

Facility: <u>Comanche Peak</u>		Date of Examination: <u>June-12-2023</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: <u>NRC 2023 Exam</u>
Administrative Topic (Step 1)	Activity and Associated K/A (Step 2)	Type Code (Step 3)
Conduct of Operations A1	Perform Manual Calorimetric (NRC 2018 RO1804) 2.1.23 RO 4.3 Ability to perform general and/or normal operating procedures during any plant condition	D, R
Conduct of Operations A2	Determine Alternate Level for the 2-3 SI Accumulator (New - RO1502) 2.1.19 RO 3.9 Ability to use available indications to evaluate system or component status	N, R
Equipment Control A3	Perform 1/M plot and Predict Criticality (NRC 2016 RO1003) 2.2.1 RO 4.5 Ability to perform pre-startup procedures for the facility, including those controls associated with plant equipment that could affect reactivity	D, R
Radiation Control A4	Determine Stay time Requirements (RWT029E modified from June 2019) 2.3.12 RO 3.2 Knowledge of radiological safety principles and procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, or alignment of filters	M, R

Facility: <u>Comanche Peak</u>		Date of Examination: <u>6-12-2023</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: <u>NRC 2023 Exam</u>
Administrative Topic (Step 1)	Activity and Associated K/A (Step 2)	Type Code (Step 3)
Conduct of Operations SA5	Determine Fuel Classification and Position in Spent Fuel Pool (New - SO1035) 2.1.42 SRO 3.4 Knowledge of new and spent fuel movement procedures.	N, R
Conduct of Operations SA6	Determine Alternate Level for the 2-3 SI Accumulator and Determine TS (New - SRO1502) 2.1.19 SRO 3.8 Ability to use available indications to evaluate system or component status	N, R
Equipment Control SA7	Perform AFD calculation and Determine TS (NRC 2015 SO1808) 2.2.12 SRO 4.1 Knowledge of surveillance procedures.	D, R
Radiation Control SA8	Review a Completed Liquid Waste Release Permit (mod from April 2013 NRC SO1039) 2.3.6 SRO 3.8 Ability to approve release permits.	M, R
Emergency Plan SA9	Classify an Event (New - SO1136K) 2.4.41 SRO 4.6 Knowledge of the emergency action level thresholds and classifications	N, R

Instructions for completing Form 3.2-1, "Administrative Topics Outline"				
1. For each license level, determine the number of administrative job performance measures (JPMs) and topic areas as follows:				
	Topic	Number of JPMs		* Reactor operator (RO) applicants do not need to be evaluated on every topic (i.e., "Equipment Control," "Radiation Control," or "Emergency Plan" can be omitted by doubling up on "Conduct of Operations"), unless the applicant is taking only the administrative topics portion of the operating test (with a waiver or excusal of the other portions).
		RO*	SRO and RO Retakes	
	Conduct of Operations	1 (or 2)	2	
	Equipment Control	1 (or 0)	1	
	Radiation Control	1 (or 0)	1	
	Emergency Plan	1 (or 0)	1	
	Total	4	5	
2. Enter the associated knowledge and abilities (K/A) statement and summarize the administrative activities for each JPM.				
3. For each JPM, specify the type codes for location and source as follows: Location: (C)ontrol room, (S)imulator, or Class(R)oom Source and Source Criteria: (P)revious two NRC exams (no more than one JPM that is randomly selected from last two NRC exams) (D)irect from bank (no more than three for ROs, no more than four for SROs and RO retakes) (N)ew or Significantly (M)odified from bank (no fewer than one)				

CP 2023 NRC Exam
NRC Admin JPM Description

RO**RA1** **Perform Manual Calorimetric (RO1804)**

Demonstrate the ability to properly perform a heat balance calculation IAW OPT-309, starting at step 8.2.2.9 C, calculate Unit 1 power level per Step 8.2.2.11. Direct from Bank (June 2018 NRC Exam)

RA2 **Alternate Level Determination for the Safety Injection Accumulator**

Demonstrate the ability to use procedure SOP-202B, Safety Injection Accumulators Attachment 1, Alternate Level Determination, to determine the current level and the proposed final 7% drain level for accumulator 2-3.

New – RO1502

RA3 **Perform 1/M plot and Predict Criticality**

Demonstrate the ability to perform Inverse Count Rate Ratio (ICRR) Calculation for each of the four rod withdrawal readings per IPO-002B Attachment 2, Create 1/M plot per IPO 002B, Attachment 2. Determine criticality predicted is below Rod Insertion Limit and conclude that all Control Banks should be inserted to CBO position.

Direct from Bank (July 2016 NRC Exam)

RA4 **Determine Stay Time Requirements**

Demonstrate the ability to use procedure STI-211.07, Heat Stress Management, and general radiation principles in order to 1) calculate gamma and neutron dose stay times, 2) calculate heat stress stay time, and 3) determine limiting containment entry time.

Modified from Bank (NRC June 2019 RWT029E)– **The math is different for dose and heat stress stay time and conclusion in June 2019 JPM was that neutron dose was most limiting. In this JPM the heat stress time is most limiting so the answers and conclusion are different.**

SRO

SA5 Determine Fuel Classification and Position in Spent Fuel Pool

Demonstrate the ability to calculate the required Minimum Burnup value for Fuel Category 3 IAW TS 3.7.17 and determine fuel assembly X74 fuel burnup meets criteria for Fuel Category 3.

New – SO1035

SA6 Alternate Level Determination for Safety Injection Accumulator and Apply Tech Specs

Demonstrate the ability to use procedure SOP-202B, Safety Injection Accumulators Attachment 1, Alternate Level Determination, to determine the current level and the proposed final 7% drain level for accumulator 2-3. SRO must also determine that TS LCO 3.5.1 CONDITION B was not met and REQUIRED ACTION B.1 required the accumulator to be restored to operable status within 24 hours.

New – SO1502

SA7 Perform Axial Flux Difference Surveillance and determine TS

Demonstrate ability to perform Axial Flux Difference surveillance and determine that 3 of 4 PR Δ FLUX channels were not within Acceptable Operation region. SRO applicant must also determine that TS LCO 3.2.3 CONDITION A was applicable and REQUIRED ACTION A.1 required THERMAL POWER be restored to < 50% RTP within 30 minutes.

Direct from Bank (June 2015 SO1808)

SA8 Approve Liquid Release Permit

Demonstrate the ability to review a Liquid Waste Release Permit IAW STA-603, Control of Station Radioactive Effluents

Modified from Bank (April 2013 SO1039) – **Different math, different tanks being used for release, rad monitor out of service for the 2023 JPM versus in service for 2013 JPM, and added pH assessment and sample ID evaluations for 2023 JPM and these aspects were not part of the 2013 JPM.**

SA9 Determine Emergency Plan Protective Action Recommendations

Demonstrate the ability to correctly determine an Emergency Action level using EPP-201, Assessment of Emergency Action Levels, within 15 minutes.

(New - SO1136K)

Facility: CPNPP JPM # RO1804

Task # RO1804A

K/A # 2.1.23

4.3 / 4.4

Title: Manual Calorimetric

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: _____

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 1 Plant Computer, personal computers, and LEFM are unavailable
- Unit 1 Steam Generator blowdown is isolated
- OPT-309, Unit Calorimetric and OPT-309-2, Calorimetric Data Reduction Worksheet have been completed through Step 8.2.2.9 B.
- OPT-309-11, Unit 1 Calorimetric Data Sheet recorded data has been verified correct

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

- PERFORM intermediate calculations to at least four decimal places and round calculated Unit 1 power level to one decimal place
- To determine Feedwater enthalpy, assume Feedwater is a saturated liquid at recorded overall average Feedwater temperature
- Starting from OPT-309 step 8.2.2.9 C, calculate Unit 1 power level per Step 8.2.2.11

Task Standard: CALCULATED calorimetric heat balance within specified accuracy limits of critical steps.

Required Materials: OPT-309, Unit Calorimetric
OPT-309-2, Calorimetric Data Reduction Worksheet
OPT-309-11, Unit 1 Calorimetric Data Sheet

Validation Time: 25 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**EXAMINER:****PROVIDE examinee:**

- **OPT-309 with Section 6.0 Prerequisites and Steps 8.2.1 through Step 8.2.2.9 B. marked as complete or not applicable based on given conditions (pages 1 – 13, 19 – 27) (Orange paper)**
- **OPT-309-11 with all data entered using normal accuracy MCB (all pages) (Orange paper)**
- **OPT-309-2 with all data entered as appropriate for given conditions through Step 8.2.2.9 B. (all pages) (Orange paper)**
- **Calculator**
- **Steam Tables (2000 ASME Steam Tables to meet accuracy criteria)**

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps are from OPT-309 starting at 8.2.2.9 C.	
Perform Step: 1 √ 8.2.2.9 C.	DETERMINED Feedwater enthalpy	
Standard:	INTERPOLATED Feedwater enthalpy change for temperature range Saturated liquid at 288°F = 257.41 BTU/lbm Saturated liquid at 292°F = 261.52 BTU/lbm $\frac{257.41 - 261.52}{288 - 292} = \frac{-4.11}{-4} = 1.0275 \text{ BTU/lbm/}^\circ\text{F}$ DETERMINED feedwater enthalpy BTU/lbm For 290°F (290 – 288) (1.0275) + 257.41 = 259.465 (257.46 – 261.46)	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 2 √ 8.2.2.9 D.	DETERMINED Δh for all four Steam Generators	
Standard:	CALCULATED Δh for all four Steam Generators: For 1-01 SG 1192.5388 - 259.465 = 933.0738 (930.07 – 936.07) For 1-02 SG 1192.5538 - 259.465 = 933.0888 (930.08 – 936.09) For 1-03 SG 1192.4075 - 259.465 = 932.9425 (929.94 – 935.94) For 1-04 SG 1192.5425 - 259.465 = 933.0775 (930.07 – 936.08)	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 3 √ 8.2.2.10	DETERMINED SG Heat Gain and Total SG Heat Gain	
Standard:	CALCULATED SG Heat Gain $Q_L = \Delta h \times W_s$ 1-01 SG (933.0738) (1.523E6) = 1.4211E9 1-02 SG (933.0888) (1.54E6) = 1.4370E9 1.04 SG (932.9425) (1.523E6) = 1.4209E9 1.05 SG (933.0775) (1.54E6) = 1.4369E9 Calculated Total SG Heat Gain 1.4211E9 + 1.4370E9 + 1.4209E9 + 1.4369E9 = 5.7159E9 (5.69E9 – 5.92E9)	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 4 ✓ 8.2.2.11	DETERMINED Percent Rated Thermal Power	
Standard:	CALCULATED Net Reactor Power BTU/hr $5.7159E9 + 0 - 5.4E7 = 5.6619E9$ CALCULATED Percent Rated Thermal Power % $\frac{5.6619E9}{1.2328E10} \times 100 = 45.9272 = 45.9$ (45.4 – 46.4)	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.	
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.	

STOP TIME:	
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INITIAL CONDITIONS: Given the following conditions:

- Unit 1 Plant Computer, personal computers, and LEFM are unavailable
- Unit 1 Steam Generator blowdown is isolated
- OPT-309, Unit Calorimetric and OPT-309-2, Calorimetric Data Reduction Worksheet have been completed through Step 8.2.2.9 B.
- OPT-309-11, Unit 1 Calorimetric Data Sheet recorded data has been verified correct

INITIATING CUE:

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

- **PERFORM** intermediate calculations to at least four decimal places and round calculated Unit 1 power level to one decimal place
- To determine Feedwater enthalpy, assume Feedwater is a saturated liquid at recorded overall average Feedwater temperature
- Starting from OPT-309 step 8.2.2.9 C, calculate Unit 1 power level per Step 8.2.2.11

UNIT 1 CALORIMETRIC DATA SHEET

Unit 1 Date Today

DATA SOURCE (Circle One):
 High Accuracy Computer Normal Accuracy Computer Normal Accuracy MCB

STEP	PARAMETER	HIGH ACCURACY (COMPUTER POINT)	NORMAL ACCURACY (COMPUTER POINT)	NORMAL ACCURACY (MCB INDICATOR)	DATA SETS		
					1 TIME: 0700	2 TIME: 0715	3 TIME: 0730
8.2.1							

NOTE: When performing calorimetric using Main Control Board indication and the LEFM is not available, both Feedwater Flow indicators on all loops are required operable to satisfy assumed accuracy requirements.

