - AT LEAST ONE RUNNING [Step 11.b]
CT-2		<ul style="list-style-type: none"> Stop all RCPs. [Step 11.c]
	US/RO	CHECK if any SG is Faulted: [Step 12]
		<ul style="list-style-type: none"> IDENTIFY any Steam Generator pressure – DECREASING IN AN UNCONTROLLED MANNER. [Step 12.a]
		<ul style="list-style-type: none"> VERIFY Steam Generator 1-03 pressure – Decreasing in an uncontrolled manner. [Step 12.a]
		<ul style="list-style-type: none"> Go to EOP-2.0A, FAULTED STEAM GENERATOR ISOLATION, Step 1. [Step 12.b]
	US	Transitions to EOP-2.0, Faulted SG Isolation
<p><u>CAUTION:</u> At least one SG must be maintained available for RCS cooldown.</p>		
<p><u>CAUTION:</u> Any faulted SG or secondary break should remain isolated during subsequent recovery actions unless needed for RCS cooldown.</p>		

Operating Test:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 & 8</u>	Page	<u>31</u>	of	<u>44</u>
Event Description: <u>SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment</u>									
Time	Position	Applicant's Actions or Behavior							

	RO	Check Main Steamline Isolation Valves – CLOSED [Step 1]
	RO	Check At Least One SG Pressure - STABLE OR INCREASING [Step 2]
	RO	Identify Faulted SG(s): [Step 3] Check pressures in all SGs: <ul style="list-style-type: none"> • ANY SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER • ANY SG COMPLETELY DEPRESSURIZED (1-03)
<div style="border: 2px solid black; padding: 10px;"> <p><u>CAUTION:</u> 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.</p> </div>		
	RO	Isolate Faulted SG(s): [Step 4] <ul style="list-style-type: none"> • Isolate main feedline • Isolate AFW flow • Isolate blowdown and sample lines • Ensure SG atmospheric(s) – CLOSED • Ensure main steamline drippot isolation valve(s) - CLOSED
	RO	Check CST Level – GREATER THAN 10% [Step 5]
	RO	Verify Faulted SG(s) Break Inside Containment [Step 6]
		Check Secondary Radiation: [Step 7] <ul style="list-style-type: none"> • Request periodic activity samples of all SGs. [Step 7.a] • Check available secondary radiation monitors – NORMAL [Step 7.b] <ul style="list-style-type: none"> ○ Condenser Off Gas radiation (COG-182, 1RE-2959) ○ Main steamline radiation (MSL-178 through 181, 1RE-2325 through 2328) ○ SG blowdown sample radiation (SGS-164, 1RE-4200)

Operating Test:	NRC	Scenario #	1	Event #	6, 7 & 8	Page	32	of	44
Event Description: SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment									
Time	Position	Applicant's Actions or Behavior							

	US	Go to EOP-3.0A, STEAM GENERATOR TUBE RUPTURE, Step 1 [Step 7.b RNO]
	US	Transitions to EOS-3.0A, Steam Generator Tube Rupture
	US/RO	CHECK If RCPs Should Be Stopped: [Step *1]
		<ul style="list-style-type: none"> • VERIFY RPCs are stopped
	US/BOP	IDENTIFY Steam Generator 1-03 as ruptured. [Step *2]
		<ul style="list-style-type: none"> • OBSERVE high radiation from Steam Generator 1-03 Main Steam Line.
<p>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.</p>		
<p>CAUTION: At least two SG(s) must be maintained available for the initial RCS cooldown. At least one SG must be maintained available for the subsequent RCS cooldown to RHR system operating conditions.</p>		
<p>NOTE: If any SG atmospheric opens the Plant Staff should be notified.</p>		
	RO/BOP	ISOLATE flow from Ruptured Steam Generator 1-03: [Step 3]
		<ul style="list-style-type: none"> • ADJUST SG 1-03 Atmospheric Controller Setpoint to 1160 PSIG. [Step 3.a]
		<ul style="list-style-type: none"> • CHECK SG 1-03 Atmospheric Relief Valve – CLOSED. [Step 3.b]
		<ul style="list-style-type: none"> • Close ruptured SG(s) main steamline isolation, and SG drippot isolation valves. [Step 3.c]

Operating Test:	NRC	Scenario #	1	Event #	6, 7 & 8	Page	33	of	44
Event Description: SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment									
Time	Position	Applicant's Actions or Behavior							

Examiner Note: The intact SG ARVs (SGs 1, 2 and 4) may be set to control at 1092 psig, the steam pressure corresponding to the No load RCS average temperature of 557°F.

- PULL-OUT steam supply valve handswitch from ruptured SG(s) to TDAFWP. [Step 3.d]
- VERIFY blowdown isolation valves from SG 1-03 – CLOSED [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 CHECK SG 1-03 Level: [Step *4]

- Narrow range level – GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT) [Step 4.a]
- MAINTAIN isolated. [Step 4.b]

CAUTION: Major steam flow paths from the ruptured SG(s) should be isolated before initiating RCS cooldown.

BOP/RO CHECK SG 1-03 Pressure – < 550 PSIG [Step 5]

US Go to ECA-3.1A, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1. [Step 5 RNO]

Operating Test: NRC Scenario # 1 Event # 6, 7 & 8 Page 34 of 44
 Event Description: SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

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.

CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment.

Examiner Note: The US may give Attachment 1D to one of the ROs to perform steps 1 through 6 of ECA-3.1.

If the unit 1 air compressors are reset and started they will trip due to loss of non-safeguards CCW flow.

	BOP	Check If Diesels Should Be Emergency Started: [Step 1] <ul style="list-style-type: none"> • Check diesel generator(s) – RUNNING • Place D/G EMER STOP/START handswitch(es) in START
	BOP	Reset SI. [Step 2]
	BOP	Reset SI Sequencers. [Step 3]
	BOP	Reset Containment Isolation Phase A And Phase B. [Step 4]
	BOP	Reset Containment Spray Signal [Step 5]
<p>Simulator Operator: If contacted to reset instrument air compressors insert the appropriate key (Key 9 for 1-01, Key 10 for 1-02, or Key 14 for X-01)</p>		
	BOP	Establish Instrument Air and Nitrogen to Containment: [Step 6.a] <ul style="list-style-type: none"> • Verify air compressor running <ul style="list-style-type: none"> ○ Manually start air compressor and align valve as appropriate [Step 6.a.RNO]

Operating Test:	NRC	Scenario #	1	Event #	6, 7 & 8	Page	35	of	44
Event Description: SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> ○ Establish instrument air to containment ● Establish nitrogen: [Step 6.b] <ul style="list-style-type: none"> ○ Verify ACCUM 1●4 VENT CTRL, 1-HC-943 – CLOSED ○ Open SI/PORV ACCUM N2 ISOLVLV, 1/1-8880
--	--	---

	BOP	Verify All AC Busses – ENERGIZED BY OFFSITE POWER [Step *7]
--	-----	---

CAUTION: PRZR heaters should not be energized until PRZR water level indicates greater than minimum recommended by Plant Staff to ensure heaters are covered.

	RO	Deenergize PRZR Heaters: [Step 8] <ul style="list-style-type: none"> ● Place all PRZR heater switches in OFF position ● Consult Plant Staff for a recommended minimum indicated PRZR water level that will ensure heaters are covered.
--	----	--

CAUTION: If any ruptured SG is faulted, AFW flow to that SG should remain isolated during subsequent recovery action unless needed for RCS cooldown.

Examiner Note: Per the CAUTION AFW flow will be isolated to SG 1-03

	BOP	Check Ruptured SG(s) Level: [Step *9] <ul style="list-style-type: none"> ● Narrow range level – GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT) ● Stop AFW flow to ruptured SG(s).
--	-----	---

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> 6, 7 & 8 </u>	Page <u> 36 </u> of <u> 44 </u>
Event Description: <u> SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment </u>			
Time	Position	Applicant's Actions or Behavior	

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.

	BOP	<p>Check If RHR Pumps Should Be Stopped: [Step *10]</p> <ul style="list-style-type: none"> • RHR pumps - ANY RUNNING WITH SUCTION ALIGNED TO RWST • Check RCS pressure: [Step *10.b] <ul style="list-style-type: none"> ○ RCS pressure - GREATER THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT) ○ RCS pressure - STABLE OR INCREASING ○ Go to Step 11 [Step *10.b.RNO]
	US	<p>Initiate Evaluation of Plant Status: [Step 11]</p> <ul style="list-style-type: none"> • Check auxiliary building and safeguards building radiation - NORMAL: <ul style="list-style-type: none"> ○ Check PC-11 area monitors - NORMAL (GRID 4) ○ Notify Radiation Protection to take local radiation surveys • Notify Chemistry to obtain RCS samples to assist in determining extent of the accident. • Evaluate plant equipment: <ul style="list-style-type: none"> ○ Consult Plant Staff to determine equipment that should be available/started to assist in recovery.
	BOP	<p>Check If Any SG Is Faulted: [Step 12]</p> <ul style="list-style-type: none"> • Check pressures in all SGs: [Step 12.a] <ul style="list-style-type: none"> ○ ANY SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER ○ OR ANY SG COMPLETELY DEPRESSURIZED
	BOP	<p>Verify all faulted SGs isolated unless needed for RCS cooldown: [Step 12.b]</p> <ul style="list-style-type: none"> • Steamlines • Feedlines • Blowdown and sample lines
	BOP	<p>Check Intact SG Levels: [Step *13]</p>

Operating Test:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 & 8</u>	Page	<u>37</u>	of	<u>44</u>
Event Description: <u>SG 1-03 Tube Rupture / Automatic Reactor Trip Failure, Manual Trip from 1B3 and 1B4 / SG 1-03 Main Steam Line Fault inside Containment</u>									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> • Narrow range level – GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT). [Step *13.a.RNO] <ul style="list-style-type: none"> ○ Maintain total AFW flow greater than 460 gpm until narrow range level greater than 43% (50% FOR ADVERSE CONTAINMENT) in at least two intact SG(s). • Control AFW flow to maintain narrow range level between 43% (50% FOR ADVERSE CONTAINMENT) and 60%.
--	--	---

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.