B	IF LEFM is being used for FW flow, <u>THEN</u> perform the following: <ul style="list-style-type: none"> ● Verify LEFM Main display - "✓" icon displayed in green (TRS 13.3.34.1) ● IF LEFM "wrench" displayed in yellow, <u>THEN</u> notify System Engineering. 				Initials / Date / Time N/A / N/A / N/A		
	Total FW Flow	LEFM Display or F5447A	LEFM Display or F5447A	LEFM Display or F5447A	UNITS = 10 ⁶ LB/HR N/A N/A N/A		
C	SG 1 FW FLO	F5992A	F6414A	1-FI-510A	UNITS = MLB/HR 1.45E6 1.40E6 1.45E6		
	SG 1 FW FLO	F5993A	F6404A	1-FI-511A	1.45E6	1.50E6	1.45E6
	SG 2 FW FLO	F5994A	F6434A	1-FI-520A	1.45E6	1.45E6	1.50E6
	SG 2 FW FLO	F5995A	F6424A	1-FI-521A	1.50E6	1.45E6	1.45E6
	SG 3 FW FLO	F5996A	F6454A	1-FI-530A	1.50E6	1.40E6	1.45E6
	SG 3 FW FLO	F5997A	F6444A	1-FI-531A	1.40E6	1.50E6	1.45E6
	SG 4 FW FLO	F5998A	F6474A	1-FI-540A	1.45E6	1.50E6	1.50E6
	SG 4 FW FLO	F5999A	F6464A	1-FI-541A	1.45E6	1.45E6	1.45E6
D	SG 1 FW NZL TEMP	T5272A	T5268A*	1-TI-2177B*	UNITS = DEG F 287.5 290 292.5		
	SG 2 FW NZL TEMP	T5273A	T5269A*	1-TI-2178B*	290	292.5	287.5
	SG 3 FW NZL TEMP	T5274A	T5270A*	1-TI-2179B*	292.5	290	287.5
	SG 4 FW NZL TEMP	T5275A	T5271A*	1-TI-2180B*	290	287.5	292.5
E	SG 1 FW PRESS (FW HDR PRESS)	P5449A	P5264A	1-PI-2138	UNITS = PSIG 1185 1180 1190		
	SG 2 FW PRESS	N/A	P5265A	1-PI-2139	1190	1185	1185
	SG 3 FW PRESS	N/A	P5266A	1-PI-2140	1180	1190	1185
	SG 4 FW PRESS	N/A	P5267A	1-PI-2141	1185	1185	1185

* IF Main Feedwater flow through Feedwater Isolation Valves has NOT been initiated, THEN the following indication should be substituted for feedwater temperature: T8001A (1-TI-2158), T8002A (1-TI-2159), T8003A (1-TI-2160), T8004A (1-TI-2161)

COMMENTS: _____

UNIT 1 CALORIMETRIC DATA SHEET

Unit 1 Date Today

DATA SOURCE (Circle One):
 High Accuracy Computer Normal Accuracy Computer Normal Accuracy MCB

STEP	PARAMETER	HIGH ACCURACY (COMPUTER POINT)	NORMAL ACCURACY (COMPUTER POINT)	NORMAL ACCURACY (MCB INDICATOR)	DATA SETS		
					1 TIME: 0700	2 TIME: 0702	3 TIME: 0704
F	MSL 1 PRESS CHAN II	N/A	P6401A	1-PI-515A	UNITS = PSIG		
	MSL 1 PRESS CHAN IV	N/A	P6402A	1-PI-516A	979	984	979
	MSL 1 PRESS CHAN I	P5464A	P6400A	1-PI-514A	984	979	974
	MSL 2 PRESS CHAN I	P5465A	P6420A	1-PI-524A	979	984	979
	MSL 2 PRESS CHAN III	N/A	P6422A	1-PI-526A	978	983	978
	MSL 2 PRESS CHAN II	N/A	P6421A	1-PI-525A	983	978	978
	MSL 3 PRESS CHAN II	N/A	P6441A	1-PI-535A	978	978	980
	MSL 3 PRESS CHAN I	P5466A	P6440A	1-PI-534A	986	981	981
	MSL 3 PRESS CHAN III	N/A	P6442A	1-PI-536A	986	981	981
	MSL 4 PRESS CHAN I	P5467A	P6460A	1-PI-544A	981	981	981
	MSL 4 PRESS CHAN II	N/A	P6461A	1-PI-545A	977	978	983
	MSL 4 PRESS CHAN IV	N/A	P6462A	1-PI-546A	978	983	978
					978	980	980
	G	SG BLDN HX OUT FLO	F2650A	F2650A	1-FI-5219A	UNITS = GPM, DEG F	
SG BLDN HX OUT TEMP		T2650A	T2650A	1-TI-5182A	0	0	0
					0	0	0
H	PR CHAN I	N6049A01	N6049A01	N-41A	UNITS = %		
	PR CHAN II	N6050A01	N6050A01	N-42A	42	42	42.5
	PR CHAN III	N6051A01	N6051A01	N-43A	42	42.5	42
	PR CHAN IV	N6052A01	N6052A01	N-44A	42	42	42
I	RC LOOP 1 N16 PWR CHAN I	T6503A01	T6503A01	1-JI-411A	UNITS = %		
	RC LOOP 2 N16 PWR CHAN II	T6523A01	T6523A01	1-JI-421A	43	43	43.5
	RC LOOP 3 N16 PWR CHAN III	T6543A01	T6543A01	1-JI-431A	43.5	43	43
	RC LOOP 4 N16 PWR CHAN IV	T6563A01	T6563A01	1-JI-441A	43	43.5	43
COMMENTS: _____							
Performed By: <u>Joe Bailey</u> DATE: <u>Today</u> TIME: <u>Now</u> Reviewed By: <u>Avery Wilson</u> DATE: <u>Today</u> TIME: <u>Now</u>							

CALORIMETRIC DATA REDUCTION WORKSHEET

Unit 1 Date Today

8.2.2.2 - Feedwater Average Temperature		
Parameter	Average Value of Data Sets (°F)	Overall Average (°F)
S/G 1 Feedwater Temperature	290	290
S/G 2 Feedwater Temperature	290	
S/G 3 Feedwater Temperature	290	
S/G 4 Feedwater Temperature	290	

8.2.2.3 Feedwater Average Pressure			
Parameter	Average of Data Sets (PSIG)	Corrected Pressure (PSIG + 14.7 = PSIA)	Overall Average (PSIA)
S/G 1 Feedwater Pressure	1185	1199.7	1200.1
S/G 2 Feedwater Pressure	1186.7	1201.4	
S/G 3 Feedwater Pressure	1185	1199.7	
S/G 4 Feedwater Pressure	1185	1199.7	

8.2.2.4 - Feedwater Flow Averages			
Parameter (W _F)	Average Value of Data Sets (LB/HR)	Correction Factor (CF) (NOTE 1)	Corrected Value LB/HR x CF (LB/HR)
S/G 1 Feedwater Flow	1.45E6	1.05	1.523E6
S/G 2 Feedwater Flow	1.467E6	1.05	1.54E6
S/G 3 Feedwater Flow	1.45E6	1.05	1.523E6
S/G 4 Feedwater Flow	1.467E6	1.05	1.54E6

8.2.2.5 - Corrected Steam Generator Steam Pressure Averages					
Parameter	Average of Data Sets (PSIG)	Corrected Pressure (PSIG+14.7 = PSIA)	Pressure Drop Due to Line Loss (PSIA) (NOTE 2)	Corrected Pressure (PSIA)	Overall Average (PSIA)
S/G 1 Steam Pressure	980.1	994.8	5.55	1000.3	1001.05
S/G 2 Steam Pressure	979.3	994.0	5.88	999.9	
S/G 3 Steam Pressure	982.1	996.8	7.04	1003.8	
S/G 4 Steam Pressure	979.4	994.1	6.13	1000.2	

NOTE 1: Correction Factor is 1 when LEFM data is used. When other Feedwater Flow data is used, Correction Factor is from Attachment 10.1 using Feedwater Temperature for the associated SG calculated in Step 8.2.2.2 (Column 2).

NOTE 2: The steam line pressure drops are the same for both Units.

CALORIMETRIC DATA REDUCTION WORKSHEET

8.2.2.6 - Steam Generator Blowdown Average Values	
Parameter	Average Value of Data Sets
SG Blowdown Flow (GPM)	0
SG Blowdown Hx Out Temp (°F)	0

8.2.2.7 - Blowdown Flow Conversion		
Average Blowdown Flow, F	Specific Volume, V	Blowdown Flow, F _{bd}
		$F_{bd} = F \times [(V)/(0.01619)]^{1/2} \times 8.021 \times 1/V$
(GPM)	FT ³ /lbm	(LBM/HR)
		0

8.2.2.8 - Blowdown Heat Loss Calculation		
Blowdown Enthalpy, h _f	Feedwater Enthalpy, h _w	Blowdown Heat Loss, Q _{bd}
		$\Sigma Q_{bd} = (h_f - h_w)F_{bd}$
(BTU/LBM)	(BTU/LBM)	(BTU/HR)
		0

8.2.2.9 - S/G Enthalpy Rise Calculation				
SG No.	Corrected Steam Pressure	Steam Enthalpy, h _g	Feedwater Enthalpy, h _w	Enthalpy Rise Δh
	(PSIA)	(BTU/LBM)	(BTU/LBM)	$\Delta h = (h_g - h_w)$ (BTU/LBM)
1	1000.3	1192.5388		
2	999.9	1192.5538		
3	1003.8	1192.4075		
4	1000.2	1192.5425		

CALORIMETRIC DATA REDUCTION WORKSHEET

8.2.2.10 - SG Heat Gain Calculation			
SG No.	Enthalpy Rise, Δh (BTU/LBM)	Steam Flow W_s $W_s = W_f - \left[\frac{F_{bd}}{4} \right]$ (LBM/HR)	S/G Heat Gain, Q_L $Q_L = \Delta h \times W_s$ (BTU/HR)
1			
2			
3			
4			
			ΣQ_L

8.2.2.11 - Percent Rated Thermal Power Calculation					
SG Heat Gain ΣQ_L (BTU/HR)	Blowdown Heat Loss, ΣQ_{bd} (BTU/HR)	Non-Reactor Heat Gains, Q_{NR} (BTU/HR)	Net Reactor Power, Q_{NET} $Q_{NET} = \Sigma Q_L + \Sigma Q_{bd} - Q_{NR}$ (BTU/HR)	Rated Thermal Power, Q_{RTP} (BTU/HR)	Percent Rated Thermal Power $P_{RTP} = \frac{Q_{NET}}{Q_{RTP}} \times 100$ (%)
	0	5.4×10^7		1.2328×10^{10}	

Comments: _____

Performed By: _____ Date: _____

Reviewed By: _____ Date: _____

CALORIMETRIC DATA REDUCTION WORKSHEET

Unit 1 Date Today

8.2.2.2 - Feedwater Average Temperature		
Parameter	Average Value of Data Sets (°F)	Overall Average (°F)
S/G 1 Feedwater Temperature	290	290
S/G 2 Feedwater Temperature	290	
S/G 3 Feedwater Temperature	290	
S/G 4 Feedwater Temperature	290	

8.2.2.3 Feedwater Average Pressure			
Parameter	Average of Data Sets (PSIG)	Corrected Pressure (PSIG + 14.7 = PSIA)	Overall Average (PSIA)
S/G 1 Feedwater Pressure	1185	1199.7	1200.1
S/G 2 Feedwater Pressure	1186.7	1201.4	
S/G 3 Feedwater Pressure	1185	1199.7	
S/G 4 Feedwater Pressure	1185	1199.7	

8.2.2.4 - Feedwater Flow Averages			
Parameter (W _F)	Average Value of Data Sets (LB/HR)	Correction Factor (CF) (NOTE 1)	Corrected Value LB/HR x CF (LB/HR)
S/G 1 Feedwater Flow	1.45E6	1.05	1.523E6
S/G 2 Feedwater Flow	1.467E6	1.05	1.54E6
S/G 3 Feedwater Flow	1.45E6	1.05	1.523E6
S/G 4 Feedwater Flow	1.467E6	1.05	1.54E6

8.2.2.5 - Corrected Steam Generator Steam Pressure Averages					
Parameter	Average of Data Sets (PSIG)	Corrected Pressure (PSIG+14.7 = PSIA)	Pressure Drop Due to Line Loss (PSIA) (NOTE 2)	Corrected Pressure (PSIA)	Overall Average (PSIA)
S/G 1 Steam Pressure	980.1	994.8	5.55	1000.3	1001.05
S/G 2 Steam Pressure	979.3	994.0	5.88	999.9	
S/G 3 Steam Pressure	982.1	996.8	7.04	1003.8	
S/G 4 Steam Pressure	979.4	994.1	6.13	1000.2	

NOTE 1: Correction Factor is 1 when LEFM data is used. When other Feedwater Flow data is used, Correction Factor is from Attachment 10.1 using Feedwater Temperature for the associated SG calculated in Step 8.2.2.2 (Column 2).

NOTE 2: The steam line pressure drops are the same for both Units.

CALORIMETRIC DATA REDUCTION WORKSHEET

8.2.2.6 - Steam Generator Blowdown Average Values	
Parameter	Average Value of Data Sets
SG Blowdown Flow (GPM)	0
SG Blowdown Hx Out Temp (°F)	0

8.2.2.7 - Blowdown Flow Conversion		
Average Blowdown Flow, F	Specific Volume, V	Blowdown Flow, F _{bd}
		$F_{bd} = F \times [(V)/(0.01619)]^{1/2} \times 8.021 \times 1/V$
(GPM)	FT ³ /lbm	(LBM/HR)
		0

8.2.2.8 - Blowdown Heat Loss Calculation		
Blowdown Enthalpy, h _f	Feedwater Enthalpy, h _w	Blowdown Heat Loss, Q _{bd}
		$\Sigma Q_{bd} = (h_f - h_w)F_{bd}$
(BTU/LBM)	(BTU/LBM)	(BTU/HR)
		0

8.2.2.9 - S/G Enthalpy Rise Calculation				
SG No.	Corrected Steam Pressure	Steam Enthalpy, h _g	Feedwater Enthalpy, h _w	Enthalpy Rise Δh
	(PSIA)	(BTU/LBM)	(BTU/LBM)	Δh = (h _g - h _w) (BTU/LBM)
1	1000.3	1192.5388	259.465	933.0738 (930.07 - 936.07)
2	999.9	1192.5538		933.0888 (930.08 - 936.09)
3	1003.8	1192.4075		932.9425 (929.94 - 935.94)
4	1000.2	1192.5425		933.0775 (930.07 - 936.08)

(257.46 - 261.46)

CALORIMETRIC DATA REDUCTION WORKSHEET

8.2.2.10 - SG Heat Gain Calculation			
SG No.	Enthalpy Rise, Δh (BTU/LBM)	Steam Flow W_s $W_s = W_f - \left[\frac{F_{bd}}{4} \right]$ (LBM/HR)	S/G Heat Gain, Q_L $Q_L = \Delta h \times W_s$ (BTU/HR)
1	933.0738	1.523E6	1.4211E9
2	933.0888	1.54E6	1.4370E9
3	932.9425	1.523E6	1.4209E9
4	933.0775	1.54E6	1.4369E9
ΣQ_L			5.7159E9 (5.69E9 - 5.92E9)

8.2.2.11 - Percent Rated Thermal Power Calculation					
SG Heat Gain ΣQ_L (BTU/HR)	Blowdown Heat Loss, ΣQ_{bd} (BTU/HR)	Non-Reactor Heat Gains, Q_{NR} (BTU/HR)	Net Reactor Power, Q_{NET} $Q_{NET} = \Sigma Q_L + \Sigma Q_{bd} - Q_{NR}$ (BTU/HR)	Rated Thermal Power, Q_{RTP} (BTU/HR)	Percent Rated Thermal Power $P_{RTP} = \frac{Q_{NET}}{Q_{RTP}} \times 100$ (%)
5.7159E9	0	5.4 X 10 ⁷	5.6619E9	1.2328 x 10 ¹⁰	45.9 (45.4 - 46.4)

Comments: _____

Performed By: _____ Date: _____

Reviewed By: _____ Date: _____

Facility: CPNPP JPM # RO1502 Task # RO1502 K/A # 2.1.19 3.9 / 3.8
 Title: Alternate Level Determination for the Safety Injection Accumulator

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 2 is in Mode 1
- Both level transmitters for 2-03 Safety Injection Accumulator are unavailable
- 2-03 Safety Injection Accumulator was slowly rising due to check valve back leakage and a 7% drain was planned before level transmitters were lost
- An ultrasonic detector has been installed per SOP-202B, Safety Injection Accumulators Attachment 1, Alternate Level Determination to provide level indication
- Current ultrasonic level measurement is 22-7/8 inches above centerline of the make-up connection

Initiating Cue: The Unit Supervisor directs you to PERFORM the following per SOP-202B, Safety Injection Accumulators, Attachment 1, Alternate Level Determination:

- PERFORM intermediate calculations to at least four decimal places and round answers to one decimal place for the following:
- CALCULATE current level in 2-03 Safety Injection Accumulator in percent
 - Current level _____ %
- CALCULATE accumulator level in inches when level is reduced 7% from current level
 - Final ultrasonic detector level after 7% drain _____ inches

Task Standard: CALCULATED current safety injection accumulator level and CALCULATED target level in inches on ultrasonic detector to drain 7% of volume. Values of items must be CALCULATED within accuracy designated in critical steps.

Required Materials: SOP-202B, Safety Injection Accumulators

Validation Time: 15 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP

EXAMINER:

PROVIDE examinee:

- **SOP-202B (pages 1 – 2, 5 – 6, 79 – 80) (Orange paper)**
- **Calculator**

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps is a calculation from SOP-202B, Attachment 1.	
	<p>NOTE: 1.54 inches above <u>OR</u> below the reference level of 21.1 inches encompasses the 39 – 61% range.</p>	
Perform Step: 1 C.	DETERMINE accumulator level using an ultrasonic detector in inches above <u>OR</u> below the reference point. This is value “L”.	
Standard:	<ul style="list-style-type: none"> • DETERMINED reference level is 21.1 inches from NOTE • CONVERTED 22-7/8 inches to decimal format (22.875) • CALCULATE inches from reference level: Current level (inches) – Reference level = Inches above reference point 22.875” - 21.1” = 1.775” 	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 2 √ D.	CALCULATE percent level as follows: 1. “L” above reference point: $(L + 7) / 14 \times 100 = (\text{percent level})$	
Standard:	CALCULATED current percent level: $(1.775 + 7) / 14 \times 100 = 62.6786\% = \mathbf{62.7\% (61.7\% - 63.7\%)}$	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 3	DETERMINE final level in percent for desired 7% level reduction	
Standard:	CALCULATED final desired level in percent: $62.6786\% - 7\% = 55.6786\%$	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	<p>Reference point at 21.1 inches is middle of 0% – 100% span or 50%: $(0 + 7) / 14 \times 100 = 50\%$ <u>OR</u> $(7 - L) / 14 \times 100 = 50\%$ Since final desired level is above 50% (55.6786%), final level will be above reference point.</p>
Perform Step: 4 ✓	<p>DETERMINE final target level as read on ultrasonic detector in inches following 7% drain.</p>
Standard:	<p>CALCULATED final level in inches:</p> <p>$(L + 7) / 14 \times 100 = 55.6786\%$</p> <p>REARRANGED for L:</p> <p>$L + 7 / 14 = 55.6786 / 100$ $L + 7 = (0.5568) (14)$ $L = 7.7950 - 7 = 0.7950$ inches</p> <p>Final level = Reference point + L</p> <p>21.1 inches + 0.7950 inches = 21.8950 inches</p> <p><u>OR</u></p> <p>14 inches = 100% span $14 / 100 = 0.14$ inches / % X 7% drain = 0.98 inches</p> <p>Final level = Current level – 0.98 inches</p> <p>Final level = 22.875 inches – 0.98 inches = 21.895 inches</p> <p>Final level = 21.9 Inches (21.7 inches to 22.1 inches)</p>
Comment:	<p>SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>
Terminating Cue:	<p>JPM complete.</p>
Termination Criteria:	<p>Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.</p>

STOP TIME:

INITIAL CONDITIONS: Given the following conditions:

- Unit 2 is in Mode 1
- Both level transmitters for 2-03 Safety Injection Accumulator are unavailable
- 2-03 Safety Injection Accumulator was slowly rising due to check valve back leakage and a 7% drain was planned before level transmitters were lost
- An ultrasonic detector has been installed per SOP-202B, Safety Injection Accumulators Attachment 1, Alternate Level Determination to provide level indication
- Current ultrasonic level measurement is 22-7/8 inches above centerline of the make-up connection

INITIATING CUE:

The Unit Supervisor directs you to **PERFORM** the following per SOP-202B, Safety Injection Accumulators, Attachment 1, Alternate Level Determination:

- **PERFORM** intermediate calculations to at least four decimal places and round answers to one decimal place for the following:
 - **CALCULATE** current level in 2-03 Safety Injection Accumulator in percent
 - Current level _____ %
 - **CALCULATE** accumulator level in inches when level is reduced 7% from current level
 - Final ultrasonic detector level after 7% drain _____ inches

Facility: CPNPP JPM # RO1003A Task # RO1003 K/A # 2.2.1 4.5 / 4.4
Title: Perform a 1/M Plot and Predict Critical Conditions

Examinee (Print): _____

Testing Method:

Simulated Performance:	_____	Classroom:	<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: _____

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 2 is performing a Reactor Startup per IPO-002B, Plant Startup from Hot Standby
- Control Rods have been withdrawn four times in increments of 50 steps
- The Full Out Position (FOP) is 225 steps
- The Unit Supervisor wants to re-perform Inverse Count Rate Ratio Calculations and re-plot points on a 1/M Data Sheet to re-verify Predicted Critical Rod Height

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

- PERFORM Inverse Count Rate Ratio (ICRR) Calculation for each of the four rod withdrawal readings per IPO-002B Attachment 2, Inverse Count Rate Ratio Calculation Steps 3.3.E and 3.3.F
- PLOT the points on 1/M Data Sheet per IPO-002B Attachment 2 Step 3.3.G
- DETERMINE ECC (Predicted Critical Rod Height) for each of the four rod withdrawals and record on 1/M Data Sheet per IPO-002B Attachment 2 Steps 3.4 and 3.5
- RECORD any required action(s) based on 1/M Data below:

Task Standard: CALCULATED Inverse Count Rate Ratios, PERFORMED a 1/M Plot using data provided on Attachment 2, DETERMINED estimated critical rod position for each of four rod withdrawals, DETERMINED criticality predicted below Rod Insertion Limit and DETERMINED all Control Banks should be inserted to CBO position. Calculations shall be within specified accuracy limits of attached key.

Required Materials: IPO-002B, Plant Startup from Hot Standby
ERX-21-001, CPNPP Unit 2 Cycle 20 Core Operating Limits Report Rev 1

Validation Time: 15 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**EXAMINER:****PROVIDE examinee:**

- IPO-002B (pages 1, 39 – 40) (Orange paper)
- IPO-002B, Attachment 2 with four sets of data completed (pages 82 – 85) (Orange paper)
- ERX-21-001 Figure 2 (page 1, 11) (Orange paper)
- Calculator
- Ruler

S1 – 115 B Start**S2 – 222 A Stop****S3 – 230 C Start****S4 – 337 B Stop****S5 – 345 D Start****S6 – 452 C Stop**

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps are from IPO-002B, Attachment 2.	
Perform Step: 1 √	CALCULATED Inverse Count Rate Ratio for Control Bank A at 50 steps and PLOTTED on 1/M Data Sheet.	
Standard:	CALCULATED Inverse Count Rate Ratio for Control Bank A at 50 steps, PLOTTED on 1/M Data Sheet, and RECORDED Data: <ul style="list-style-type: none"> • RECORD an average Count Rate of 55. • CALCULATE ICRR = $1/M = 50/55 = 0.91 \pm 0.01$. • RECORD ICRR = 0.91 ± 0.01. • PLOT points for CBA @ 0 steps (ICCR 1.0) and CBA @ 50 steps (ICCR 0.91). • DRAW a line from 1.00 to 0.91 that INTERSECTS with CBD at 225 ± 35 steps. • LOG an Estimated Critical Condition CBD between 190 and 260 steps. 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 2 √	CALCULATED Inverse Count Rate Ratio for Control Bank A at 100 steps and PLOTTED on 1/M Data Sheet.	
Standard:	CALCULATED Inverse Count Rate Ratio for Control Bank A at 100 steps, PLOTTED on 1/M Data Sheet, and RECORDED Data: <ul style="list-style-type: none"> • RECORD an average Count Rate of 65. • CALCULATE ICRR = $1/M = 50/65 = 0.77 \pm 0.01$. • RECORD ICRR = 0.77 ± 0.01. • PLOT points for CBA @ 50 steps (ICCR 0.91) and CBA @ 100 steps (ICCR 0.77). • DRAW a line from 0.91 to 0.77 that INTERSECTS with CBD at 15 ± 25 steps. • LOG an Estimated Critical Condition between CBC 105 and CBD 40 steps. 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 3 ✓	CALCULATED Inverse Count Rate Ratio for Control Bank B at 35 steps and PLOTTED on 1/M Data Sheet.
Standard:	<p>CALCULATED Inverse Count Rate Ratio for Control Bank B at 35 steps, PLOTTED on 1/M Data Sheet, and RECORDED Data:</p> <ul style="list-style-type: none"> • RECORD an average Count Rate of 88. • CALCULATE ICRR = $1/M = 50/88 = 0.57 \pm 0.01$. • RECORD ICRR = 0.57 ± 0.01. • PLOT points for CBA @ 100 steps (ICCR 0.77) and CBB @ 35 steps. (ICCR 0.57) • DRAW a line from 0.77 to 0.57 that INTERSECTS with CBC at 60 ± 20 steps. • LOG an Estimated Critical Condition CBC between 40 and 80 steps.
<p>Comment: SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>	

Perform Step: 4 ✓	CALCULATED Inverse Count Rate Ratio calculation for Control Bank B at 85 steps and PLOTTED on 1/M Data Sheet.
Standard:	<p>CALCULATED Inverse Count Rate Ratio for Control Bank B at 85 steps, PLOTTED on 1/M Data Sheet, and RECORDED Data:</p> <ul style="list-style-type: none"> • RECORD an average Count Rate of 333. • CALCULATE ICRR = $1/M = 50/333 = 0.15 \pm 0.01$. • RECORD ICRR = 0.15 ± 0.01. • PLOT points for CBB @ 35 steps (ICCR 0.57) and CBB @ 85 steps (ICCR 0.15). • DRAW a line from 0.57 to 0.15 that INTERSECTS with CBB at 105 ± 15 steps. • LOG an Estimated Critical Condition CBB between at 90 and 120 steps.
<p>Comment: SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>	

Examiner Note:	The following Performance Standard is from IPO-002B, Step 5.2.10, 4th bullet.	
Perform Step: 5 ✓	RECORD any required action based on 1/M Data on Attachment 2, Page 3 of 4 or JPM Cue Sheet.	
Standard:	DETERMINED Estimated Critical Condition indicates criticality will be achieved below Rod Insertion Limit (CBC @ 49 steps) within next reactivity addition and RECORDED the following: <ul style="list-style-type: none"> • INSERT all Control Banks to the CBO position (critical) and recalculate ECC (not critical). 	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.	
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.	