	BOP	Initiate RCS Cooldown to Cold Shutdown: [Step *14] <ul style="list-style-type: none"> • Maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR • Use RHR System if in service • Check PRZR pressure-LESS THAN 1960 PSIG • BLOCK low steam line pressure SI signal • Dump steam to condenser from intact SG(s).
--	-----	---

CRITICAL TASK STATEMENT	Initiate Cooldown of the Reactor Coolant System in accordance with ECA-3.1A, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired, prior to commencing ECCS flow reduction.
--------------------------------	--

CT-3	BOP	Dump steam from intact SG(s) using SG atmospheric [Step *14.e.RNO] <ul style="list-style-type: none"> • Make plant announcement and notify Plant Staff of steam release • Perform the following as necessary to release steam while maintaining cooldown rate: <ul style="list-style-type: none"> ○ Place SG(s) atmospheric(s) controller(s) in manual and increase demand
-------------	-----	--

When the cooldown is initiated in ECA-3.1 at step 14 TERMINATE the scenario.

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> Att. 2 </u>	Page <u> 38 </u> of <u> 44 </u>
Event Description: <u> EOP-0.0A, Attachment 2 </u>			
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]
		<ul style="list-style-type: none"> • VERIFY SSW Pump 1-02 – RUNNING. [Step 1.a] • VERIFY EDG 1-02 Cooler SSW return flow. [Step 1.b]
	BOP	VERIFY Safety Injection Pump 1-02 – 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 Pump 1-02 – RUNNING. [Step 5]
	BOP	VERIFY RHR Pump 1-02 – RUNNING. [Step 6]
	BOP	VERIFY Proper CVCS Alignment: [Step 7]
		<ul style="list-style-type: none"> • VERIFY CCP 1-02 – RUNNING. [Step 7.a] • VERIFY Letdown Relief Valve Isolation: [Step 7.b] • Letdown Orifice Isolation Valves – CLOSED. [Step 7.b.1] • Letdown Isolation Valves 1/1-LCV-459 & 1/1-LCV-460 – CLOSED. [Step 7.b.2]
	BOP	VERIFY ECCS flow: [Step 8]

Operating Test: NRC Scenario # 1 Event # Att. 2 Page 39 of 44
 Event Description: EOP-0.0A, Attachment 2

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • CCP SI flow indicator – CHECK FOR FLOW. [Step 8.a]
		<ul style="list-style-type: none"> • RCS pressure – LESS THAN 1700 PSIG (1800 PSIG FOR ADVERSE CONTAINMENT). [Step 8.b]
		<ul style="list-style-type: none"> • GO to Step 9. [Step 8.b RNO b]
	BOP	VERIFY Feedwater Isolation Complete: [Step 9]
		<ul style="list-style-type: none"> • Feedwater Isolation Valves – CLOSED.
		<ul style="list-style-type: none"> • Feedwater Isolation Bypass Valves – CLOSED.
		<ul style="list-style-type: none"> • Feedwater Bypass Control Valves – CLOSED.
		<ul style="list-style-type: none"> • Feedwater Control Valves – CLOSED.
	BOP	VERIFY Diesel Generator 1-02 – RUNNING. [Step 10]
	BOP	VERIFY Monitor Lights for SI Load Shedding on 1-MLB-9 and 1-MLB-10 – LIT. [Step 11]
<div style="border: 1px solid black; padding: 10px;"> <p>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.</p> </div>		
	BOP	VERIFY Proper SI alignment – PROPER MLB LIGHT INDICATION. [Step 12]
<div style="border: 1px solid black; padding: 10px;"> <p>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.</p> </div>		
<div style="border: 1px solid black; padding: 10px;"> <p>NOTE: When the SI sequencer has timed out, the Reactor Makeup Water Pump with its handswitch in Auto will restart.</p> </div>		

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> Att. 2 </u>	Page <u> 40 </u> of <u> 44 </u>
Event Description: <u> EOP-0.0A, Attachment 2 </u>			
Time	Position	Applicant's Actions or Behavior	

BOP				
VERIFY Components on Table 1 are Properly Aligned. [Step 13]				
	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

Operating Test: <u> NRC </u>	Scenario # <u> 1 </u>	Event # <u> Att. 2 </u>	Page <u> 41 </u> of <u> 44 </u>
Event Description: <u> EOP-0.0A, Attachment 2 </u>			
Time	Position	Applicant's Actions or Behavior	

	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: <u> NRC </u> Scenario # <u> 1 </u> Event # <u> Att. 2 </u> Page <u> 42 </u> of <u> 44 </u>	
Event Description: <u> EOP-0.0A, Attachment 2 </u>	
Time	Position
Applicant's Actions or Behavior	

Examiner Note: The next four (4) steps would be performed on Unit 2.

	CB-03	2-HS-5538	AIR PRG EXH ISOL DMPR	CLOSED
	CB-03	2-HS-5539	AIR PRG EXH ISOL DMPR	CLOSED
	CB-03	2-HS-5537	AIR PRG SPLY ISOL DMPR	CLOSED
	CB-03	2-HS-5536	AIR PRG SPLY ISOL DMPR	CLOSED
	BOP	NOTIFY Unit Supervisor attachment instructions complete <u>AND</u> to IMPLEMENT FRGs as required.		

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

Scenario Event Description
Make-Up NRC Scenario 1

;Make-up CPNPP 2021 NRC Simulator Scenario 1

;Event 1 - Loop 4 Tcold Fails High

;TE-441B Failure High
IMF RP05D f:630 k:1

;Event 2 SG 1-01 Level Channel Fails Low

;LI-551 Failure Low
IMF RX04A f:0 k:2

;Event 3 - 1-TK-130 Fails to 0% Demand - Manual reopens valve

IOR AICVTK130 f:10 k:3
{AOCVTK130.Value=0}IMF CV05 f:0
{AOCVTK130.Value=0}IOR LOCVTK130_1 f:1
{AOCVTK130.Value=0}IOR LOCVTK130_2 f:0
{AOCVTK130.Value=0}IOR DICVTK130_2 f:1
{AOCVTK130.Value=0}IOR DICVTK130_4 f:1
{DICVTK130_2.Value=1}DMF CV05
{DICVTK130_2.Value=1}DOR LOCVTK130_1
{DICVTK130_2.Value=1}DOR LOCVTK130_2
{DICVTK130_2.Value=1}DOR DICVTK130_2
{DICVTK130_2.Value=1}DOR DICVTK130_4
{DICVTK130_1.Value=1}IMF CV05 f:0

;Event 4 - Station Service Water Pump 1-01 Trip

;SSWP 1-01 Trips
IMF SW01A f:1 k:4

;Event 5 - High Pressure Stop Valve Fails Closed

;HP Stop Valve 3 Failure
IMF TC08C f:1 k:5

;Event 6 - SGTR #3

;SGTR 1 Tube
IMF SG02C f:1 k:6

;Event 7 - ALL Automatic & Manual Rx Trip Failures

;Rx Trip Breakers Jammed Close - All

IMF RP15E f:1

;Event 8 - SG #3 Main Steam Line Fault inside Containment

;S/G 1-03 Main Steam Line Fault inside Containment

Scenario Event Description
Make-Up NRC Scenario 1

IMF MS01C f:0.5 k:6

;Key 9 to reset IA Compressor 1-01
IRF EDR73 f:auto k:9

;Key 10 to reset IA Compressor 1-01
IRF EDR74 f:auto k:10

;Key 14 to reset IA Compressor 1-01
IRF IAR07 f:str/rst k:14

;KEY 11 CCP 1-02 Aux Lube Oil Pump to Auto

IRF CVR06 f:1 k:11

;KEY 12 CCP 1-01 Aux Lube Oil Pump to Off

IRF CVR05 f:0 k:12

;KEY 13 Rx Trip Breakers Open

IRF RPR112 f:2 k:13
IRF RPR113 f:2 k:13

Facility:	CPNPP 1 & 2	Scenario No.:	3	Op Test No.:	Make-Up CPNPP 2021 NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	1 x 10 ⁻⁸ amps following a refueling outage. MDAFWPs are maintaining Steam Generator Water Levels 60-75%. Steam dumps are in Steam Pressure mode. Boron is 1669 ppm (by sample).				
Turnover:	Raise power to 3% per IPO-002A, Plant Startup from Hot Standby, Section 5.4				
Critical Tasks:	<p>CT 1 – Initiate a MSLI or Manually close MSLI valves, due to failure to automatically isolate, prior to exiting EOP-0.0A, Reactor Trip or Safety Injection, or EOP-2.0, Faulted Steam Generator Isolation.</p> <p>CT 2 – Trip reactor coolant pumps within 5 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.</p>				
Event No.	Malf. No.	Event Type*	Event Description		
1	-	R (RO, SRO) N (BOP)	Raise power to 2% to 3%		
2	TP06A TP07B	C (BOP, SRO)	Turbine Plant Cooling Water Pump 1 Trip Turbine Plant Cooling Water Pump 2 Failure to Auto-Start		
3	RP06B	C (RO, SRO) TS (SRO)	N-16 Channel 2 fails high		
4	RX08B RX16B	I (RO, SRO) TS (SRO))	PT-456 PZR Pressure Transmitter fails high, PORV PCV-456 fails 25% open		
5	FW24B	C (BOP, SRO) TS (SRO)	MDAFW Pump 1-02 trips, manual start of TDAFW Pump required		
6	RD09B6 RD04B6 RD04F6 RC19C	M (ALL)	Seismic event, Ejected rod, SBLOCA @ 1500 gpm, Stuck rod		
7	MS02	M (ALL)	Main Steam line leak downstream of the MSIVs (MSLI does not occur automatically)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specifications					

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

SCENARIO SUMMARY Make-Up NRC Scenario 3

***Event 1**

In accordance with turnover instructions, the crew begins raising power to 2% to 3%, 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.

***Event 2**

When the lead examiner is satisfied with the power increase (stable between 2-3%) a trip of the running TPCW Pump will occur. The standby pump will fail to automatically start and manual operator action will be required to start the standby pump. Crew response will be per ABN-306, Turbine Plant Cooling Water System Malfunction, Section 3.0. The crew will start the standby pump and verify other parameters for the system.

***Event 3**

The next event is a failure of the loop 2 N-16 detector high. Tave will rise and pressurizer level will rise. The crew will take manual control of pressurizer level The crew will enter ABN-704, Tc/N-16 Instrument Malfunction, Section 2.0. The SRO will refer to Technical Specifications.

***Event 4**

Pressurizer Pressure channel PT-456 will fail high. PORV PCV-456 will open and when closed will stick at 25% open. The crew will enter ABN-705, Section 2.0, Pressurizer Pressure Instrument Malfunction. The primary action is to close the PORV block valve. The SRO will refer to Technical Specifications.

***Event 5**

After the crew has control of RCS pressure, the Motor Driven Auxiliary Feedwater Pump (MDAFWP) 1-02 will trip. The crew will enter ABN-305, Auxiliary Feedwater System Malfunction. The crew will manually start the Turbine Driven Auxiliary Feedwater Pump (TDAFWP) and feed Steam Generators 1-03 and 1-04 with the TDAFWP. The SRO will refer to Technical Specifications.

***Event 6**

A seismic event occurs; this is a precursor for upcoming events. The crew will enter ABN-907, Acts of Nature, Section 2.0, Earthquake. 120 seconds after the seismic annunciators have come in, Control Rod B6 will partially eject from the core (SBLOCA) and Control Rod F6 will stick at 168 steps on the reactor trip. The reactor will trip and the crew will enter EOP-0.0A, Reactor Trip or Safety Injection. Emergency Boration verification via Safety Injection flow will be required due to the 2 Stuck Control Rods. The crew must secure RCPs within 5 minutes of loss of subcooling.

Event 7

A Main steam line break in the turbine building will occur (downstream of the MSIVs,) as a result of the seismic event, requiring the MSIVs to be manually closed as they will fail to close automatically.

Terminating Criteria

Scenario will be terminated when the crew has RESET RHR Auto Switchover in EOP-1.0A, or at the lead Examiners discretion, Terminate the scenario.

* - *On Lead Examiner's Cue*

Scenario Event Description Make-Up NRC Scenario 3
--

Risk Significance:

- Failure of risk significant systems prior to trip: PORV stuck open
MDAFW Pump trips

- Risk significant core damage sequence: Rod Ejection then Small Break LOCA
Main Steam Line Break

- Risk significant operator actions: Manual start of TDAFWP
Manual Main Steam line Isolation

Scenario Event Description
Make-Up NRC Scenario 3

Critical Task Determination

Critical Task	Safety Significance	Cueing	Measurable Performance Indicators	Performance Feedback
CT-1 – Initiate a MSLI or Manually close MSLI valves, due to failure to automatically isolate, prior to exiting EOP-0.0A, Reactor Trip or Safety Injection, or EOP-2.0, Faulted Steam Generator Isolation.	Take one or more actions that would prevent a challenge to the RCS potentially leading to a PTS concern	SG pressure along with RCS pressure and temperature falling.	The operator will manually close the MSIVs from CB-07.	All MSIV valve light indications will change from Red lit to Green lit and steam flow will go to zero for SGs.
CT-2 – Trip reactor coolant pumps within 5 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.	Take one or more actions that would prevent a challenge to the ability to cool the core during a SBLOCA.	Procedurally driven from EOP-0.0A and EOP-1.0A Foldout pages. Availability of Subcooling indication both on meters and computer.	The operator will secure ALL RCPs using the handswitches on CB-05.	Indication of pump stop including light indication, flow and motor current.
<p>NOTE: (Per NUREG-1021, Appendix D) If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.</p>				

Scenario Event Description
Make-Up NRC Scenario 3

UNIT: 1

PART I TO BE PREPARED BY THE OFF-GOING UNIT SUPERVISOR.
1.0 SHIFT ACTIVITIES:

1.1 **Activities Completed This Shift:** Reactor Dilution to criticality per IPO-002A. IPO-002A Section 5.3 is complete. Low Power Physics Testing. Reactor engineering is working on a reactivity plan.

1.2 **Activities In-Progress:** Maintaining Reactor Power 10-8 amps.

1.3 **Planned Activities:** Continue IPO-002A at Section 5.4 to raise power. Continue power escalation.

2.0 PLANT AND EQUIPMENT STATUS:

2.1 Technical Specification Related Equipment Summary:
None

2.2 Non-Technical Specification Equipment Summary:
None

3.0 General Information: Secondary plant ready for power escalation. SGs being fed by MDAFW Pumps. MSR Prewarming in progress.

4.0 END OF SHIFT REVIEW:
LOGS – RO/BOP X LOGS-NEO X CLOSED eLCOARs ARCHIVED X
OPTS COMPLETED X DAILY ACTIVITIES LIST X LCOARs REVIEWED X

PART II TO BE COMPLETED BY THE ON-COMING UNIT SUPERVISOR.

1.0 CRITICAL PARAMETERS:
MODE: 2 REACTOR POWER: 1x10-8 MWE: 0
RCS TAVE: 557 °F CONTROL ROD POSITION 100 ON BANK D
Cb: 1590 ppm RCS PRESS: 2235 psig

Protected Train – Train A
 Risk Assessment - GREEN

Unit 2 is in Mode 1 at 100% power
 BAT C_B = 7447 ppm

Scenario Event Description
Make-Up NRC Scenario 3

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP					
INITIALIZE to IC-8 and LOAD Make-up – CPNPP 2021 NRC Simulator Scenario 3					
EVENT	TYPE	MALF #	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
2	IMF	TP07B	Turbine Plant Cooling Water Pump 2 Fail to Auto-Start	f:1	K0
7	IMF	SS02A1	MSL Isolation Train A Master Relay Failure	f:1	K0
7	IMF	SS02A2	MSL Isolation Train B Master Relay Failure		
2	IMF	TP06A	Turbine Plant Cooling Water Pump 1 Trip	f:1	K2
2	IMF	TP07B	Turbine Plant Cooling Water Pump 2 Fail to Auto-Start	f:1	K0
3	IMF	RP06B	Channel 2 N-16 fails low	f:100	K3
4	IMF	RX08B	PT-456 PZR Pressure Transmitter fails high	f:2500	K4
4	IMF	RX16B	PORV PCV-456 fails 25% open.	f:25	K4 + 4
4	IRF	RCR24	PORV Block Valve breaker	f:0	K11
5	IMF	FW24B	AFW Pump 1-02 trips	f:1	K5
6	IRF	AN2A_02	Seismic Event	f:4	K6
		AN2A_03	Seismic Event	f:4	K6
	IMF	RD09B6	Ejected Rod B6	f:228	K6 + 120
		RD04B6	Stuck Rod B6 (ejected – for indication only)	f:228	K6 + 120
		RD04F6	Stuck Rod F6	f:168	K6 + 120
		RC19C	SBLOCA	f:1500	K6 + 120 (1)
7	IMF	MS02	Main Steam Line leak downstream of the MSIVs	f:2e+006	K6 + 270
7	IMF	SS02A1	MSL Isolation Train A Master Relay Failure	f:1	K0
7	IMF	SS02A2	MSL Isolation Train B Master Relay Failure		
(1) When SI is actuated at CB-07, {DIRPSIA2.Value=1} MMF RC19C f:1750 r:60 modifies SBLOCA to 1750 gpm (60 sec ramp) <u>OR</u> KEY 7 may be used to modify the malfunction with the 60 sec ramp.					

Scenario Event Description
Make-Up NRC Scenario 3

Simulator Operator: INITIALIZE to IC-8 and LOAD Make-up – CPNPP 2021 NRC Simulator Scenario 3
ENSURE all Simulator Annunciator Alarms are ACTIVE
ENSURE all Control Board Tags are removed
ENSURE Operator Aid reflects current boron conditions (1590 ppm BOL)
ENSURE Rod Bank Update (RBU) is performed (C at 215 / D at 100)
ENSURE Turbine Load Rate set at 10 MWe/minute
Place AFW AUTO START FUSES REMOVED placard on CB-08
ENSURE ASD speakers are ON to half volume
ENSURE procedures in progress are on SRO desk:
- COPY of 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
ENSURE Control Rods are in MANUAL with Bank C at 215 steps and Bank D at 100
ENSURE PCS on CB-06 set to “GTGC MODE2” and on scale
ENSURE Steam Dump pot is set for 6.76 turns
ENSURE Alarms in service for CV-01 and CV-03 on Panel Overview
PLACE Pink MANUAL Magnet (Rectangle) above 1/1-RBSS, Rod Bank Select Switch

Control Room Annunciators in Alarm:

1-ALB-6D-1.1 – SR HI VOLT FAIL
1-ALB-6D-3.1 – SR SHTDN FLUX ALM BLK
PCIP-1.1 – SR TRN A RX TRIP BLK
PCIP-1.3 – AMSAC BLK TURB < 40% PWR C-20
PCIP-1.4 – CNDSR AVAIL STM DMP ARMED C-9
PCIP-1.7 – RX ≤ 50% PWR TURB TRIP PERM P-9
PCIP-2.1 – SR TRN B RX TRIP BLK
PCIP-2.4 – LO TURB PWR ROD WITHDRWL BLK C-5
PCIP-2.5 – SR RX TRIP BLK PERM P-6
PCIP-3.5 – RX & TURB ≤ 10% PWR P-7
PCIP-4.5 – RX ≤ 48% PWR 3-LOOP FLO PERM P-8
PCIP-4.6 – TURB ≤ 10% PWR P-13
1-ALB-7B-1.6 – FW FLUSH VLV NOT CLOSE HV-2166
1-ALB-8A-1.3 – FWPT B TRIP
1-ALB-8A-1.10 – 1 OF 4 TURB STOP VLV CLOSE
1-ALB-9A – Various Heater Drain and Extraction Steam Alarms

Operating Test : NRC Scenario # 3 Event # 1 Page 9 of 42 Event Description: Raise Reactor Power to 2% to 3%

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Examiner Note: The following steps are from 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, Step 5.4.1.B.

- 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.

	RO	WITHDRAW control rods to establish a 0.5 dpm startup rate. [Step 5.4.1.B]
	RO	REDUCE startup rate to 0.2 dpm at approximately 3×10^{-6} amps. [Step 5.4.1.C]
	RO	VERIFY the Power Range channels begin to respond. [Step 5.4.1.D].
	RO	VERIFY Steam Dumps are maintaining temperature. [Step 5.4.1.E]
	RO	VERIFY 1-PCIP, 3.6 TAVE LO LO P-12 is OFF. [Step 5.4.1.G]

Operating Test : <u> NRC </u> Scenario # <u> 3 </u> Event # <u> 1 </u> Page <u> 10 </u> of <u> 42 </u>		
Event Description: <u> Raise Reactor Power to 2% to 3% </u>		
Time	Position	Applicant's Actions or Behavior

	RO	Maintain Reactor Power between 2% and 3%. [Step 5.4.1.H]
<i>When the crew has demonstrated that they can maintain power stable between 2% and 3%, or at Lead Examiner discretion, PROCEED to Event 2.</i>		

Operating Test :	NRC	Scenario #	3	Event #	2	Page	11	of	42
Event Description: TPCW Pump 1-01 Trip. TPCW Pump 1-02 AUTO start fails									
Time	Position	Applicant's Actions or Behavior							

Simulator Operator: When directed, EXECUTE Event 2 (Key 2).
- TP06A, TPCW Pump 1-01 Trip. TP07B, TPCW Pump 1-02 AUTO start fails.