STOP TIME:	
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INITIAL CONDITIONS: Unit 2 is performing a Reactor Startup per IPO-002B, Plant Startup from Hot Standby

- Control Rods have been withdrawn four times in increments of 50 steps
- The Full Out Position (FOP) is 225 steps
- The Unit Supervisor wants to re-perform Inverse Count Rate Ratio Calculations and re-plot points on a 1/M Data Sheet to re-verify Predicted Critical Rod Height

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

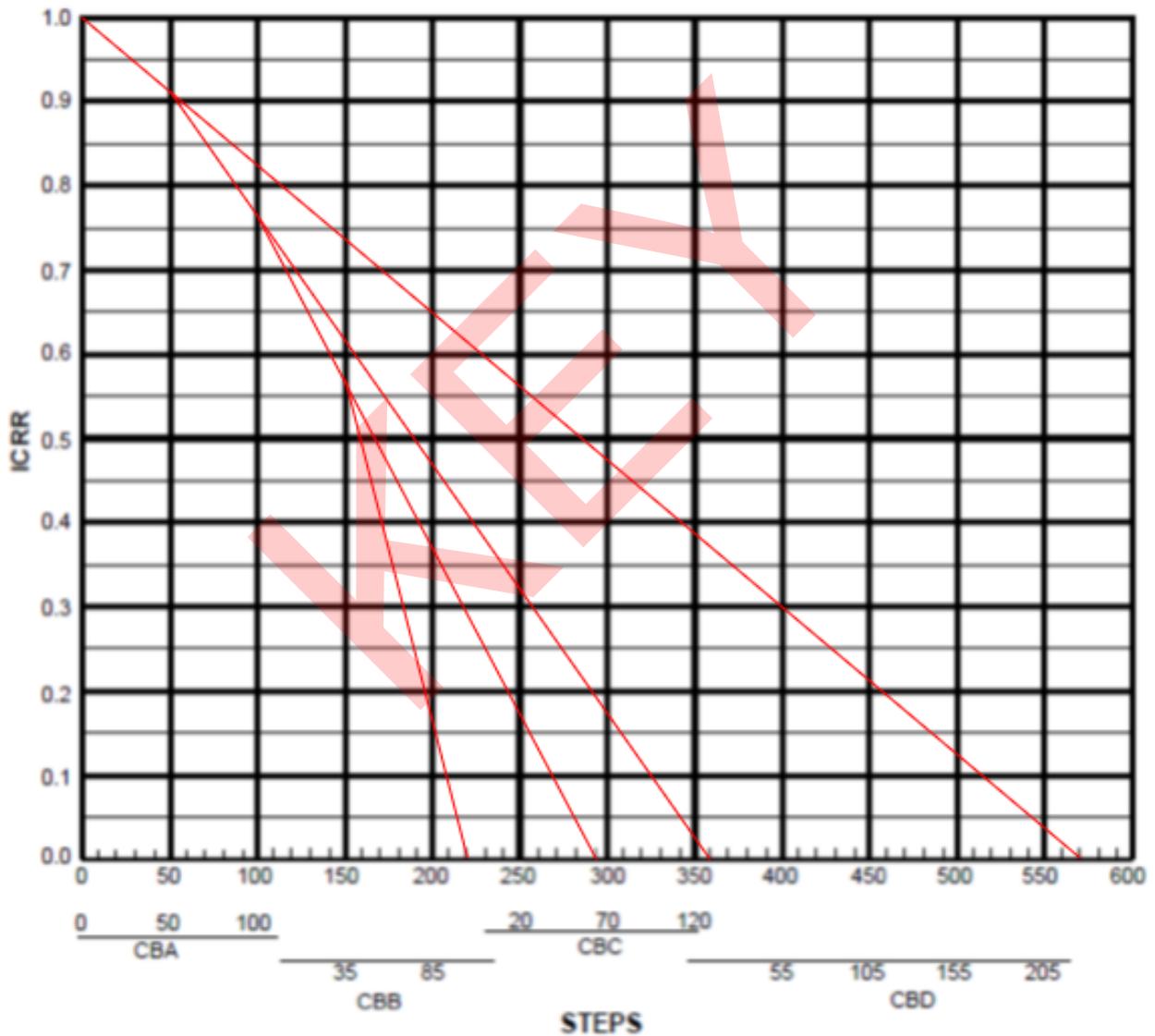
- PERFORM Inverse Count Rate Ratio (ICRR) Calculation for each of the four rod withdrawal readings per IPO-002B Attachment 2, Inverse Count Rate Ratio Calculation Steps 3.3.E and 3.3.F
- PLOT the points on 1/M Data Sheet per IPO-002B Attachment 2 Step 3.3.G
- DETERMINE ECC (Predicted Critical Rod Height) for each of the four rod withdrawals and record on 1/M Data Sheet per IPO-002B Attachment 2 Steps 3.4 and 3.5
- RECORD any required action(s) based on 1/M Data below:

<p style="text-align: center;">CPNPP INTEGRATED PLANT OPERATING PROCEDURES MANUAL</p>	<p style="text-align: center;">UNIT 2</p>	<p style="text-align: center;">PROCEDURE NO. IPO-002B</p>
<p style="text-align: center;">PLANT STARTUP FROM HOT STANDBY</p>	<p style="text-align: center;">REVISION NO. 12</p>	<p style="text-align: center;">PAGE 85 OF 104</p>
	<p style="text-align: center;">CONTINUOUS USE</p>	

ATTACHMENT 2
PAGE 4 OF 4

INVERSE COUNT RATE RATIO CALCULATION

1/M DATA SHEET



Facility: CPNPP JPM # RWT029E Task # RWT029 K/A # 2.3.12 3.2 / 3.7
 Title: Determine Stay Time Requirements

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 1 reactor startup is in progress
- A Containment entry is being planned for a 3-member team to repair a leaking instrument isolation valve inside 1-02 Loop Room
- Estimated area gamma dose rate is 50 mrem/hr
- Estimated area neutron dose rate is 2 mrem/hr
- Radiation Protection determined:
 - Maximum total gamma dose allowed for job (team dose) is 0.3 REM
 - Maximum total neutron dose allowed for job (team dose) is 0.03 REM
- Safety Services performed a heat stress evaluation and all personnel will be wearing ice vests
- Heat Stress ACTION TIME has been determined to be 35 minutes

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

- CALCULATE the following:
 - Gamma dose stay time for the team _____ minutes
 - Neutron dose stay time for the team _____ minutes
 - Heat Stress STAY TIME for the team _____ minutes
- DETERMINE most limiting allowable time for Containment entry team based on ALARA and Heat Stress:
 - Limiting Containment entry time: _____ minutes

Task Standard: CALCULATED gamma and neutron dose stay times for the team, CALCULATED Heat Stress Stay Time, and DETERMINED limiting Containment entry time. Values of items must be CALCULATED within accuracy designated in critical steps

Required Materials: STI-211.07, Heat Stress Management

Validation Time: 15 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP

EXAMINER:

PROVIDE examinee:

- **STI-211.07 (all pages) (Orange paper)**
- **Calculator**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	
Perform Step: 1 √	Calculate gamma dose stay time for team.
Standard:	<p>CALCULATED the following:</p> <ul style="list-style-type: none"> • 300 mrem allowed / 3 persons = 100 mrem/person • 100 mrem/person / 50 mrem/hr gamma = 2 hours. • 2 hours x 60 min/hr = 120 minute gamma Stay Time
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 2 √	Calculate neutron dose stay time for team.
Standard:	<p>CALCULATED the following:</p> <ul style="list-style-type: none"> • 30 mrem allowed / 3 persons = 10 mrem/person • 10 mrem/person / 2 mrem/hr neutron = 5 hours. • 5 hours x 60 min/hr = 300 minute neutron Stay Time
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following step is from STI-211.07, Section 4.0, Definitions.
	<p>4.19 <u>Stay Time</u> – Two times the Action Time. The maximum time that workers will be allowed to continue working in the permitted work location. <i>Example: AT is 27 minutes - Stay Time would be $2 \times 27 = 54$ minutes.</i></p>
Perform Step: 3 √	Calculate Heat Stress Stay Time.
Standard:	<p>CALCULATED the following:</p> <ul style="list-style-type: none"> • Heat Stress Action Time is 35 minutes per the Initial Conditions. • Heat Stress Stay Time is 2 x 35 minutes = 70 minutes
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 4 ✓	Determine limiting Containment entry time.
Standard:	DETERMINED the limiting Containment entry time is 70 minutes based on Heat Stress Stay Time.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.

STOP TIME:	
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INITIAL CONDITIONS: Given the following conditions:

- Unit 1 reactor startup is in progress
- A Containment entry is being planned for a 3-member team to repair a leaking instrument isolation valve inside 1-02 Loop Room
- Estimated area gamma dose rate is 50 mrem/hr
- Estimated area neutron dose rate is 2 mrem/hr
- Radiation Protection determined:
 - Maximum total gamma dose allowed for the job is 0.3 REM
 - Maximum total neutron dose allowed for the job is 0.03 REM
- Safety Services performed a heat stress evaluation and all personnel will be wearing ice vests
- Heat Stress ACTION TIME has been determined to be 35 minutes

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

- CALCULATE the following:
 - Gamma dose stay time for the team _____ minutes
 - Neutron dose stay time for the team _____ minutes
 - Heat Stress STAY TIME for the team _____ minutes
- DETERMINE most limiting allowable time for Containment entry team based on ALARA and Heat Stress:
 - Limiting Containment entry time: _____ minutes

Required Materials: Technical Specification 3.7.17 Spent Fuel Storage Area, Amendment 182

Validation Time: 25 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP

EXAMINER:

PROVIDE examinee:

- **Technical Specification (pages 3.7-37 – 3.7-43) (Orange paper)**
- **Calculator**

√ - Check Mark Denotes Critical Step

START TIME:	
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Perform Step: 1	DETERMINED applicable Fitting Coefficients.	
Standard:	<p>DETERMINED Fuel Assembly (FA) X74 with nominal fuel rod outer diameter of 0.360" is classified as Fuel Group F2 per Technical Specification Table 3.7.17-3.</p> <p>DETERMINED FA X74 with initial U-235 enrichment of 4.74% in central zone region of fuel meets Minimum Applicable Initial Enrichment values of Table 3.7.17-1 for Fuel Group F2, therefore Fitting Coefficients of Tables 3.7.17-2 and 3.7.17-3 are applicable per Technical Specification Figure 3.7.17-1 Note 4. a.</p>	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 2 √	CALCULATE required Minimum Burnup value (in MWD/MTU) for Fuel Category 3 with 5 years decay.	
Standard:	<p>DETERMINED Fitting Coefficients A1 - A4 using Table 3.7.17-3 for Category 3 with 5 years decay.</p> <p>CALCULATED Minimum Burnup per Technical Specification Figure 3.7.17-1 Note 4. d.</p> <p>Minimum Burnup = 1,000 x [A₁ X En³ + A₂ X En² + A₃ X En + A₄]</p> <p>Minimum Burnup = 1,000 X [0.5228 X 4.74³ + -5.9434 X 4.74² + 31.2846 X 4.74 + -34.4602]</p> <p>= 1,000 X [55.6763 + (-133.5339) + 148.2890 + (-34.4602)]</p> <p>= 1000 X 35.9712</p> <p>= 35971.2 MWD/MTU (35791 – 36151)</p>	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 3 ✓	DETERMINE if fuel assembly X74 meets criteria to be classified as Fuel Category 3	
Standard:	<p>DETERMINED fuel assembly X74 burnup from cue = 41288.3 MWD/MTU</p> <p>DETERMINED Minimum Burnup to be classified as Category 3 = 35971.2 MWD/MTU</p> <p>From Technical Specification Figure 3.7.17-1 Note 4. d. If the fuel assembly burnup is greater than or equal to the calculated Minimum Burnup value, then the fuel may be classified into this Fuel Category.</p> <p>DETERMINED fuel assembly X74 burnup is greater than Minimum Burnup for Category 3.</p> <p>DETERMINED fuel assembly X74 meets criteria to be classified as Fuel Category 3.</p> <p>CIRCLED YES.</p>	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	
Terminating Cue:	JPM complete.	
Termination Criteria:	<p>Task completion.</p> <p>Not making adequate progress after twice validation time.</p> <p>Failed to meet task standard.</p>	

STOP TIME:	
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INITIAL CONDITIONS: Given the following conditions:

- Fuel Assembly (FA) X74 nominal fuel rod outer diameter – 0.360”
- FA X74 initial U-235 enrichment for central zone region of fuel – 4.74%
- FA X74 was placed in spent fuel pool 5 years ago
- Reactor Engineering provided fuel burnup calculation for assembly X74 of 41288.3 MWD/MTU

INITIATING CUE:

The Fuel Handling Supervisor directs you to **PERFORM** the following per Technical Specification 3.7.17, Spent Fuel Assembly Storage:

- **PERFORM** intermediate calculations to at least four decimal places and round final required Minimum Burnup value to one decimal place.
- **CALCULATE** required Minimum Burnup value (in MWD/MTU) for Fuel Category 3.
- **DETERMINE** if fuel assembly X74 meets criteria to be classified as Fuel Category 3:

Circle one: YES NO

Facility: CPNPP JPM # RO1502 Task # RO1502 K/A # 2.1.19 3.9 / 3.8
 Title: Alternate Level Determination for the Safety Injection Accumulator

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 2 is in Mode 1
- Both level transmitters for 2-03 Safety Injection Accumulator are unavailable
- 2-03 Safety Injection Accumulator was slowly rising due to check valve back leakage and a 7% drain was planned before level transmitters were lost
- An ultrasonic detector has been installed per SOP-202B, Safety Injection Accumulators Attachment 1, Alternate Level Determination to provide level indication
- Current ultrasonic level measurement is 22-7/8 inches above centerline of the make-up connection

Initiating Cue: The Unit Supervisor directs you to PERFORM the following per SOP-202B, Safety Injection Accumulators, Attachment 1, Alternate Level Determination:

- PERFORM intermediate calculations to at least four decimal places and round answers to one decimal place for the following:
- CALCULATE current level in 2-03 Safety Injection Accumulator in percent
 - Current level _____ %
- CALCULATE accumulator level in inches when level is reduced 7% from current level
 - Final ultrasonic detector level after 7% drain _____ inches
- IDENTIFY Technical Specification Limiting Condition(s) for Operation (LCO(s)), Required Action(s), and Completion Time(s), if any.
- _____

Task Standard: CALCULATED current safety injection accumulator level, CALCULATED target level in inches on ultrasonic detector to drain 7% of volume, DETERMINED TS LCO 3.5.1 CONDITION B was not met and REQUIRED ACTION B.1 required the accumulator to be restored to operable status within 24 hours. Values of items must be CALCULATED within accuracy designated in step.