Indications Available:

9A-3.10 – TPCW PMP 1 OVRLOAD/TRIP

1-FI-3061, TPCW PMP DISCH FLO, indicating 0 gpm

1-HS-3060, TPCW PMP 1, Orange MISMATCH light LIT AND White TRIP light LIT

1-HS-3139, TPCW PMP 2, Green light ON – Red light OFF, indicating pump NOT running

	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE TPCW Pump 1-01 has Tripped AND TPCW Pump 1-02 has failed to automatically start.
Examiner Note: The crew may immediately start TPCW Pump 1-02 based on ODA-102 guidance which allows the operator to manually perform an action that should have occurred automatically.		
	BOP	PERFORM 1-ALB-9A, Window 3.10, TPCW PMP OVRLOAD/TRIP
<p>CAUTION: If TPCW pump damage is indicated, the 86M relay should <u>NOT</u> be reset until Maintenance personnel have been notified to investigate cause of trip condition. Placing handswitch in STOP will reset 86M relay (white TRIP light).</p>		
	BOP	ENSURE a standby TPCW pump is operating: [Step 1] <ul style="list-style-type: none"> • 1-HS-3139, TPCW PMP 2
	BOP	<ul style="list-style-type: none"> • START TPCW Pump 1-02 using 1-HS-3139
Examiner Note: The following step is Not Applicable as the operator should start TPCW pump 1-02 and verify it is running prior to performing this step.		

Operating Test :	NRC	Scenario #	3	Event #	2	Page	12	of	42
Event Description: TPCW Pump 1-01 Trip. TPCW Pump 1-02 AUTO start fails									
Time	Position	Applicant's Actions or Behavior							

	BOP	IF NO TPCW pump operating, THEN GO to ABN-306 for Loss of TPCW. [Step 1A]
	BOP	IF TPCW Pump 1-01 tripped, THEN REFER to ABN-306 for TPCW Pump Malfunction. [Step 1B]
	US	DIRECT entry into ABN-306, Turbine Plant Cooling Water System Malfunction, Section 3.
<u>Simulator Operator:</u> When contacted as the prompt team, acknowledge the request.		
<u>Simulator Operator:</u> When contacted about status of TPCW Pump 1-01, wait 3 minutes and REPORT Phase 'B' 50/51 overcurrent relays are tripped at the breaker and an acrid odor is present at the TPCW Pump.		
<u>Examiner Note:</u> The following steps are from ABN-306, TPCW System Malfunction.		
CAUTION: Damage to the pump may result from prolonged operation at flow below 4,700 gpm.		
	BOP	VERIFY TPCW Head Tank Level – GREATER THAN 6%. [Step 3.3.1] <ul style="list-style-type: none"> • 1-LI-3051, TPCW HEAD TK LVL • L6907A, TPCW HEAD TANK LEVEL
NOTE: With standby TPCW Pump handswitch in AUTO, the pump will AUTO start if the running pump trips, provided LO-LO TPCW Tank level signal is <u>NOT</u> present.		
	BOP	VERIFY at least ONE TPCW Pump – RUNNING: [Step 3.3.2] <ul style="list-style-type: none"> • 1-HS-3139, TPCW PMP 2
	BOP	VERIFY TPCW Head Tank Level – GREATER THAN 20%. [Step 3.3.3] <ul style="list-style-type: none"> • 1-LI-3051, TPCW HEAD TK LVL • L6907A, TPCW HEAD TANK LEVEL

Operating Test :	<u> NRC </u>	Scenario #	<u> 3 </u>	Event #	<u> 2 </u>	Page	<u> 13 </u>	of	<u> 42 </u>
Event Description: TPCW Pump 1-01 Trip. TPCW Pump 1-02 AUTO start fails									
Time	Position	Applicant's Actions or Behavior							

	BOP	VERIFY 1-FI-3061, TPCW PMP DISCH FLO – WITHIN LIMITS [Step 3.3.4] (F2701A01, is a one-minute average of TPCW flow).
		<ul style="list-style-type: none"> • VERIFY TPCW flow – GREATER THAN 4700 GPM and LESS THAN 22000 GPM

CAUTION: Unless cause of trip is known, TPCW Pump 86M Relay should not be reset until Maintenance Department has investigated cause of trip. Placing handswitch in STOP resets 86M Relay (white TRIP light).

	BOP	CHECK BOTH TPCW Pumps – NOT tripped: [Step 3.3.5] <ul style="list-style-type: none"> • 1-HS-3139, TPCW PMP 2 RUNNING
		<ul style="list-style-type: none"> • Locally PERFORM the following: [Step 3.3.5 RNO] <ul style="list-style-type: none"> • INSPECT TPCW Pump 1-01 for signs of damage, smoke, burn odors, overheating (TB 778) [Step 3.3.5 RNO a] • INSPECT TPCW Pump 1-01 breaker for dropped relay flag (TB SWGR Rm) [Step 3.3.5 RNO b] <ul style="list-style-type: none"> • 1A3/3/BKR, TURBINE PLANT COOLING WATER PUMP 1-01 MOT BKR • NOTIFY Maintenance Department of any abnormal condition or finding [Step 3.3.5 RNO c]

	BOP	VERIFY TPCW Pumps – ONLY ONE RUNNING: [Step 3.3.6] <ul style="list-style-type: none"> • 1-HS-3139, TPCW PMP 2
--	-----	--

	US	INITIATE Issue Report per STA-421, as applicable. [Step 3.3.7]
--	----	--

When the plant is stable or at Lead Examiner's discretion, PROCEED to Event 3.

Operating Test :	NRC	Scenario #	3	Event #	3	Page	14	of	42
Event Description: Channel 2 N-16 fails high									
Time	Position	Applicant's Actions or Behavior							

Simulator Operator: When directed, EXECUTE Event 3 (Key 3). Failure of channel 2 N-16 detector high.

Indications Available:

1-JI-421B – N-16 meter will rise
 6D-1.10 – AVE Tave Tref DEV
 6D-1.7 – ANY CONTROL ROD BANK AT LO LIMIT
 6D-2.7 – ANY CONTROL ROD BANK AT LO-LO LIMIT
 Tave will rise

	RO	RESPOND to Annunciator Procedure Alarms.
	RO	RECOGNIZE 1-JI-421B has failed high
	RO	RESPONDS to ALM-0064A, 1.10 which will direct entry into ABN-704, Tc / N-16 Instrument Malfunction
	US	Enter ABN-704, Tc / N-16 Instrument Malfunction

- 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	Verify Control Rods in – MANUAL [Step 1]
Examiner Note: The RO may place 1-LK-459 or 1FK-121 in manual to control PRZR level or may leave in auto as charging will respond slowly to this failure		
	RO	VERIFY Pressurizer Level maintained at program [Step 2]
	RO	SELECT the failed channel on: [Step 3] <ul style="list-style-type: none"> • 1-TS-412T, Tave CHAN DEFEAT

Operating Test :	<u> NRC </u>	Scenario #	<u> 3 </u>	Event #	<u> 3 </u>	Page	<u> 15 </u>	of	<u> 42 </u>
Event Description: Channel 2 N-16 fails high									
Time	Position	Applicant's Actions or Behavior							

	BOP	VERIFY Steam Dump System: [Step 4] <ul style="list-style-type: none"> • NOT actuated • NOT armed
	RO	RESTORE Tave to within 1°F of Tref. [Step 5]
	RO	SELECT the failed channel on: [Step 6] <ul style="list-style-type: none"> • 1/1-JS-411E, N16 PWR CHAN DEFEAT
	RO	ENSURE a valid N16 channel is supplying the recorder: [Step 7] 1/1-TS-411E, 1-TR-411 CHAN SELECT
	RO/US	VERIFY Steam Dumps not armed by observing the following light DARK: TURB LOAD REJ STM DMP ARMED C-7 (PCIP - 3.4) [Step 8]
	BOP	Step Not Applicable: IF Steam Dumps were blocked in Step 4, THEN RESTORE to service by returning following switches to ON: [Step 9] <ul style="list-style-type: none"> • 43/1-SDA, STM DMP INTLK SELECT • 43/1-SDB, STM DMP INTLK SELECT
	RO	CHECK 1-LK-459, PRZR LVL CTRL AND 1-FK-121, CCP CHR G FLO CTRL in AUTO [Step 10]
	US	Within 72 hours, HAVE I&C place bistable test switches for failed channel in CLOSED position per Attachments 1 and 2 [Step 11]
	US	VERIFY appropriate alarms and trip status lights ON per Attachment 3 AND NOTE verification in Unit Log. [Step 12]

Operating Test :	<u> NRC </u>	Scenario #	<u> 3 </u>	Event #	<u> 3 </u>	Page	<u> 16 </u>	of	<u> 42 </u>
Event Description: Channel 2 N-16 fails high									
Time	Position	Applicant's Actions or Behavior							

	US	REFER to Technical Specifications listed in Section 3.1 of this procedure to determine applicable LCOAR conditions [Step 13]
		<ul style="list-style-type: none"> • LCO 3.3.1 - Reactor Trip System (RTS) Instrumentation (Function 6 and 7) • Condition E – One Channel inoperable
	US	ENTER into issue reporting program per STA-421 [Step 14]
<i>When channel 1 N-16 detector is defeated, or at Lead Examiner discretion, PROCEED to Event 4.</i>		

Operating Test :	NRC	Scenario #	3	Event #	4	Page	17	of	42
Event Description: PT-456 fails High, PORV PCV-456 fails open and fails to reseal, remains 25% open									
Time	Position	Applicant's Actions or Behavior							

Simulator Operator: When directed, EXECUTE Event 4 (Key 4).
 - RX08B, PZR Pressure Transmitter PT-456 fails high
 - RX16B, PORV PCV-456 fails open and fails to reseal remains 25% open

Indications Available:

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
 1-PI-456, PRZR PRESS CHAN II failed high
 1/1-PCV-456, PRZR PORV indicates mid position

	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE pressurizer 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]
		<ul style="list-style-type: none"> • IF PORV OPEN and RCS Pressure < 2335 psig, THEN CLOSE affected PORV and CLOSE associated block valve. [Step 2.3.1 RNO]
	◇ RO ◇	<ul style="list-style-type: none"> • PLACE 1/1-PCV-456, PRZR PORV in CLOSE. [Step 2.3.1 RNO]
	◇ RO ◇	<ul style="list-style-type: none"> • PLACE 1/1-8000B, 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]