Required Materials: SOP-202B, Safety Injection Accumulators
OPT-102B-1, Mode 1 and 2 Shiftly Surveillances
Technical Specifications Amendment 183
Calculator

Validation Time: 15 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**EXAMINER:****PROVIDE examinee:**

- SOP-202B (pages 1 – 2, 5 – 6, 79 – 80) (Orange paper)
- OPT-102B-1 (all pages) (Orange paper)
- Technical Specifications
- Calculator

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps is a calculation from SOP-202B, Attachment 1.	
	<p>NOTE: 1.54 inches above <u>OR</u> below the reference level of 21.1 inches encompasses the 39 – 61% range.</p>	
Perform Step: 1 C.	DETERMINE accumulator level using an ultrasonic detector in inches above <u>OR</u> below the reference point. This is value “L”.	
Standard:	<ul style="list-style-type: none"> • DETERMINED reference level is 21.1 inches from NOTE • CONVERTED 22-7/8 inches to decimal format (22.875) • CALCULATE inches from reference level: Current level (inches) – Reference level = Inches above reference point 22.875” - 21.1” = 1.775” 	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 2 √ D.	CALCULATE percent level as follows: 1. “L” above reference point: $(L + 7) / 14 \times 100 = (\text{percent level})$	
Standard:	CALCULATED current percent level: $(1.775 + 7) / 14 \times 100 = 62.6786\% = \mathbf{62.7\% (61.7\% - 63.7\%)}$	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 3	DETERMINE final level in percent for desired 7% level reduction	
Standard:	CALCULATED final desired level in percent: $62.6786\% - 7\% = 55.6786\%$	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	<p>Reference point at 21.1 inches is middle of 0% – 100% span or 50%: $(0 + 7) / 14 \times 100 = 50\%$ <u>OR</u> $(7 - L) / 14 \times 100 = 50\%$ Since final desired level is above 50% (55.6786%), final level will be above reference point.</p>
Perform Step: 4 ✓	<p>DETERMINE final target level as read on ultrasonic detector in inches following 7% drain.</p>
Standard:	<p>CALCULATED final level in inches: $(L + 7) / 14 \times 100 = 55.6786\%$ REARRANGED for L: $L + 7 / 14 = 55.6786 / 100$ $L + 7 = (0.5568) (14)$ $L = 7.7950 - 7 = 0.7950$ inches Final level = Reference point + L 21.1 inches + 0.7950 inches = 21.8950 inches <u>OR</u> 14 inches = 100% span $14 / 100 = 0.14$ inches / % X 7% drain = 0.98 inches Final level = Current level – 0.98 inches Final level = 22.875 inches – 0.98 inches = 21.895 inches Final level = 21.9 Inches (21.7 inches to 22.1 inches)</p>
Comment:	<p>SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>

Perform Step: 5	<p>DETERMINE Technical Specification limits on safety injection accumulator level.</p>
Standard:	<p>DETERMINED ECCS accumulator level limits from OPT-102B-1, Mode 1 and 2 Shiftly Surveillances are 39% and 61%.</p>
Comment:	<p>SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>

Examiner Note:	The following steps are from CPNPP Technical Specifications.					
Perform Step: 6 ✓	IDENTIFY Technical Specification LIMITING CONDITION FOR OPERATION and CONDITION.					
Standard:	RECOGNIZED current safety injection accumulator level is not within specification limit and DETERMINED the following: <ul style="list-style-type: none"> • Technical Specification LCO 3.5.1, Four ECCS accumulators shall be OPERABLE, CONDITION B, One accumulator inoperable for reasons other than Condition A. 					
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"/>			

Examiner Note:	Examinee may also indicate that accumulator level should be lowered as a required action (not critical).					
Perform Step: 7 ✓	IDENTIFY Technical Specification REQUIRED ACTION and COMPLETION TIME.					
Standard:	DETERMINED Technical Specification 3.5.1 B.1 REQUIRED ACTION and COMPLETION TIME: <ul style="list-style-type: none"> • REQUIRED ACTION: Restore accumulator to OPERABLE status • COMPLETION TIME: within 24 hours. 					
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"/>			

Terminating Cue:	JPM complete.
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.

STOP TIME:	
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INITIAL CONDITIONS: Given the following conditions:

- Unit 2 is in Mode 1
- Both level transmitters for 2-03 Safety Injection Accumulator are unavailable
- 2-03 Safety Injection Accumulator was slowly rising due to check valve back leakage and a 7% drain was planned before level transmitters were lost
- An ultrasonic detector has been installed per SOP-202B, Safety Injection Accumulators Attachment 1, Alternate Level Determination to provide level indication
- Current ultrasonic level measurement is 22-7/8 inches above centerline of the make-up connection

INITIATING CUE:

The Unit Supervisor directs you to **PERFORM** the following per SOP-202B, Safety Injection Accumulators, Attachment 1, Alternate Level Determination:

- **PERFORM** intermediate calculations to at least four decimal places and round answers to one decimal place for the following:
 - **CALCULATE** current level in 2-03 Safety Injection Accumulator in percent
 - Current level _____ %
 - **CALCULATE** accumulator level in inches when level is reduced 7% from current level
 - Final ultrasonic detector level after 7% drain _____ inches
- **IDENTIFY** Technical Specification Limiting Condition(s) for Operation (LCO(s)), Required Action(s), and Completion Time(s), if any.
 - _____

MODE 1 AND 2 SHIFTLY SURVEILLANCES

PARAMETER DESCRIPTION	CHANNEL	READINGS				ACCEPTANCE CRITERIA
		DAY		MID		
SSI TEMPERATURE SR 3.7.9.2 Actual TS is 102 °F See NOTE (2)	2-TR-4260-1			°F		≤ 100.4 °F
	2-TR-4260-2			°F		≤ 100.4 °F
SSI LEVEL SR 3.7.9.1 ≥ 776 FT requires TRM 13.7.34 entry	X-LI-4288 (UNIT 1)			FT		≥ 770 FT
	X-LI-4289 (UNIT 1)			FT		≥ 770 FT
ECCS ACCUMULATOR ISOLATION VALVES SR 3.5.1.1 SR 3.5.1.5	2-MLB-1A2, 1.8	SAT	UNSAT	SAT	UNSAT	VALVE OPEN (MLB DARK) AND VALVE MOTOR BREAKER OFF (NO DEVIATIONS ON OWI-103-2202)
	2-MLB-1B2, 1.8	SAT	UNSAT	SAT	UNSAT	
	2-MLB-1A2, 2.8	SAT	UNSAT	SAT	UNSAT	
	2-MLB-1B2, 2.8	SAT	UNSAT	SAT	UNSAT	
ECCS VALVE ALIGNMENT SR 3.5.2.1	1/2-8802A	SAT	UNSAT	SAT	UNSAT	VALVE CLOSED AND POWER SWITCH OFF
	69/2-8802A					
	1/2-8802B	SAT	UNSAT	SAT	UNSAT	VALVE CLOSED AND POWER SWITCH OFF
	69/2-8802B					
	1/2-8835	SAT	UNSAT	SAT	UNSAT	VALVE OPEN AND POWER SWITCH OFF
	69/2-8835					
	1/2-8813	SAT	UNSAT	SAT	UNSAT	VALVE OPEN AND POWER SWITCH OFF
	69/2-8813					
	1/2-8806	SAT	UNSAT	SAT	UNSAT	VALVE OPEN AND POWER SWITCH OFF
	69/2-8806					
	1/2-8809A	SAT	UNSAT	SAT	UNSAT	VALVE OPEN AND POWER SWITCH OFF
	69/2-8809A					
	1/2-8809B	SAT	UNSAT	SAT	UNSAT	VALVE OPEN AND POWER SWITCH OFF
	69/2-8809B					
	1/2-8840	SAT	UNSAT	SAT	UNSAT	VALVE CLOSED AND POWER SWITCH OFF
	69/2-8840					
RWST LEVEL SR 3.3.2.1.7b	2-LI-930		%		%	LEVEL ≥ 95% AND MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 4%
	2-LI-931		%		%	
	2-LI-932		%		%	
	2-LI-933		%		%	
RWST TEMPERATURE SR 3.5.4.1	2-TI-4793			°F		40°F TO 120 °F
CRDM SHROUD EXHAUST TEMPERATURE TRS 13.7.36.1 NOTE (1)	2-TI-5454			°F	°F	≤ 163 °F
	2-TI-5455			°F	°F	≤ 163 °F

MODE 1 AND 2 SHIFTLY SURVEILLANCES

PARAMETER DESCRIPTION	CHANNEL	READINGS		ACCEPTANCE CRITERIA
		DAY	MID	
CONTAINMENT AVERAGE TEMPERATURE 3.6.5.1 TRS 13.7.36.1 NOTE (1)	2-TI-5400A	°F	°F	≤110 °F <i>Actual TS is 120 °F. Ref. 2-ALB-3A/4.1</i>
CONTAINMENT PRESSURE, IR SR 3.3.2.1.1c SR 3.3.2.1.2c SR 3.3.2.1.3b.3 SR 3.3.2.1.4c	2-PI-935	PSIG	PSIG	MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤3.0 PSIG
	2-PI-937	PSIG	PSIG	
	2-PI-934	PSIG	PSIG	
	2-PI-936	PSIG	PSIG	
CONTAINMENT PRESSURE, NR SR 3.6.4.1	2-PI-5470A	PSIG	PSIG	-0.3 PSIG TO 1.3 PSIG
	2-PI-5470B	PSIG	PSIG	-0.3 PSIG TO 1.3 PSIG
REACTOR CAVITY EXHAUST TEMPERATURE (NEUTRON DETECTOR WELL EXHAUST TEMPERATURE) TRS 13.7.36.1 NOTE (1) These temperature readings are indicated on 2-TR-5445 and 2-TR-5449	2-TE-5445	°F	°F	≤ 150 °F
	2-TE-5446	°F	°F	≤ 150 °F
	2-TE-5447	°F	°F	≤ 150 °F
	2-TE-5448	°F	°F	≤ 150 °F
	2-TE-5449	°F	°F	≤ 150 °F
	2-TE-5450	°F	°F	≤ 150 °F
	2-TE-5451	°F	°F	≤ 150 °F
	2-TE-5452	°F	°F	≤ 150 °F
ECCS ACCUMULATOR LEVEL SR 3.5.1.2 * Primary channel except when declared inoperable. If inoperable, circle other channel to indicate its use for the surveillance. Ref. TS BASES Accumulator level shall meet acceptance criteria, using new channel, prior to shifting to new channel. ** Computer points should be used to validate deviation prior to initiating any report and/or work document. (EVAL-2009-003699-07)	2-LI-950 * (L6950A)**	%	%	PRIMARY CHANNEL LEVEL 39% TO 61 % AND MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 5%** IF LEVEL OUTSIDE THIS CRITERIA, VERIFY 2-ALB-4C, 1.4, 2.4, 3.4 & 4.4 NOT LIT AND RESTORE LEVEL. A level increase of ≥ 12% above the reference level may require sampling within 6 hours. Ref. SR 3.5.1.4
	2-LI-951 (L6951A)**	%	%	
	2-LI-952 * (L6952A)**	%	%	
	2-LI-953 (L6953A)**	%	%	
	2-LI-954 * (L6954A)**	%	%	
	2-LI-955 (L6955A)**	%	%	
	2-LI-956 * (L6956A)**	%	%	
	2-LI-957 (L6957A)**	%	%	
ECCS ACCUMULATOR PRESSURE SR 3.5.1.3 * Primary channel except when declared inoperable. If inoperable, circle other channel to indicate its use for the surveillance. Ref. TS BASES Accumulator pressure shall meet acceptance criteria, using new channel, prior to shifting to new channel.	2-PI-960 *	PSIG	PSIG	PRIMARY CHANNEL PRESSURE 623 PSIG TO 644 PSIG AND MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 30 PSIG
	2-PI-961	PSIG	PSIG	
	2-PI-962 *	PSIG	PSIG	
	2-PI-963	PSIG	PSIG	
	2-PI-964 *	PSIG	PSIG	
	2-PI-965	PSIG	PSIG	
	2-PI-966 *	PSIG	PSIG	
	2-PI-967	PSIG	PSIG	

MODE 1 AND 2 SHIFTLY SURVEILLANCES

PARAMETER DESCRIPTION	CHANNEL	READINGS		ACCEPTANCE CRITERIA		
		DAY	MID			
N-16 POWER SR 3.3.1.1.6 SR 3.3.1.1.7	2-JI-411A	%	%	MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 6%		
	2-JI-421A	%	%			
	2-JI-431A	%	%			
	2-JI-441A	%	%			
OVERTEMPERATURE N-16 SETPOINT SR 3.3.1.1.6	2-TI-411B	%	%	MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 10%		
	2-TI-421B	%	%			
	2-TI-431B	%	%			
	2-TI-441B	%	%			
OVERPOWER N-16 SETPOINT SR 3.3.1.1.7	2-NI-411A	%	%	MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 5%		
	2-NI-421A	%	%			
	2-NI-431A	%	%			
	2-NI-441A	%	%			
RCS LOOP FLOW SR 3.3.1.1.10 SR 3.4.4.1	2-FI-414	%	%	RCS FLOW INDICATED ON ALL OPERABLE CHANNELS AND MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ON ANY LOOP ≤ 3%		
	2-FI-415	%	%			
	2-FI-416	%	%			
	2-FI-424	%	%			
	2-FI-425	%	%			
	2-FI-426	%	%			
	2-FI-434	%	%			
	2-FI-435	%	%			
	2-FI-436	%	%			
	2-FI-444	%	%			
	2-FI-445	%	%			
	2-FI-446	%	%			
RCS TOTAL FLOW SR 3.4.1.3	SUM OF ALL OPERABLE LOOP FLOW CHANNELS DIVIDED BY THE NUMBER OF OPERABLE CHANNELS	%	%	AVERAGE OF ALL OPERABLE LOOP FLOW INDICATORS ≥ 97.16% (INDICATES REQUIRED FLOW OF ≥ 408,000 gpm) <i>Not required in Mode 2.</i>		
RCP STATUS SR 3.4.4.1	1/2-PCPX1	SAT	UNSAT	SAT	UNSAT	ALL FOUR RCPs OPERATING
	1/2-PCPX2					
	1/2-PCPX3					
	1/2-PCPX4					

MODE 1 AND 2 SHIFTLY SURVEILLANCES

PARAMETER DESCRIPTION	CHANNEL	READINGS		ACCEPTANCE CRITERIA
		DAY	MID	
PRESSURIZER LEVEL SR 3.3.1.1.9 SR 3.4.9.1	2-LI-459A	%	%	LEVEL ≤ 92% AND MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 5%
	2-LI-461	%	%	
	2-LI-460A	%	%	
PRESSURIZER PRESSURE SR 3.3.1.1.8a SR 3.3.1.1.8b SR 3.3.2.1.1d SR 3.4.1.1	2-PI-455A	PSIG	PSIG	MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 40 PSIG AND AVERAGE ≥ 2220 PSIG (IF ONLY 3 CHANNELS AVAILABLE, AVERAGE ≥ 2222 PSIG.) <i>Minimum pressure N/A in Mode 2 and some power changes. Ref. TS 3.4.1.</i>
	2-PI-456	PSIG	PSIG	
	2-PI-457	PSIG	PSIG	
	2-PI-458	PSIG	PSIG	
	AVERAGE	PSIG	PSIG	
ROD GROUP ALIGNMENT SR 3.1.4.1 *	DRPI AND BANK DEMAND** TDM-102B COLR	SAT UNSAT	SAT UNSAT	DRPI AND DEMAND POSITION WITHIN ±12 STEPS FOR EACH ROD
SHUTDOWN BANK INSERTION LIMIT SR 3.1.5.1 *		SAT UNSAT	SAT UNSAT	ALL SHUTDOWN RODS FULLY WITHDRAWN, ≥218 & ≤231 STEPS (ADMIN LIMIT, ≥222 & ≤231 STEPS)
CONTROL BANK INSERTION LIMIT SR 3.1.6.2 *		SAT UNSAT	SAT UNSAT	CONTROL BANK INSERTION WITHIN LIMITS OF COLR
CONTROL BANK SEQUENCE AND OVERLAP SR 3.1.6.3 *		SAT UNSAT	SAT UNSAT	CONTROL BANK SEQUENCE AND OVERLAP WITHIN LIMITS OF COLR FOR CONTROL BANKS NOT FULLY WITHDRAWN. (In practice, sequence and overlap are satisfied as long as rods are in position per COLR. See SR 3.1.6.3 Bases.)
* Physics Test exceptions 3.1.8 apply. Control Bank rod insertion limits only apply when Keff ≥ 1.0. Shutdown Bank rod insertion limits only apply when Keff ≥ 1.0, or in Mode 2 with any Control Bank not fully inserted.				
** - IF SR 3.1.4.1 is satisfied, THEN the Bank Demand Position Indication System (step counters) should be used to determine the acceptability of SR 3.1.5.1, SR 3.1.6.2, and SR 3.1.6.3. OTHERWISE, utilize the most conservative indication (EITHER DRPI OR Bank Demand).				
RCS AVERAGE TEMPERATURE SR 3.4.1.2 SR 3.4.2.1*	2-TI-412	°F	°F	EACH RCS LOOP TEMPERATURE ≥ 551 °F AND THE AVERAGE OF ALL 4 LOOPS ≤ 592 °F (IF ONLY 3 CHANNELS AVAILABLE, WITHIN LIMITS OF COLR) * Applicable in Mode 2 with Keff ≥ 1.0. Physics Test exceptions 3.1.8 apply.
	2-TI-422	°F	°F	
	2-TI-432	°F	°F	
	2-TI-442	°F	°F	
	AVERAGE	°F	°F	
INTERMEDIATE RANGE NEUTRON FLUX SR 3.3.1.1.4	2-NI-35B	amps	amps	LOWEST OPERABLE READING CHANNEL > THE HIGHEST OPERABLE READING CHANNEL DIVIDED BY 4. <i>Only applicable below P-10 (Mode 1) and above P-6 (Mode 2).</i>
	2-NI-36B	amps	amps	
POWER RANGE NEUTRON FLUX SR 3.3.1.1.2a SR 3.3.1.1.2b	2-NI-0041B	%	%	MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ≤ 4%
	2-NI-0042B	%	%	
	2-NI-0043B	%	%	
	2-NI-0044B	%	%	

MODE 1 AND 2 SHIFTLY SURVEILLANCES

PARAMETER DESCRIPTION	CHANNEL	READINGS		ACCEPTANCE CRITERIA
		DAY	MID	
CALORIMETRIC AND CALIBRATION OF POWER RANGE NIS AND N-16 CHANNELS SR 3.3.1.2.6 SR 3.3.1.2.7 SR 3.3.1.2.2a	PERFORM OPT-309		SAT UNSAT	OPT-309 ACCEPTANCE CRITERIA SATISFIED. MID SHIFT - ENSURE OPT-309 AND ANY NECESSARY ADJUSTMENTS HAVE BEEN COMPLETED. <i>Not required until 24 hours after THERMAL POWER ≥15% RTP</i>
STEAMLINE PRESSURE SR 3.3.2.1.1e SR 3.3.2.1.4d.1	2-PI-515A	PSIG	PSIG	MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS ON ANY LOOP ≤ 60 psig
	2-PI-516A	PSIG	PSIG	
	2-PI-514A	PSIG	PSIG	
	2-PI-524A	PSIG	PSIG	
	2-PI-526A	PSIG	PSIG	
	2-PI-525A	PSIG	PSIG	
	2-PI-535A	PSIG	PSIG	
	2-PI-534A	PSIG	PSIG	
	2-PI-536A	PSIG	PSIG	
	2-PI-544A	PSIG	PSIG	
	2-PI-545A	PSIG	PSIG	
	2-PI-546A	PSIG	PSIG	
STEAM GENERATOR LEVEL SR 3.3.1.1.14 SR 3.3.2.1.5b SR 3.3.2.1.6c	2-LI-518	%	%	MAXIMUM DEVIATION BETWEEN OPERABLE CHANNELS IN ANY LOOP ≤ 5%
	2-LI-551	%	%	
	2-LI-517	%	%	
	2-LI-519	%	%	
	2-LI-528	%	%	
	2-LI-529	%	%	
	2-LI-527	%	%	
	2-LI-552	%	%	
	2-LI-538	%	%	
	2-LI-539	%	%	
	2-LI-537	%	%	
	2-LI-553	%	%	
	2-LI-548	%	%	
	2-LI-554	%	%	
	2-LI-547	%	%	
2-LI-549	%	%		
CST LEVEL SR 3.7.6.1 Actual TS is ≥ 53% See NOTE (2)	2-LI-2478A	%	%	LEVEL ≥ 61%.
	2-LI-2479A	%	%	

MODE 1 AND 2 SHIFTLY SURVEILLANCES

PARAMETER DESCRIPTION	CHANNEL	READINGS				ACCEPTANCE CRITERIA
		DAY		MID		
PC-11 / RM-80 LOOPS COMMUNICATING PROPERLY	SCADA	SAT	UNSAT	SAT	UNSAT	In the window back of SCADA B, observe the two red LEDs (transmit and receive) flashing on circuit boards 1 through 4 AND for card 5 (slot 6) the bottom LED is flashing.
CONTAINMENT AIR PARTICULATE RADIATION SR 3.4.15.1	2-RE-5502 (CAP-298)	SAT	UNSAT	SAT	UNSAT	PC-11 CHANNEL(S) ARE OPERABLE (GREEN STATUS AND INDICATING, "GROUP 1 OPT-102") REVIEW TREND DISPLAY OR OPT-114 AND VERIFY CHANNEL IS REFLECTING EXPECTED CONDITIONS. NOTES: (2) MAY BE YELLOW STATUS (from natural radio nuclides), IF ALL CCW RADIATION MONITORS IN GREEN STATUS AND INDICATING. (3) <u>WHEN</u> THE ASSOCIATED SSW PUMP IS <u>NOT</u> RUNNING, THE SSW-265/ SSW-266 SURVEILLANCE IS SAT, IF <u>MONITOR LOSS OF SAMPLE FLOW AND MONITOR LOSS OF PROCESS FLOW</u> ARE THE ONLY ALARM CONDITIONS.
CONTAINMENT AIR GASEOUS RADIATION SR 3.3.6.1.3a SR 3.4.15.1	2-RE-5503 (CAG-297)	SAT	UNSAT	SAT	UNSAT	
LIQUID EFFLUENT MONITORING ODCM SR 4.3.3.4.1b SR 4.3.3.4.2a	2-RE-5100 (TBD-272)			SAT	UNSAT	
	2-RE-4269 (SSW-265) (2) (3)			SAT	UNSAT	
	2-RE-4270 (SSW-266) (2) (3)			SAT	UNSAT	
DRMS TRENDING	PERFORM OPT-114	SAT	UNSAT			OPT-114 ACCEPTANCE CRITERIA SATISFIED
SFGD BUILDING AREA (EXHAUST) TEMPERATURE TRS 13.7.36.1 NOTE (1)	2-TI-5629		°F		°F	≤ 104 °F
	2-TI-5628		°F		°F	≤ 104 °F
	2-TI-5627		°F		°F	≤ 104 °F
	2-TI-5626		°F		°F	≤ 104 °F
LOOSE PARTS MONITORING SYSTEM TRS 13.4.31.1	CHECK EACH CHANNEL ON THE AUDIO MONITOR TO VERIFY NORMAL BACKGROUND LEVELS			SAT	UNSAT	ALL EIGHT DETECTORS ARE OPERATING WITH NO HI ALARMS REFER TO ABN-910 FOR GUIDANCE ON AUDIO INTERPRETATION
RCS INVENTORY CALCULATION SR 3.4.13.1 SR 3.4.13.2	VERIFY OPT-303 IS CURRENT			SAT	UNSAT	OPT-303 ACCEPTANCE CRITERIA SATISFIED WITHIN THE LAST 72 HOURS
NOTE - THE FOLLOWING ITEMS ARE ONLY REQUIRED IN MODE 2.						
SHUTDOWN MARGIN CALCULATION SR 3.1.1.1 SR 3.1.8.4	PERFORM OPT-301			SAT	UNSAT	OPT-301 ACCEPTANCE CRITERIA SATISFIED REQUIRED IN MODE 2 WITH $K_{eff} < 1.0$ OR DURING PHYSICS TESTING.
SOURCE RANGE NEUTRON FLUX SR 3.3.1.1.5	2-NI-31B		cps		cps	LOWEST OPERABLE READING CHANNEL ≥ THE HIGHEST OPERABLE READING CHANNEL DIVIDED BY 3.5. <i>Only applicable below P-6.</i>
	2-NI-32B		cps		cps	

Facility: CPNPP JPM # SO1808 Task # SO1808A K/A # 2.2.12 3.7 / 4.1
 Title: Perform Axial Flux Difference Surveillance

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 1 is at 95% power
- Axial Flux Difference (AFD) alarm was declared INOPERABLE at 0800
- The following Power Range Nuclear Instrument AFD data was collected and entered in OPT-403-1, AFD Data Sheet.

TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C
0800	9%	9%	10%	9%
0830	9%	10%	10%	10%
0900	10%	10%	11%	11%
0930	11%	11%	11%	12%
1000	11%	11%	11%	13%
1030	12%	12%	13%	14%

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

- PERFORM OPT-403, Axial Flux Difference using information provided
- COMPLETE OPT-403-1, AFD Data Sheet
- IDENTIFY Technical Specification Limiting Condition(s) for Operation (LCO(s)), Required Action(s), and Completion Time(s), if any.
- _____

Task Standard: PERFORMED Axial Flux Difference surveillance and DETERMINED 3 of 4 PR Δ FLUX channels were not within Acceptable Operation region and match attached KEY. DETERMINED TS LCO 3.2.3 CONDITION A was applicable and REQUIRED ACTION A.1 required THERMAL POWER be restored to < 50% RTP within 30 minutes.

Required Materials: OPT-403, Axial Flux Difference
OPT-403-1, AFD Data Sheet
NUC-204-6, Axial Flux Difference as a Function of Rated Thermal Power, Unit 1
Cycle 23
Technical Specifications, Amendment 183

Validation Time: 10 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**EXAMINER:****PROVIDE examinee:**

- **OPT-403 (all pages) (Orange paper)**
- **OPT-403-1 with time and power range flux values entered (all pages) (Orange paper)**
- **NUC-204-6 (all pages) (Orange paper)**
- **ERX-22-001 Rev 0 CPNPP Unit 1 Cycle 23 Core Operating Limits Report (all pages) (Orange paper)**
- **Technical Specifications (controlled copy)**
- **Calculator**

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following steps are from OPT-403 and documented on Form OPT-403-1.	
Perform Step: 1 6.1	VERIFY MODE 1 at \geq 50% RTP.	
Standard:	CHECKED prerequisite box for MODE 1 at \geq 50% RTP per Initial Conditions.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 2 8.1 & 8.1.1	Record the following data for the affected unit: <ul style="list-style-type: none"> Unit 1 or 2 as applicable 	
Standard:	CHECKED step and CIRCLED Unit 1 on OPT-403-1.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 3 8.1 & 8.1.2	Record the following data for the affected unit: <ul style="list-style-type: none"> Date 	
Standard:	CHECKED step and ENTERED Date on OPT-403-1.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 4 8.2 & 8.2.1	Record the following data: <ul style="list-style-type: none"> Time 	
Standard:	CHECKED time entered on OPT-403-1.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 5 8.2 & 8.2.2	Record the following data: <ul style="list-style-type: none"> PR Δ FLUX for each operable excore detector 	
Standard:	CHECKED PR Δ FLUX recorded for each operable excore detector on OPT-403-1 from JPM Cue Sheet.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 6 8.2 & 8.2.3	Record the following data: <ul style="list-style-type: none"> Percent Rated Thermal Power (RTP)
Standard:	CHECKED Percent Rated Thermal Power recorded on OPT-403-1.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Perform Step: 7 ✓ 8.3 & 8.3 A.	Perform the following to determine PR Δ FLUX status and record: <ul style="list-style-type: none"> Verify at least 3 of 4 PR Δ FLUX channels are within the Acceptable Operation region (Doghouse Region) of NUC-204-6 "Axial Flux Difference as a Function of Rated Thermal Power."
Standard:	EVALUATED OPT-403-1 data against NUC-204-6 (not critical), CIRCLED YES for times between 0800 and 1000 (critical), CIRCLED NO for 1030 (critical), and INITIALED on OPT-403-1 (not critical).
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Perform Step: 8 8.3 & 8.3 B.	Perform the following to determine PR Δ FLUX status and record: <ul style="list-style-type: none"> Repeat Steps 8.2 and 8.3 at least once per thirty (30) minutes.
Standard:	REPEATED Steps 8.2 and 8.3 at least once per thirty (30) minutes on OPT-403-1.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Perform Step: 9 ✓	IDENTIFY Technical Specification LIMITING CONDITION FOR OPERATION and CONDITION
Standard:	RECOGNIZED AFD is not within specification limit and DETERMINED the following: <ul style="list-style-type: none"> LIMITING CONDITION FOR OPERATION: Technical Specification LCO 3.2.3 (critical), The AFD in % flux difference units shall be maintained within the limits specified in the COLR (not critical) CONDITION: CONDITION A, AFD not within limits is applicable (critical) at 1030 (critical).
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Perform Step: 10 ✓	Identify Technical Specification REQUIRED ACTION and COMPLETION TIME.
Standard:	DETERMINED Technical Specification 3.2.3.A.1 REQUIRED ACTION and COMPLETION TIME: <ul style="list-style-type: none"> REQUIRED ACTION: Restore THERMAL POWER to < 50% RTP COMPLETION TIME: within 30 minutes.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 11	Record findings in the Discrepancies/Comments Section of OPT-403-1.
Standard:	RECORDED findings in Discrepancies / Comments Section of OPT-403-1.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.