Operating Test :	NRC	Scenario #	3	Event #	4	Page	18	of	42
Event Description: PT-456 fails High, PORV PCV-456 fails open and fails to reseal, remains 25% open									
Time	Position	Applicant's Actions or Behavior							

	◇ RO ◇	ADJUST 1-PK-455A for current RCS pressure. [Step 2.3.3]
	RO	TRANSFER to an Alternate Controlling Channel, if required. [Step 2.3.4] <ul style="list-style-type: none"> 1/1-PS-455F, PRZR PRESS CTRL CHAN SELECT to the 455/458 position
	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 selected to recorder. [Step 2.3.7] <ul style="list-style-type: none"> 1/1-PS-455G, 1-PR-455 PRZR PRESS SELECT already selected to the 455 position (valid channel).
	RO	IF necessary, OPEN PORV closed in Step 1 RNO to AUTO and ENSURE it remains CLOSED. [Step 2.3.8] <ul style="list-style-type: none"> DETERMINES 1-PCV-456 is in mid position and should remain in closed.
	RO	If necessary, OPEN block valve closed in step 1. [Step 2.3.9] <ul style="list-style-type: none"> DETERMINES 1-PCV-456 is in mid position and Block Valve 1/1-8000B should remain in closed.
<p>NOTE: It may be necessary to leave the PORV Block Valve closed to aid in establishing a water seal. Reference ALM-0053A/B.</p>		
	US/RO	Within one hour, VERIFY PCIP Window 2.6 - PRZR PRESS SI BLK PERM P-11 – DARK. [Step 2.3.10]

Operating Test :	NRC	Scenario #	3	Event #	4	Page	19	of	42
Event Description: PT-456 fails High, PORV PCV-456 fails open and fails to reseal, remains 25% open									
Time	Position	Applicant's Actions or Behavior							

	US/RO	VERIFY other instruments on common instrument line – NORMAL. [Step 2.3.11]
		<ul style="list-style-type: none"> VERIFY Loop 2 Instruments LT-460 responding normally per Attachment 1.
<div style="border: 1px solid black; padding: 5px;"> <p>NOTE:</p> <ul style="list-style-type: none"> 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>u</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). </div>		
<p>Examiner Note: Technical Specification 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits do NOT apply in Mode 2.</p>		
	US	EVALUATE Technical Specifications. [Step 2.3.14]
		<ul style="list-style-type: none"> LCO 3.3.1.E, Reactor Trip System Instrumentation. (Functions 6, Overtemperature N-16 & 8.b, Pressurizer Pressure High)
		<ul style="list-style-type: none"> CONDITION E - One channel inoperable. ACTION E.1 - Place channel in trip within 72 hours, <u>OR</u> ACTION E.2 - Be in MODE 3 within 78 hours.
<p>Examiner Note: Technical Specification 3.3.1, Reactor Trip System (RTS) Instrumentation, Function 8.a, “Pressurizer Pressure LOW” does NOT apply in current plant conditions. Must be in MODE 1 and above the P-7 (At Power Permissive) interlock for this Function to apply.</p>		
		<ul style="list-style-type: none"> LCO 3.3.2.D, ESFAS Instrumentation. (Function 1.d, Pressurizer Pressure Low)
		<ul style="list-style-type: none"> CONDITION D - One channel inoperable. ACTION D.1 - Place channel in trip within 72 hours, <u>OR</u> ACTION D.2.1 - Be in MODE 3 within 78 hours, <u>AND</u> ACTION D.2.2 - Be in MODE 4 within 84 hours.

Operating Test :	<u> NRC </u>	Scenario #	<u> 3 </u>	Event #	<u> 4 </u>	Page	<u> 20 </u>	of	<u> 42 </u>
Event Description: PT-456 fails High, PORV PCV-456 fails open and fails to reseal, remains 25% open									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> LCO 3.3.2.L, ESFAS Instrumentation. (Function 8.b, Pressurizer Pressure P-11)
		<ul style="list-style-type: none"> CONDITION L - One or more required channel(s) inoperable. <ul style="list-style-type: none"> ACTION L.1 - Verify interlock is in required state for existing unit condition within 1 hour, <u>OR</u> ACTION L.2.1 - Be in MODE 3 within 7 hours, <u>AND</u> ACTION L.2.2 - Be in MODE 4 within 13 hours.
<u>Simulator Operator:</u> When contacted to remove power to 1/1-8000B, PRZR PORV BLK VLV, EXECUTE remote function RCR24 (Key 11), 1/1-8000B to OFF.		
		<ul style="list-style-type: none"> LCO 3.4.11.B, Pressurizer Power Operated Relief Valves (PORVs)
		<ul style="list-style-type: none"> CONDITION B - One PORV inoperable and not capable of being manually cycled. <ul style="list-style-type: none"> ACTION B.1 – Close associated block valve within 1 hour, <u>AND</u> ACTION B.2.1 – Remove power from associated block valve within 1 hour, <u>AND</u> ACTION B.2.2 – Restore PORV to OPERABLE within 72 hours.
	US	INITIATE a work request per STA-606. [Step 2.3.15]
	US	INITIATE a SMART Form per STA-421. [Step 2.3.16]
<i>When Technical Specifications are addressed, or at Lead Examiner discretion, PROCEED to Event 5.</i>		

Operating Test :	NRC	Scenario #	3	Event #	5	Page	21	of	42
Event Description: Motor Driven Auxiliary Feedwater Pump (MDAFWP) 1-02 trip									
Time	Position	Applicant's Actions or Behavior							

Simulator Operator: When directed, EXECUTE Event 5 (Key 5).
- FW24B, Motor Driven Auxiliary Feedwater Pump (MDAFWP) 1-02 trip.

Indications Available:

8B-4.3 - MD AFWP 1/2 OVRLOAD/TRIP

1-HS-2451A, MD AFWP 2, amber MISMATCH and green PUMP lights LIT

SGs 1-03 & 1-04 AFW FLO Indicators indicating (0) GPM (1-FI-2465A/C and 1-FI-2466A/C)

MD AFWP 2 CURRENT indicating (0) AMPS (1-II-2451)

MD AFWP 2 DISCH PRESS indicating (0) PSIG (1-PI-2454A)

MD AFWP 2 DISCH FLO indicating (0) GPM (1-FI-2457A)

SGs 1-03 & 1-04 LVL (NR) decreasing (1-LI-553/554 SGs 1-03/4 Controlling NR Channels)

	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE trip of Motor Driven Auxiliary Feedwater Pump 1-02.
	US	DIRECT performance of ABN-305, Auxiliary Feedwater System Malfunction
Examiner Note: The following steps are from ABN-305, Auxiliary Feedwater System Malfunction		
Examiner Note: The crew may immediately start the TDAFW Pump to arrest the drop in Steam Generator Water Level and follow-up their actions with ABN-305		
<p>CAUTION: Placing the pump handswitch in STOP OR PULL-OUT with the pump tripped (white TRIP light) will reset the 86M relay (white TRIP light) and may result in an automatic restart if the handswitch is returned to AUTO.</p>		
	US/BOP	DETERMINE which MD AFW Pump is malfunctioning <u>AND</u> verify affected pump - TRIPPED. [Step 3.3.1]
		<ul style="list-style-type: none"> • DETERMINES AFW Pump 1-02 has tripped. <ul style="list-style-type: none"> • 1-HS-2451A, MD AFWP 2, amber MISMATCH and green PUMP lights LIT

Operating Test :	NRC	Scenario #	3	Event #	5	Page	22	of	42
Event Description: Motor Driven Auxiliary Feedwater Pump (MDAFWP) 1-02 trip									
Time	Position	Applicant's Actions or Behavior							

CAUTION: Do not exceed 800 gpm total flow on one Motor Driven Auxiliary Feedwater Pump.

BOP

VERIFY at least one AFW Pump running. [Step 3.3.2]

- MDAFWP 1-01 is RUNNING

CAUTION: Do NOT operate both Motor-Driven Auxiliary Feedwater Pumps at the same time with the trains cross-connected.

BOP

Verify Steam Generator levels - NORMAL. [Step 3.3.3]

- DETERMINES Steam Generator 3 & 4 levels trending down
- IF the TD AFW Pump is available, THEN START the TD AFW Pump AND FEED the two steam generators NOT being supplied by the MD AFW Pump. [Step 3.3.3 RNO]
- START the TDAFW Pump and FEED Steam Generators 1-03 and 1-04
- OPEN 1-HS-2452-1, AFWPT STM SPLY VLV MSL 4 from SG 1-04
- OPEN 1-HS-2452-2, AFWPT STM SPLY VLV MSL 1 from SG 1-01

Examiner Note: The crew may feed all 4 Steam Generators with the TDAFWP to ensure minimum flow requirements are met.

Simulator Operator: When contacted, wait 2 minutes and REPORT the breaker for MD AFW Pump 1-02 tripped on overcurrent and the motor is hot to the touch.