STOP TIME:	
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INITIAL CONDITIONS: Given the following conditions:

- Unit 1 is at 95% power
- Axial Flux Difference (AFD) alarm was declared INOPERABLE at 0800
- The following Power Range Nuclear Instrument AFD data was collected and entered in OPT-403-1, AFD Data Sheet.

TIME	1-NI-41C	1-NI-42C	1-NI-43C	1-NI-44C
0800	9%	9%	10%	9%
0830	9%	10%	10%	10%
0900	10%	10%	11%	11%
0930	11%	11%	11%	12%
1000	11%	11%	11%	13%
1030	12%	12%	13%	14%

INITIATING CUE:

The Shift Manager directs you to PERFORM the following:

- PERFORM OPT-403, Axial Flux Difference using information provided
- COMPLETE OPT-403-1, AFD Data Sheet
- IDENTIFY Technical Specification Limiting Condition(s) for Operation (LCO(s)), Required Action(s), and Completion Time(s), if any.
- _____

Facility: CPNPP JPM # SO1039C

Task # SO1039

K/A # 2.3.6

2.0 / 3.8

Title: Approve Liquid Release Permit

Examinee (Print): _____

Testing Method:

Simulated Performance: _____

Classroom: XActual Performance: X

Simulator: _____

Alternate Path: _____

Plant: _____

Time Critical: _____

Low Pwr: _____

RCA: _____

Bank / Mod / New: M

Emerg: _____

EN: _____

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Unit 1 is shutdown for REFUELING and the following conditions exist:

- X-01 Waste Water Holdup Tank (WWHT1) is scheduled for release
- 1-01 and 1-03 Circulating Water Pumps are operating
- Unit 1 Circulating Water System has been selected as the discharge path

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

- REVIEW the Liquid Release Permit and Plant Conditions and CIRCLE the results:
 - STA-603-13 REQUIRED? YES / NO
 - Recirculation time SATISFACTORY? YES / NO
 - Unit 1 Discharge flowpath ALLOWED? YES / NO
 - Sample times SATISFACTORY? YES / NO
 - Sample ID data SATISFACTORY? YES / NO
 - Sample pH Acceptance Criteria SATISFACTORY? YES / NO

Task Standard: REVIEWED Liquid Release Permit and EVALUATED parameters as specified in critical steps.

Required Materials: STA-603, Control of Station Radioactive Effluents
STA-603-10, Batch Liquid Radioactive Effluent Release Data Sheet
STA-603-13, Batch Radioactive Effluent Release Verification

Validation Time: 15 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**EXAMINER:****PROVIDE examinee:**

- STA-603 (all pages) (Orange paper)
- STA-603-10 partially completed with data (all pages) (Orange paper)
- STA-603-13 (all pages) (Orange paper)
- Calculator
- May ask for ODCM reference so be prepared with that

√ - Check Mark Denotes Critical Step

START TIME:	
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Perform Step: 1 √	Review Release Permit, STA-603-10, Batch Liquid Radioactive Effluent Release Data Sheet.
Examiner Note:	STA-603-13 is required per initiating criteria specified on the STA-603-13 form.
Standard:	REVIEWED STA-603-13, Release Permit and DETERMINED the following: <ul style="list-style-type: none"> • STA-603-13 is required and CIRCLED YES.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 2 √	Review Release Permit, STA-603-10, Batch Liquid Radioactive Effluent Release Data Sheet.
Examiner Note:	Minimum required recirculation time is specified on STA-603-10.
Standard:	REVIEWED STA-603-10, Release Permit and DETERMINED the following: <ul style="list-style-type: none"> • Recirculation time is greater than 0.5 hours before sample and CIRCLED YES.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 3 √	Based on the initial conditions, determine the required minimum dilution requirements are met for a release via Unit 1.
Examiner Note:	Minimum number of operating circulating water pumps is specified per STA-603 Step 6.2.7.
Standard:	DETERMINED that a minimum of two Circulating Water Pumps (CWP) are required for a release: <ul style="list-style-type: none"> • Unit 1 Discharge flowpath has 2 CWPs and CIRCLED YES.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 4 √	Determine if sample times are satisfactory.
Examiner Note:	Minimum time between samples is specified on STA-603-10.
Standard:	DETERMINED sample times are \geq 15 minutes apart and CIRCLED YES.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

- INITIAL CONDITIONS:** Unit 1 is shutdown for REFUELING and the following conditions exist:
- X-01 Waste Water Holdup Tank (WWHT1) is scheduled for release
 - 1-01 and 1-03 Circulating Water Pumps are operating
 - Unit 1 Circulating Water System has been selected as the discharge path

- INITIATING CUE:** The Shift Manager directs you to PERFORM the following:
- REVIEW the Liquid Release Permit and Plant Conditions and CIRCLE the results:
 - STA-603-13 REQUIRED? YES / NO
 - Recirculation time SATISFACTORY? YES / NO
 - Unit 1 Discharge flowpath ALLOWED? YES / NO
 - Sample times SATISFACTORY? YES / NO
 - Sample ID data SATISFACTORY? YES / NO
 - Sample pH Acceptance Criteria SATISFACTORY? YES / NO

RELEASE PERMIT NUMBER _____

BATCH LIQUID RADIOACTIVE EFFLUENT RELEASE DATA SHEET

▼ PRE-RELEASE DATA ▼

Maximum volumes and flowrates:

TANK	VOL	gpm
WMT1	5340	100
WMT2	5340	100
LHMT1	5875	100
LHMT2	5875	100
WWHT1	30500	300
WWHT2	30500	300
PET1	30000	100
PET2	30000	100

Unit 1 Unit 2 Common (X)

Tank being discharged: WWHT1

XRE-5253 (LWE-076) Operable? Yes No N/A

NOTE: Not Applicable for WWHTs.

IF LWE-076 is inoperable, THEN record the LCOAR # and attach form STA-603-13. LCOAR # _____

Date/Time recirculation initiated: Today / 0345 (minimum 1 hour recirc time; WWHT ≥ 0.5 hour)

Estimated Release Start Date/Time: Today / 0900

Requested By: Larry Barnes Date/Time: Today / 0400

▼ SAMPLE DATA ▼

Sample Date/Time: Today / 0425 2nd Sample Date/Time: Today / 0450

Sample ID (Spectrum) No. 1.12E-7
(1st sample, attach results)

NOTE: 2nd sample, taken at least 15 minutes after initial sample, is always required for WWHTs. Discharge does not flow through X-RE-5253.

Sample ID (Spectrum) No. 1.85E-7 (2nd sample if applicable, attach results)

2nd sample Gamma Spectrum total activities agree within +/- 25% SAT UNSAT

Sample saved for composite analysis: LBJ (Initial)

NOTE: Radiological effluent software automatically merges multiple spectrums and uses the highest values of each nuclide identified.

NOTE: Exceeding the acceptance criteria for pH would not prevent the release from occurring and is recorded and reported by Environmental IAW the TPDES wastewater permit (No. 01854) and Commitment 24708.

Environmental Parameter	Acceptance Criteria
pH <u>9.1</u>	6.0 to 9.0

Prepared By: Stella Stevens Date/Time: Today / 0515

Facility: CPNPP JPM # SO1136K 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>N</u>	Emerg:	_____	EN: _____

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- An EF-4 tornado touches down in the Owner Controlled Area and passes through the Protected Area
- Unit 1 trips from full power after operating for the last 450 days
- Unit 2 is Defueled
- All offsite power transmission lines are lost
- Unit 1 and Unit 2 safeguard buses are powered from their respective emergency diesel generators
- Operators report visible damage to 1-01 TD AFW Pump steam discharge piping as it exits the Safeguards Building roof
- Unit 1 SG narrow range levels are as follows with slowly lowering trend:
1-01 – 38% 1-02 – 42% 1-03 – 41% 1-04 - 37%
- Unit 1 Pressurizer level is 30% and slowly rising
- Unit 1 Core Exit Temperature is 610°F and slowly rising
- Unit 1 RCS pressure is 2260 PSIG and slowly rising
- 1-01 and 1-02 MD AFW Pumps tripped and cannot be restarted
- 1-01 TD AFW Pump speed, discharge pressure, and flow are oscillating severely with flow cycling between 25 GPM and 50 GPM to each Steam Generator

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

- DETERMINE Emergency Action Level Group / Category, Subcategory, and Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation that will be declared

Task Standard: • COMPLETED designated critical steps and DETERMINED Event Classification (FS1.1) within 15 minutes.

Required Materials: EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation
EPP-201, Emergency Action Level Technical Bases Document Rev 3
CPNPP Emergency Action Level Hot, Common, and Cold Classification Charts Revision 15
FRH-0.1A, Response to Loss of Secondary Heat Sink
FRC-0.1A, Response to Inadequate Core Cooling

Validation Time: 15 minutes
Time Critical Time: 15 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**EXAMINER:****PROVIDE examinee:**

- EPP-201 (all pages) (Orange paper)
- EPP-201, Bases Document (all pages) (Controlled copy)
- CPNPP Emergency Action Level Hot, Common, and Cold Classification Charts (Controlled Copy)
- FRH-0.1A (page 1, 32) (Orange paper)
- FRC-0.1A (page 1, 21) (Orange paper)

√ - Check Mark Denotes Critical Step

START TIME:

Examiner Note:	The following steps are from CPNPP EAL Classification Matrix Hot Conditions (RCS > 200°F) and All Conditions.
Perform Step: 1	DETERMINE applicable Event Category matrix.
Standard:	REFERRED to CPNPP EAL Classification Matrix and DETERMINED the following charts are applicable: <ul style="list-style-type: none"> • Hot Conditions (RCS > 200°F) • All Conditions
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

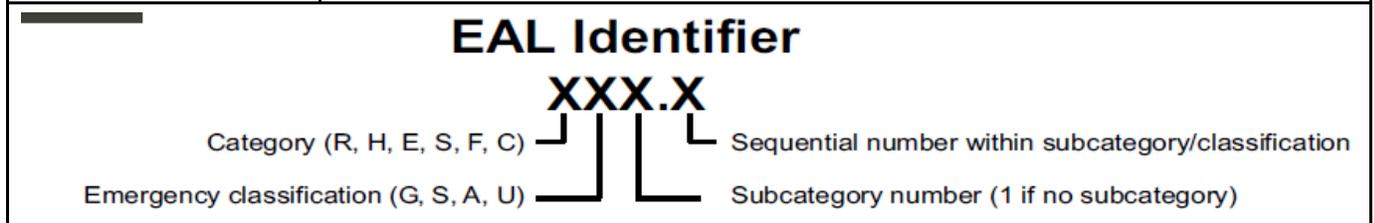
Perform Step: 2	EVALUATE plant conditions and DETERMINE applicable EAL Group / Category / Subcategory
Standard:	IDENTIFIED applicable EAL Group / Category as Hazards (H) and Subcategory 3 Natural or Tech Hazard. IDENTIFIED applicable EAL Group / Category as System Malfunction (S) and Subcategory 9 Hazardous Event Affecting Safety Systems. REFERRED to FRH-0.1A Attachment 1.A and DETERMINED plant parameters result in CSFST Heat Sink Red Path condition. IDENTIFIED applicable EAL Group / Category as Fission Product Barrier Degradation (F).
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 3	DETERMINE applicable Categories from Table F-1 Fission Product Barrier Matrix.
Standard:	IDENTIFIED Category B.2 Fuel Clad (FC) Barrier Potential Loss and B.1 Reactor Coolant System (RCS) Barrier Potential Loss
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 4	DETERMINE event classifications for each applicable EAL Group / Category / Subcategory.	
Standard:	IDENTIFIED Hazards (H) and Subcategory 3 Natural or Tech Hazard results in HU3.1 Notification of Unusual Event. IDENTIFIED System Malfunction (S) and Subcategory 9 Hazardous Event Affecting Safety Systems results in SA9.1 Alert. IDENTIFIED Fission Product Barrier Degradation (F) results in FS1.1 Site Area Emergency.	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	EPP-201 4.2.4.1 states: When multiple, simultaneous events occur, the emergency classification level is based on the highest EAL reached. Also, there is no “additive” effect from multiple EALs meeting the same classification.
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Perform Step: 5 ✓	CLASSIFY the event.
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Standard:	CLASSIFIED event as Site Area Emergency (FS1.1) .	
Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 6 ✓	CLASSIFY event within required time limits.
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Standard:	CLASSIFIED event within 15 minutes.
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Comment:		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
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Terminating Cue:	JPM complete.
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Termination Criteria:	Fifteen minutes elapsed. Failed to meet task standard.
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STOP TIME:	
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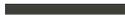
INITIAL CONDITIONS: Given the following conditions:

- An EF-4 tornado touches down in the Owner Controlled Area and passes through the Protected Area
- Unit 1 trips from full power after operating for the last 450 days
- Unit 2 is Defueled
- All offsite power transmission lines are lost
- Unit 1 and Unit 2 safeguard buses are powered from their respective emergency diesel generators
- Operators report visible damage to 1-01 TD AFW Pump steam discharge piping as it exits the Safeguards Building roof
- Unit 1 SG narrow range levels are as follows with slowly lowering trend:
1-01 – 38% 1-02 – 42% 1-03 – 41% 1-04 - 37%
- Unit 1 Pressurizer level is 30% and slowly rising
- Unit 1 Core Exit Temperature is 610°F and slowly rising
- Unit 1 RCS pressure is 2260 PSIG and slowly rising
- 1-01 and 1-02 MD AFW Pumps tripped and cannot be restarted
- 1-01 TD AFW Pump speed, discharge pressure, and flow are oscillating severely with flow cycling between 25 GPM and 50 GPM to each Steam Generator