US

DISPATCH a NEO to check breaker status of affected auxiliary feedwater pump. [Step 3.3.4]

- 1EA2/13/BKR, 1APMD2, AUXILIARY FEEDWATER PUMP 1-02 BKR (SFGD 852 Rm 1-103)

Operating Test :	<u> NRC </u>	Scenario #	<u> 3 </u>	Event #	<u> 5 </u>	Page	<u> 23 </u>	of	<u> 42 </u>
Event Description: Motor Driven Auxiliary Feedwater Pump (MDAFWP) 1-02 trip									
Time	Position	Applicant's Actions or Behavior							

	BOP	Verify MD AFW Pump suction pressure greater than or equal to 10 psig. [Step 3.3.5]
	US	Dispatch an NEO to affected MD AFW Pump Room to inspect pump condition. [Step 3.3.6]
		<ul style="list-style-type: none"> • Pump casing and discharge piping at ambient temperature • Pump and pump motor – NO APPARENT DAMAGE • No excessive leakage
		<ul style="list-style-type: none"> • IF pump casing OR discharge piping temperature indicates possible steam binding AND there is NO apparent damage, THEN PERFORM the following: Step is N/A [Step 3.3.6 RNO a]
	US	<ul style="list-style-type: none"> • If damage to motor or pump is apparent, or excessive leakage is found, THEN PERFORM the following: [Step 3.3.6. RNO b]
		<ul style="list-style-type: none"> • REFER to Technical Specification 3.7.5 for LCO. [Step 3.3.6 RNO b.1]]
		<ul style="list-style-type: none"> • LCO 3.7.5, Auxiliary Feedwater (AFW) System
		<ul style="list-style-type: none"> • CONDITION B - One AFW train inoperable for reasons other than Condition A. • ACTION B.1 - Restore AFW train to OPERABLE status within 72 hours.
		<ul style="list-style-type: none"> • COMPLETE a Condition Report per STA-421 [Step 3.3.6 RNO b.2]]
		<ul style="list-style-type: none"> • REFER to STA-706 [Step 3.3.6 RNO b.3]]
		<ul style="list-style-type: none"> • REFER to EPP-201 [Step 3.3.6 RNO b.4]]
		<ul style="list-style-type: none"> • RESTORE Auxiliary Feedwater System to Operable status per OPT-206A/B. [Step 3.3.6 RNO b.5]]
		<p>VERIFY affected AFW Pump is required to maintain Steam Generator levels. [Step 3.3.7]</p> <ul style="list-style-type: none"> • MDAFWP 1-02 is NOT required to maintain SG Water Levels
		GO TO procedure and step in effect. [Step 3.3.8]
<p><i>When Steam Generator Levels are being maintained between 60% and 75%, and Technical Specifications have been addressed, or at Lead Examiner discretion, PROCEED to Event 6.</i></p>		

Operating Test : <u> NRC </u> Scenario # <u> 3 </u> Event # <u> 6 & 7 </u> Page <u> 24 </u> of <u> 42 </u>		
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure		
Time	Position	Applicant's Actions or Behavior

Simulator Operator: When directed, EXECUTE Event 6 (Key 6).
 - ALB-02A-2.1, Seismic Monitoring System Activation.
 - ALB-02A-3.1, Operating Basis Earthquake Exceedance.

Indications Available:

2A-2.1 – SEISMIC MONITORING SYSTEM ACTIVATION

2A-3.1 – OBE EXCEEDANCE

YELLOW OBE light on Seismic Monitoring Panel

RED EVENT light on Seismic Monitoring Panel

	BOP	RESPOND to Annunciator Alarm Procedures.
--	-----	--

	US	DIRECT performance of ABN-907, Acts of Nature, Section 2.0, Earthquake.
--	----	---

- NOTE:**
- During an actual seismic event, evaluations and inspections should be completed within four hours of the event with the exception of the operator pre-shutdown walkdown inspection to verify no damage or changes to plant equipment. Walkdowns should be completed within eight hours of the event. Results of evaluations and inspections should be reported to the NRC at the end of the 8 hours.
 - [C] ● Restart following a seismic event induced trip of one or both Units cannot be initiated until it is confirmed that the OBE was not exceeded AND that the seismic event did not cause any damage.
 - [C] ● Seismic event induced damage to one or both Units is required to be treated as if the OBE had been exceeded.
 - [C] ● The PCMCIA card with the seismic data should only be removed by the System Engineer or his designee.

Simulator Operator: As Security contact the Control Room and report that ground motion was felt in the Safeguards Building

Examiner Cue: The Seismic Monitoring Panel is NOT Simulated in the Simulator. If the Seismic Monitoring Panel attempted to be referenced by BOP, inform the BOP that the “Yellow OBE” light and the “Red Event” light are ILLUMINATED.

Operating Test :	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>6 & 7</u>	Page	<u>25</u>	of	<u>42</u>
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

	US	IF there are indications (i.e. movement felt or report from government agencies) of a seismic event without an alarm from the Seismic Monitoring System, <u>THEN</u> [Step 2.3.1]
		<ul style="list-style-type: none"> MONITOR local news media for reports of a seismic event. [Step 2.3.1.a]
		<ul style="list-style-type: none"> CHECK: USGS Website link on the Operations Department Website for the following information: [Step 2.3.1.b] <ul style="list-style-type: none"> - Confirmation of an earthquake. - earthquake magnitude - earthquake epicenter
		<ul style="list-style-type: none"> CONTACT System Engineering to evaluate USGS information to determine whether OBE has been exceeded. [Step 2.3.1.c]
	US	CONTACT I&C to perform channel operational test per INC-7694A, Section 8.3 on the Seismic Monitoring System. [Step 2.3.2] <u>AND</u> VERIFY COT SAT.
<p><u>NOTE:</u></p> <p>[C]</p> <ul style="list-style-type: none"> If the Seismic Monitoring Systems declares that the OBE was indeed exceeded, RNO steps (a) thru (c) can not be used to override the OBE exceedance conclusion but can only serve to verify that a seismic event has indeed occurred. Step 3 should not be delayed and should be performed in parallel with Step 2. 		
	BOP	DETERMINE Control Room Seismic Monitoring annunciators have alarmed. [Step 2.3.3]
		<ul style="list-style-type: none"> 1-ALB-2A, window 2.1
		<ul style="list-style-type: none"> 1-ALB-2A, window 3.1
		<ul style="list-style-type: none"> Red Event light
		<ul style="list-style-type: none"> Yellow OBE light
	CREW	Prompt Operator Actions to be completed within 4 hours of the seismic event: [Step 2.3.4]
		<ul style="list-style-type: none"> Primary coolant and secondary system radiation, temperature, pressure, and flow parameters for changes and excursions coincident with the earthquake.
<p>SBLOCA will occur 120 seconds after the seismic annunciators are received. MSL leak downstream of the MSIVs will occur 270 seconds after the seismic annunciators are received.</p>		

Operating Test : <u> NRC </u> Scenario # <u> 3 </u> Event # <u> 6 & 7 </u> Page <u> 26 </u> of <u> 42 </u>		
Event Description: <u> Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure </u>		
Time	Position	Applicant's Actions or Behavior

Simulator Operator: VERIFY Event 7 starts on delay of Key 6 + 120 seconds
 - RD06H8, Ejected Rod, SBLOCA 1500 gpm
 - RD04F6, Stuck Rod, Steam leak downstream of MSIVs, MSLI Failure

Indications Available:

2A-2.8 – ANY CNTMT SMP PMP RUN
 2B-4.12 – CNTMT FN CLR 1 & 2 CNDS FILL RATE HI
 2B-3.12 – CNTMT FN CLR 3 & 4 CNDS FILL RATE HI
 5B-3.4 – PRZR 1 OF 4 PRESS LO
 5B-4.4 – PRZR 1 OF 4 SI PRESS LO
 5B-3.6 – PRZR LVL LO
 5C-1.2 – PRZR LVL DEV LO
 5C-3.3 – PRZR PRESS LO BACKUP HTRS ON

	RO/BOP	RECOGNIZE Pressurizer level and pressure – LOWERING.
--	--------	--

Examiner Note: Crew may manually initiate Reactor Trip and Safety Injection prior to an automatic Reactor Trip and Safety Injection occurring.

	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.

Simulator Operator: When the crew initiates SI from CB-07, RCS leak rate should increase to 1750 gpm with a 60 second ramp. If crew does not manually initiate Safety Injection from CB-07, KEY 7 should be used to increase leak rate.

	RO	VERIFY Reactor Trip: [Step 1]
--	----	-------------------------------

- VERIFY Reactor Trip Breakers – OPEN. [Step 1.a]
- VERIFY Neutron flux – DECREASING. [Step 1.a]
- IDENTIFY ONE Control Rod Position Rod Bottom Lights – NOT LIT and ONE other Control Rod indicates Ejected [Step 1.b]

	BOP	VERIFY Turbine Trip: [Step 2]
--	-----	-------------------------------

- VERIFY all HP Turbine Stop Valves – CLOSED. [Step 2]

Operating Test :	NRC	Scenario #	3	Event #	6 & 7	Page	27	of	42
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

	BOP	VERIFY Power to AC Safeguards Buses: [Step 3]
		<ul style="list-style-type: none"> VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 3.a]
		<ul style="list-style-type: none"> VERIFY both AC Safeguards Buses – ENERGIZED. [Step 3.b]
	RO	CHECK SI Status: [Step 4]
		<ul style="list-style-type: none"> Check if SI is Actuated: [Step 4.a]
		<ul style="list-style-type: none"> SI actuation as indicated on the First Out Annunciator 1-ALB-6C.
		<ul style="list-style-type: none"> SI Actuated blue status light - ON
		<ul style="list-style-type: none"> VERIFY Both Trains SI Actuated: [Step 4.b]
		<ul style="list-style-type: none"> SI Actuated blue status light - ON <u>NOT</u> FLASHING
Examiner Note: RCS subcooling should be monitored per the Foldout Page of EOP-0.0A and RCPs secured when subcooling is lost.		
CRITICAL TASK STATEMENT	Trip reactor coolant pumps within 5 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.	
Subcooling less than 25°F Start Time: _____		
RCPs Tripped Stop Time: _____		
Examiner Note: Emergency Boration flow will be credited by using SI Flow. The crew should verify Emergency Boration flow using ABN-107, Attachment 4, Transfer of Charging Pump Suction to the RWST OR The Job Aid.		
Examiner Note: The following steps are from ABN-107, Attachment 4; Transfer of Charging Pump Suction to the RWST OR The Job Aid to verify Emergency Boration.		
CAUTION: Injecting through a CCP SI ISOL VLV (8801A/B) requires CCP SI injection check valve leak test within 24 hours per SR 3.4.14.1 (requires MODE 3, 4, or 5).		

Operating Test :	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>6 & 7</u>	Page	<u>28</u>	of	<u>42</u>
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

	RO	IF Safety Injection actuated (1/1-LCV-112D <u>OR</u> 1/1-LCV-112E OPEN), THEN perform the following steps: [Step 1]
		<ul style="list-style-type: none"> • VERIFY ONE of the following valves OPEN: [Step 1.a] <ul style="list-style-type: none"> • 1/1-LCV-112D, RWST TO CHRG PMP SUCT VLV. OR • 1/1-LCV-112E, RWST TO CHRG PMP SUCT VLV.
		<ul style="list-style-type: none"> • VERIFY the following valves CLOSED: [Step 1.b] <ul style="list-style-type: none"> • 1/1-LCV-112B, VCT TO CHRG PMP SUCT VLV. <u>AND</u> • 1/1-LCV-112C, VCT TO CHRG PMP SUCT VLV.
		<ul style="list-style-type: none"> • VERIFY at least ONE CCP running: [Step 1.c] <ul style="list-style-type: none"> • 1/1-APCH1, CCP1 • 1/1-APCH2, CCP2
		<ul style="list-style-type: none"> • VERIFY 1-FI-917, CCP SI FLOW indication. [Step 1.d]
		<ul style="list-style-type: none"> • IF CCP SI FLOW can NOT be verified, THEN initiate Emergency Boration Flow per another method of ABN-107. [Step 1.e]
<div style="border: 1px solid black; padding: 5px;"> <p>NOTE: TDM-201A/B provides equivalency values for boration from 2400 ppm source and a 7000 ppm source. A conservative approach is to borate the entire volume required for the condition from the 7000 ppm source once boration flow from the 2400 ppm source is terminated.</p> </div>		
		<ul style="list-style-type: none"> • WHEN the RWST is isolated (1/1-LCV-112D <u>AND</u> 1/1-LCV-112E CLOSED) per the applicable ERG, THEN initiate Emergency Boration Flow per another method of ABN-107 <u>until the desired amount of boration volume is injected</u> (Reference Attachment 7 of ABN-107). [Step 1.f]
<p>Examiner Note: EOP-0.0A, Attachment 2 steps performed by BOP are identified later in the scenario.</p>		

Operating Test :	NRC	Scenario #	3	Event #	6 & 7	Page	29	of	42
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

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]

Examiner Note: The TDAWP may be used to feed all four SGs.

RO

VERIFY AFW Alignment [Step *6]

- VERIFY MDAFW 1-01 Pump – RUNNING feeding SG 1-01 and 1-02, MDAFW 1-02 Pump – TRIPPED, [Step 6.a]
- TDAFW Pump RUNNING – feeding SG 1-03 and 1-04 [Step 6.b]
- VERIFY AFW total flow – GREATER THAN 460 GPM. [Step 6.c]
- VERIFY AFW valve alignment - PROPER ALIGNMENT. [Step 6.d]

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]

Operating Test :	NRC	Scenario #	3	Event #	6 & 7	Page	30	of	42
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

CRITICAL TASK STATEMENT	Initiate a MSLI or Manually close MSLI valves, due to failure to automatically isolate, prior to exiting EOP-0.0A, Reactor Trip or Safety Injection, or EOP-2.0, Faulted Steam Generator Isolation.								
	RO	CHECK if Main Steam lines should be ISOLATED: [Step *8]							
		<ul style="list-style-type: none"> VERIFY the following: [Step 8.a] <ul style="list-style-type: none"> Containment pressure – GREATER THAN 6.0 PSIG. Steam Line pressure – LESS THAN 610 PSIG. 							
CT-1		<ul style="list-style-type: none"> VERIFY Main Steam Line Isolation – COMPLETE. [Step 8.b] 							
		<ul style="list-style-type: none"> Determines Main Steam Isolation NOT complete with steam flow indicated on all four Steam Generators 							
		<ul style="list-style-type: none"> Manually INITIATE a Main Steam Line Isolation. [Step 8.b RNO] 							
		<ul style="list-style-type: none"> PLACE 1-HS-2337A, MSL ISOL MAN ACT / RESET in CLOSE position and VERIFY Main Steam Line Isolation Actuation <u>OR</u> 							
		<ul style="list-style-type: none"> PLACE 1-HS-2337B, MSL ISOL MAN ACT / RESET in CLOSE position and VERIFY Main Steam Line Isolation Actuation <u>OR</u> 							
Examiner Note: Crew may manually initiate MSLI on Step 8 or Step 9, depending on timing of the event.									
CRITICAL TASK STATEMENT	Initiate a MSLI or Manually close MSLI valves, due to failure to automatically isolate, prior to exiting EOP-0.0A, Reactor Trip or Safety Injection, or EOP-2.0, Faulted Steam Generator Isolation.								
	RO	CHECK RCS Temperature: [Step *9]							
		<ul style="list-style-type: none"> VERIFY RCS Average Temperature – STABLE AT OR TRENDING TO 557°F. [Step 9] - Less than 557°F 							
		<ul style="list-style-type: none"> STOP dumping steam. [Step 9.a RNO] 							
		<ul style="list-style-type: none"> IF cooldown continues, THEN REDUCE total AFW flow as necessary to minimize cooldown. [Step 9.b RNO] <ul style="list-style-type: none"> Maintaining a minimum of 460 gpm UNTIL narrow range level greater than 43% (50% ADVERSE CONTAINMENT) in at least one SG. As necessary to maintain SG levels WHEN narrow range level greater than 43% (50% FOR ADVERSE CONTAINMENT) in at least one SG 							

Operating Test :	NRC	Scenario #	3	Event #	6 & 7	Page	31	of	42
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> IF TDAFW pump is not required to maintain greater than 460 gpm flow, THEN stop TDAFW pump.
CT-1	US/RO	<ul style="list-style-type: none"> IF cooldown continues, THEN CLOSE Main Steam Isolation Valves. [Step 9.c RNO]
		<ul style="list-style-type: none"> Manually INITIATE a Main Steam Line Isolation. [Step 9.c RNO]
		<ul style="list-style-type: none"> PLACE 1-HS-2337A, MSL ISOL MAN ACT / RESET in CLOSE position and VERIFY Main Steam Line Isolation Actuation <u>OR</u>
		<ul style="list-style-type: none"> PLACE 1-HS-2337B, MSL ISOL MAN ACT / RESET in CLOSE position and VERIFY Main Steam Line Isolation Actuation <u>OR</u>
	RO	CHECK PRZR Valve Status: [Step 10]
		<ul style="list-style-type: none"> VERIFY PRZR Safeties – CLOSED. [Step 10.a]
		<ul style="list-style-type: none"> VERIFY Normal PRZR Spray Valves – CLOSED. [Step 10.b]
		<ul style="list-style-type: none"> VERIFY PORVs – CLOSED. [Step 10.c] (PCV-456 in Mid position)
		<ul style="list-style-type: none"> VERIFY Power to at least 1 Block Valve – AVAILABLE. [Step 10.d]
		<ul style="list-style-type: none"> VERIFY Block Valves – AT LEAST ONE OPEN. [Step 10.e]
CRITICAL TASK STATEMENT		Trip reactor coolant pumps within 5 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.
Subcooling less than 25°F Start Time: _____		
RCPs Tripped Stop Time: _____		
	RO	CHECK if RCPs Should Be Stopped: [Step 11]
		<ul style="list-style-type: none"> VERIFY RCS subcooling – LESS THAN 25°F (55°F FOR ADVERSE CONTAINMENT). [Step 11.a]
		<ul style="list-style-type: none"> VERIFY ECCS pumps - AT LEAST ONE RUNNING [Step 11.b]
		<ul style="list-style-type: none"> CCP -OR- SI pump

Operating Test :	NRC	Scenario #	3	Event #	6 & 7	Page	32	of	42
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

CT-2		<ul style="list-style-type: none"> Stop all RCPs. [Step 11.c]
	RO/BOP	CHECK if Any SG is Faulted: [Step 12]
		<ul style="list-style-type: none"> CHECK pressures in all SGs: [Step 12.a]
		<ul style="list-style-type: none"> ANY SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
		<ul style="list-style-type: none"> Go to Step 13 [Step 12.a RNO a]
	RO/BOP	CHECK If SG Tubes Are Not Ruptured: [Step 13]
		<ul style="list-style-type: none"> Condenser off gas radiation – NORMAL (COG-182, 1RE-2959) Main steamline radiation – NORMAL (MSL-178 through 181, 1RE-2325 through 2328) SG blowdown sample radiation monitor – NORMAL (SGS-164, 1RE-4200) No Steam Generator level increasing in an uncontrolled manner
	RO/BOP	CHECK If RCS Is Intact: [Step 14]
		<ul style="list-style-type: none"> Containment pressure – LESS THAN 1.3 psig Containment recirculation sump levels – NORMAL Containment radiation – NORMAL GRID 4
		<ul style="list-style-type: none"> Go 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.

Operating Test :	NRC	Scenario #	3	Event #	6 & 7	Page	33	of	42
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

NOTE: As PRZR Temperature decreases the error on indicated PRZR level will increase. Attachment 2 may be used to determine actual PRZR level.

Examiner Note: RCPs may have already been tripped due to loss of subcooling per the foldout page of EOP-0.0A.

CRITICAL TASK STATEMENT

Trip reactor coolant pumps within 5 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.

Subcooling less than 25°F Start Time: _____

RCPs Tripped Stop Time: _____

	RO	CHECK If RCPs Should Be Stopped: [Step 1]
		<ul style="list-style-type: none"> RCS subcooling - LESS THAN 25°F (55°F FOR ADVERSE CONTAINMENT) [Step 1.a]
		<ul style="list-style-type: none"> ECCS pumps - AT LEAST ONE RUNNING [Step 1.b] <ul style="list-style-type: none"> CCP or SI Pump
CT-2		<ul style="list-style-type: none"> Stop all RCPs. [Step 1.c]
	RO/BOP	CHECK if Any Steam Generator Is Faulted: [Step 2]
		<ul style="list-style-type: none"> Check pressures in all SGs [Step 2.a] <ul style="list-style-type: none"> ANY SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER -OR- ANY SG COMPLETELY DEPRESSURIZED
		<ul style="list-style-type: none"> Go to Step 3 [Step 2.a RNO a]
	BOP	CHECK Intact Steam Generator Levels: [Step *3]

Operating Test :	<u> NRC </u>	Scenario #	<u> 3 </u>	Event #	<u> 6 & 7 </u>	Page	<u> 34 </u>	of	<u> 42 </u>
Event Description: <u> Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure </u>									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Narrow range level – GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT) [Step 3.a]
		<ul style="list-style-type: none"> Control AFW flow to maintain narrow range level between 43% (50% FOR ADVERSE CONTAINMENT) and 60% [Step 3.b]
	BOP	CHECK Secondary Radiation NORMAL: [Step 4]
		<ul style="list-style-type: none"> Condenser Off Gas radiation (COG-182, 1RE-2959)
		<ul style="list-style-type: none"> Main steamline radiation (MSL-178 through 181, 1RE-2325 through 2328)
		<ul style="list-style-type: none"> SG blowdown sample radiation monitor (SGS-164, 1RE-4200)
<div style="border: 2px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p>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.</p> </div>		
	RO	CHECK PRZR PORVs and Block Valves: [Step *5]
		<ul style="list-style-type: none"> Power to block valves – AVAILABLE [Step 5.a] (PCV-455A Block Valve Power Available)
		<ul style="list-style-type: none"> PORVs – CLOSED [Step 5.b] (PCV-456 in Mid Position)
		<ul style="list-style-type: none"> Block valves - AT LEAST ONE OPEN [Step 5.c]
	US/RO	CHECK if ECCS Flow Should Be Reduced: [Step *6]
		<ul style="list-style-type: none"> Secondary heat sink: [Step 6.a] <ul style="list-style-type: none"> Total AFW flow to intact SGs - GREATER THAN 460 GPM -OR- Narrow range level in at least one intact SG - GREATER THAN 43% (50% FOR ADVERSE CONTAINMENT)
		<ul style="list-style-type: none"> RCS subcooling - GREATER THAN 25°F (55°F FOR ADVERSE CONTAINMENT) [Step 6.b]
		<ul style="list-style-type: none"> Go to Step 7. OBSERVE CAUTIONS PRIOR TO STEP 7 [Step 6.b RNO b]

Operating Test :	NRC	Scenario #	3	Event #	6 & 7	Page	35	of	42
Event Description: Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure									
Time	Position	Applicant's Actions or Behavior							

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	CHECK EDGs Running. [Step 7.a]
	RO/BOP	PLACE both EDG EMERG STOP/START handswitches in START. [Step 7.b]
	RO/BOP	RESET SI. [Step 7.c]
		<ul style="list-style-type: none"> 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.d]
		<ul style="list-style-type: none"> At SI Sequencer Train A Cabinet, DEPRESS SI SEQR RESET green pushbutton then PLACE ON/RESET toggle switch in RESET. After ~ 2 seconds, 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. After ~ 2 seconds, PLACE ON/RESET toggle switch in ON.
	RO/BOP	RESET Containment Isolation Phase A and Phase B. [Step 7.e]
		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.

Operating Test : <u> NRC </u> Scenario # <u> 3 </u> Event # <u> 6 & 7 </u> Page <u> 36 </u> of <u> 42 </u>		
Event Description: <u> Seismic Event, Ejected Rod, SBLOCA, Steam leak downstream of MSIVs, MSLI Failure </u>		
Time	Position	Applicant's Actions or Behavior

	RO/BOP	RESET Containment Spray Signal. [Step 7.f]
		<ul style="list-style-type: none"> • DEPRESS 1/1-CSRA, TRAIN A CS RESET pushbutton.
		<ul style="list-style-type: none"> • DEPRESS 1/1-CSRB, TRAIN B CS RESET pushbutton.
<p><i>When the crew has RESET Containment Spray, or at the lead Examiners discretion, Terminate the scenario.</i></p>		

Operating Test :	NRC	Scenario #	3	Event #	N/A	Page	37	of	42
Event Description: EOP-0.0A, Attachment 2									
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]
		<ul style="list-style-type: none"> VERIFY SSW Pumps – RUNNING. [Step 1.a] VERIFY Diesel Generator Cooler 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]
	BOP	VERIFY Proper CVCS Alignment: [Step 7]
		<ul style="list-style-type: none"> VERIFY CCPs – 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 :	<u> NRC </u>	Scenario #	<u> 3 </u>	Event #	<u> N/A </u>	Page	<u> 38 </u>	of	<u> 42 </u>
Event Description: <u> EOP-0.0A, Attachment 2 </u>									
Time	Position	Applicant's Actions or Behavior							

	BOP	VERIFY ECCS flow: [Step 8]
		<ul style="list-style-type: none"> CCP SI flow indicators – CHECK FOR FLOW. [Step 8.a]
		<ul style="list-style-type: none"> RCS pressure – LESS THAN 1700 PSIG (1800 PSIG FOR ADVERSE CONTAINMENT). [Step 8.b]
		<ul style="list-style-type: none"> SIP discharge flow indicator – CHECK FOR FLOW. [Step 8.c]
		<ul style="list-style-type: none"> RCS pressure – LESS THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT). [Step 8.d]
		<ul style="list-style-type: none"> Go to Step 9 of this attachment. [Step 8.d RNO d]
	BOP	VERIFY Feedwater Isolation Complete: [Step 9]
		<ul style="list-style-type: none"> Feedwater Isolation Valves – CLOSED.
		<ul style="list-style-type: none"> Feedwater Isolation Bypass Valves – CLOSED.
		<ul style="list-style-type: none"> Feedwater Bypass Control Valves – CLOSED.
		<ul style="list-style-type: none"> 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-MLB-10 – LIT. [Step 11]
<p>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.</p>		
	BOP	VERIFY Proper SI alignment – PROPER MLB LIGHT INDICATION. [Step 12]

Operating Test : NRC Scenario # 3 Event # N/A Page 39 of 42

Event Description: EOP-0.0A, Attachment 2

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 13]			
		<u>Location</u>	<u>Equipment</u>	<u>Description</u>	<u>Condition</u>
		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

Operating Test :	NRC	Scenario #	3	Event #	N/A	Page	40	of	42
Event Description: EOP-0.0A, Attachment 2									
Time	Position	Applicant's Actions or Behavior							

	CV-01	X-HS-6188	PRI PLT SPLY FN 18 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6195	PRI PLT SPLY FN 19 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6202	PRI PLT SPLY FN 20 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6209	PRI PLT SPLY FN 21 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6216	PRI PLT SPLY FN 22 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6223	PRI PLT SPLY FN 23 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6230	PRI PLT SPLY FN 24 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-3631	UPS & DISTR RM A/C FN 1 & BSTR FN 42	STARTED
	CV-01	X-HS-3632	UPS & DISTR RM A/C FN 2 & BSTR FN 43	STARTED
	CV-01	1-HS-5600	ELEC AREA EXH FN 1	STOPPED/DEENERGIZED
	CV-01	1-HS-5601	ELEC AREA EXH FN 2	STOPPED/DEENERGIZED
	CV-01	1-HS-5602	MS & FW PIPE AREA EXH FN 3 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5603	MS & FW PIPE AREA EXH FN 4 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5618	MS & FW PIPE AREA SPLY FN 17	STOPPED/DEENERGIZED
	CV-01	1-HS-5620	MS & FW PIPE AREA SPLY FN 18	STOPPED/DEENERGIZED
	CV-03	X-HS-5855	CR EXH FN 1	STOPPED/DEENERGIZED
	CV-03	X-HS-5856	CR EXH FN 2	STOPPED/DEENERGIZED
	CV-03	X-HS-5731	SFP EXH FN 33	STOPPED/DEENERGIZED
	CV-03	X-HS-5733	SFP EXH FN 34	STOPPED/DEENERGIZED
	CV-03	X-HS-5727	SFP EXH FN 35	STOPPED/DEENERGIZED
	CV-03	X-HS-5729	SFP EXH FN 36	STOPPED/DEENERGIZED

Examiner Note: The next four steps would be performed on Unit 2.

Operating Test : <u> NRC </u> Scenario # <u> 3 </u> Event # <u> N/A </u> Page <u> 41 </u> of <u> 42 </u>	
Event Description: <u> EOP-0.0A, Attachment 2 </u>	
Time	Applicant's Actions or Behavior

	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 <u>AND</u> to IMPLEMENT FRGs as required.		
<i>EOP-0.0A, Attachment 2 steps are now complete.</i>				

Scenario Event Description
Make-up NRC Scenario 3

;Make-Up CPNPP 2021 NRC Simulator Scenario 3
;Initial Conditions
;IC8 1x10⁻⁸ power

;MSL isolation failure
IMF SS02A1 f:1
IMF SS02A2 f:1

;TPCW Pmp Trip
IMF TP07B f:1
IMF TP06A f:1 k:2

;Channel 2 N-16 fails high
IMF RP06B f:100 k:3

;PCV456 Fail at 25%
IMF RX08B f:2500 k:4
IMF RX16B f:25 d:5 k:4

;AFWP 2 trip
IMF FW24B f:1 k:5

;Seismic event
IRF AN2A_02 f:4 k:6
IRF AN2A_03 f:4 k:6

;Ejected rod, stuck rod
IMF RD09B6 f:228 d:120 k:6
IMF RD04B6 f:228 d:120 k:6
IMF RD04F6 f:168 d:120 k:6
IMF RC19C f:1500 d:120 k:6

;Modify RCS Leak
{DIRPSIA2.Value=1} MMF RC19C f:1750 r:60

;If crew does not manually actuate SI INSERT Key 7
{Key[7] != 0} MMF RC19C f:1750 r:60

;Steam Leak
IMF MS02 f:2e+006 r:120 d:270 k:6

;PRZR PORV Block Valve Breaker
IRF RCR24 f:0 k:11

Facility:		CPNPP 1 and 2		Date of Exam:		09/22/21		Operating Test No.:		NRC							
A P P L I C A N T	E V E N T T Y P E	SCENARIOS											T O T A L	MINIMUM (*)			
		CPNPP #1			CPNPP #2 (SPARE)			CPNPP #3									
		CREW POSITION			CREW POSITION			CREW POSITION									
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				R	I	U	
SRO-U1	RX	-						1						1	1	1	0
	NOR	-						-						-	1	1	1
	I/C	6						4						10	4	4	2
	MAJ	2						2						4	2	2	1
	TS	3						3						6	0	2	2
RO1	RX			-					1					1	1	1	0
	NOR			-					-					-	1	1	1
	I/C			4					2					6	4	4	2
	MAJ			2					2					4	2	2	1
	TS			-					-					-	0	2	2
Instructions:																	
1.	Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO <i>additionally</i> serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.																
2.	Reactivity manipulations may be conducted under normal or <i>controlled</i> abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.																
3.	Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.																

Facility: CPNPP		Date of Examination:		09/22/21		Operating Test No: CP-2021-08		
	Applicants							
Competencies	SRO-U1			RO1				
	SCENARIO			SCENARIO				
	1	2	3	1	2	3		
Interpret/Diagnose Events and Conditions	1,2,3,4,5,6,7,8		2,3,4,5,6,7	2,4,5,6,7,8		3,4,6,7		
Comply With and Use Procedures (1)	1,2,3,4,5,6,7,8		1,2,3,4,5,6,7	2,4,5,6,7,8		1,3,4,6,7		
Operate Control Boards (2)	-		-	2,4,5,6,7,8		1,3,4,6,7		
Communicate and Interact	1,2,3,4,5,6,7,8		1,2,3,4,5,6,7	1,2,3,4,5,6,7,8		1,2,3,4,5,6,7		
Demonstrate Supervisory Ability (3)	1,2,3,4,5,6,7,8		1,2,3,4,5,6,7	-		-		
Comply With and Use Tech. Specs. (3)	1,2,4		3,4,5	-		-		
Notes:								
(1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.								