INITIATING CUE:

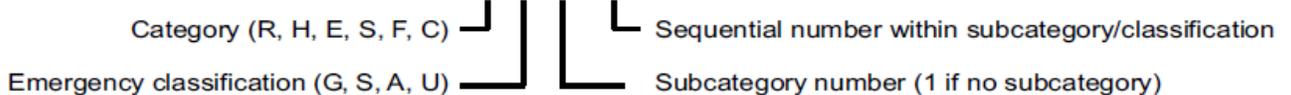
The Shift Manager directs you to **PERFORM** the following:

- **DETERMINE** Emergency Action Level Group / Category, Subcategory, and Event Classification per EPP-201, Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation that will be declared



EAL Identifier

XXX.X



EAL Identifier: _____

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

Facility: <u>Comanche Peak</u>	Date of Examination: <u>6-12-2023</u>	
Exam Level: RO ■ SRO-I ■ SRO-U ■	Operating Test No.: <u>NRC</u>	
System / JPM Title	Type Code*	Safety Function
Control Room Systems		
a. (S1) Place RCS Makeup in Automatic – uncontrolled dilution occurs (Direct from bank - RO1324B) 004.A2.06 RO 3.9 (SRO-U)	D, A, S	1
b. (S2) Secure from Safety Injection following LOCA (New - RO1519) WE02 EA2.09 RO 4.5	N, ENS, S	2
c. (S3) Wide Range Pressure Channel Failure in Mode 5 (LTOP is active) (RO1824-direct from 2013 NRC Exam) 010 A2.03 RO 4.3 (RO-Only)	D, L, S	3
d. (S4) Transfer to Cold Leg Recirculation from Hot Leg Recirculation (RO1507C -direct from 2017 NRC exam) WE11 EA1.12 RO 4.1 (SRO-U)	D, ENS, L, S	4P
e. (S5) Lower PRT Pressure (New – RO7003) 007 A2.02 RO 3.6	N, S	5
f. (S6) Realign Safeguards Bus 1EA2 to Offsite Power (New – RO4203) 064 A4.07 RO 3.8	N, S	6
g. (S7) Respond to CR Rad Monitor Alarm X-RE-5895 - manually align CR HVAC (Modified from RO4103) 072 A3.01 RO 2.9	M, A, ENS, S	7
h. (S8) Respond to loss of all CW pumps at low power-manually trip turbine and close MSIVs (New – RO3809) 075 A2.02 RO 3.9 (SRO-U)	N, A, L	8
In-Plant Systems		
i. (P1) Local start of TDAFWP during Loss of all Feedwater (New – AO6405) 061 A2.04 RO 4.1 (SRO-U)	N, E, L, R	4S
j. (P2) Transfer Inverter IV2PC1 from Bypass to Normal Operation (AO4204D Direct from 2015 NRC Exam) 063 A3.03 RO 3.3	D	6
k. (P3) Terminate Release of Radioactive Liquid (Modified from RO8063) 068 A2.04 RO 3.3 (SRO-U)	M, A, E, R	9

Form 3.2-2 Instructions for Control Room/In-Plant Systems Outline

1. Determine the number of control room system and in-plant system job performance measures (JPMs) to develop using the following table:

License Level	Control Room	In-Plant	Total
Reactor Operator (RO)	8	3	11
Senior Reactor Operator-Instant (SRO-I)	7	3	10
Senior Reactor Operator-Upgrade (SRO-U)	2 or 3	3 or 2	5

2. Select safety functions and systems for each JPM as follows:

Refer to Section 1.9 of the applicable knowledge and abilities (K/A) catalog for the plant systems organized by safety function. For pressurized-water reactor operating tests, the primary and secondary systems listed under Safety Function 4, "Heat Removal from Reactor Core," in Section 1.9 of the applicable K/A catalog, may be treated as separate safety functions (i.e., two systems, one primary and one secondary, may be selected from Safety Function 4). From the safety function groupings identified in the K/A catalog, select the appropriate number of plant systems by safety functions to be evaluated based on the applicant's license level (see the table in step 1).

For RO/SRO-I applicants: Each of the control room system JPMs and, separately, each of the in-plant system JPMs must evaluate a different safety function, and the same system or evolution cannot be used to evaluate more than one safety function in each location. One of the control room system JPMs must be an engineered safety feature.

For SRO-U applicants: Evaluate SRO-U applicants on five different safety functions. One of the control room system JPMs must be an engineered safety feature, and the same system or evolution cannot be used to evaluate more than one safety function.

3. Select a task for each JPM that supports, either directly or indirectly and in a meaningful way, the successful fulfillment of the associated safety function. Select the task from the applicable K/A catalog (K/As for plant systems or emergency and abnormal plant evolutions) or the facility licensee's site-specific task list. If this task has an associated K/A, the K/A should have an importance rating of at least 2.5 in the RO column. K/As that have importance ratings of less than 2.5 may be used if justified based on plant priorities; inform the NRC chief examiner if selecting K/As with an importance rating less than 2.5. The selected tasks must be different from the events and evolutions conducted during the simulator operating test and tasks tested on the written examination. A task that is similar to a simulator scenario event may be acceptable if the actions required to complete the task are significantly different from those required in response to the scenario event.

Apply the following specific task selection criteria:

Form 3.2-2 Instructions for Control Room/In-Plant Systems Outline (continued)

- At least one of the tasks shall be related to a shutdown or low-power condition.
- Four to six of the tasks for RO and SRO-I applicants shall require execution of alternative paths within the facility licensee’s operating procedures. Two to three of the tasks for SRO-U applicants shall require execution of alternative paths within the facility licensee’s operating procedures.
- At least one alternate path JPM must be new or modified from the bank.
- At least one of the tasks conducted in the plant shall evaluate the applicant’s ability to implement actions required during an emergency or abnormal condition.
- At least one of the tasks conducted in the plant shall require the applicant to enter the radiologically controlled area. This provides an excellent opportunity for the applicant to discuss or demonstrate radiation control administrative subjects.

If it is not possible to develop or locate a suitable task for a selected system, return to step 2 and select a different system.

4. For each JPM, specify the codes for type, source, and location:

Code	License Level Criteria		
	RO	SRO-I	SRO-U
(A)lternate path	4-6	4-6	2-3
(C)ontrol room			
(D)irect from bank	≤ 9	≤ 8	≤ 4
(E)mergency or abnormal in-plant	≥ 1	≥ 1	≥ 1
(EN)gineered safety feature (for control room system)	≥ 1	≥ 1	≥ 1
(L)ow power/shutdown	≥ 1	≥ 1	≥ 1
(N)ew or (M)odified from bank (must apply to at least one alternate path JPM)	≥ 2	≥ 2	≥ 1
(P)revious two exams (randomly selected)	≤ 3	≤ 3	≤ 2
(R)adiologically controlled area	≥ 1	≥ 1	≥ 1
(S)imulator			

Control Room Systems JPMs

- (S1) **Place RCS Makeup in Automatic – uncontrolled dilution occurs (RO1324B)**
Demonstrate the ability to realign the Reactor Makeup Control System for Automatic operation using SOP-104A. Once the applicant places switch 1/1-MU, RCS MU MAN ACT in START, an uncontrolled dilution occurs and requires manual action to stop the dilution.
Alternate path.
Direct from Bank (RO1324B)
- (S2) **Secure from SI following a LOCA**
Demonstrate the ability to secure SI pumps following a LOCA in accordance with EOS-1.2A. Want to see the applicant use Table 1 and/or Table 2 to evaluate SCM and determine pumps to secure.
Normal path
(New - RO1519)
- (S3) **Wide Range Pressure Channel Failure in Mode 5 (LTOP active)**
Demonstrate the ability to respond to a Wide Range Pressure Transmitter failure while in MODE 5, Utilizing ALM-0053A or ABN-715, and closed the Block Valve associated with the failed open PORV within 8 minutes (2X validation).
Direct from Bank. (NRC Exam 2013 RO1824)
RO-only JPM.
- (S4) **Transfer to Cold leg Recirculation from Hot leg Recirculation**
During LOCA, transfer back from hot leg injection to cold leg injection IAW EOP-1.4A, Attachment 2.
Normal path.
Direct from bank (NRC Exam 2017 RO1507C).
- (S5) **Lower PRT Pressure**
Demonstrate the ability to lower PRT pressure using SOP-109A to clear the high-level alarm and reach approximately 3 psig in the PRT.
Normal path.
(New – RO7003)
- (S6) **Realign Safeguards Bus 1EA2 to Offsite Power**
Transfer 1EA2 bus from loaded EDG back to offsite power IAW SOP-609A, section 5.7.
(New – RO4203)
- (S7) **Respond to CR Radiation Monitor Alarm X-RE-5895(A/B)**
Demonstrate the ability to properly align Control Room HVAC after a high radiation actuation in accordance with ALM-3200, ABN-902 and SOP-902. After valid high radiation alarm occurs on ALM-3200, the applicant recognizes that Emergency Recirculation Automatic Initiation did not occur per step 1.c of ABN-902 and won't work with switch X-ZL-5877A/B, CR EMER RECIRC, so manual alignment per SOP-902 is required.
This is an Alternate Path JPM.
Modified from (RO4103). In the original JPM, when applicant placed hand switch X-HS-5877 in EMER RECIRC MAN ACT position, the actuation switch actually works and

repositions dampers and fans. In this JPM the dampers must be manually realigned and fans manually started (the switch does not work).

(S8) **Respond to Loss of all CW Pumps at Low power**

With reactor power at 8% and two Circ water pumps running, applicant is directed to start a third CW pump and when attempted all running CW pumps trip. Applicant must use ABN-304 and trip the turbine and close the MSIV's.

Alternate path.

(New - RO3809)

In Plant Systems JPMs

(P1) **Local start of TDAFWP during Loss of all Feedwater**

Reset and open 1-HV-2452, AFWPT 1-01 TRIP AND THROT VLV per ABN-305, Auxiliary Feedwater System Malfunction, Attachment 1, HV 2452 TDAFW Pump Trip and Throttle Valve

Normal path.

(New – AO6405)

(P2) **Transfer Inverter IV2PC1 from Bypass to Normal Operation**

Utilize SOP-607B, 118 VAC Distribution System and Inverters, Section 5.5.9, and transfer Inverter IV2PC1 from Bypass to Normal Operation.

Normal path.

Direct from bank **(NRC Exam 2015 AO4204D)**.

(P3) **Terminate Release of Radioactive Liquid**

Demonstrate ability to Stop 1-01 RCDT Pump and Start 1-02 RCDT Pump per SOP-110A, Reactor Coolant Drain Tank System, Section 5.8 Alternating Reactor Coolant Drain Tank Pumps. During the surveillance the alarm window 2.6 at rad waste panel locks in high and the applicant must stop the release (either ABN-903 or ALM procedure ALM-301 window 2.6) by locally closing valve XWP-0117, LWPS DISCH HDR VLV 5253 UPSTRM ISOL VLV.

This is an Alternate Path JPM.

Modified from **(RO8063)** – In the original JPM it was not started as an RCDT pump swap and the first valve to close (XHS-5253) with the key switch actually worked. In this JPM XHS-5253 fails to close even with close switch in close. Applicant will have to go to the upstream manual valve (valve XWP-117) and close it to terminate the release. This requires walking away from Rad waste panel and locating valve.

Facility: CPNPP JPM # RO1324B Task # RO1324 K/A # 004.A2.06 3.9 SF-1
 Title: Place RCS Makeup in Automatic

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- A boration was just completed and the piping flushed with blend
- B₁₀ weight fraction from CHORE is 0.1834
- RCS boron concentration is 820 ppm
- BAT boron concentration is 7447 ppm
- SOP-104A, Prerequisites 7.1 and 7.2 have been completed

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

- Realign the Reactor Makeup Control System for Automatic operation at a blended flow concentration of 820 ppm

Task Standard: PLACED 1/1-FCV-111B, RCS MU TO VCT ISOL VLV and 1/1-FCV-110A, BA BLNDR FLO CTRL VLV in AUTO, SET 1-FK-110, BA BLNDR FLO CTRL at 3.50 (3.45 to 3.55), PLACED 43/1-MU, RCS MU MODE SELECT in AUTO, PLACED 1/1-MU, RCS MU MAN ACT in START, and TERMINATED inadvertent dilution by completing any of the following:

- PLACED 1/1-FCV-111A, RMUW BLNDR FLO CTRL VLV in CLOSE
- PLACED 1/1-FCV-111B, RCS MU TO VCT ISOL VLV in CLOSE
- PLACED 43/1-MU, RCS MU MODE SELECT in OFF

Required Materials: SOP-104A, Reactor Makeup and Chemical Control System
 TDM-201A, CVCS Nomographs/Blended Flow
 TDM-203A, CVCS Controller Data
 ABN-105, Chemical and Volume Control System Malfunction

Validation Time: 12 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**SIMULATOR OPERATOR:**

This JPM may be run independently via IC-51 or in parallel with JPM S-7 via IC-62.

INITIALIZE to IC-51 or IC-62.

- ENSURE RCS and BAT boron concentration job aids updated – RCS 820 ppm X-01 BAT 7447 ppm
- PLACE simulator in RUN

OR

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

- PLACE 1-FK-110, BA BLNDR FLO CTRL at 6.0
- PLACE 1-FK-111, RMUWW BLNDR FLO CTRL at 7.8
- PLACE 43/1-MU, RCS MU MODE SELECT in Manual
- PLACE 1/1-MU, RCS MU MAN ACT in STOP
- PLACE 1/1-FCV-110A in OPEN
- PLACE 1/1-FCV-111B in CLOSE
- INSERT conditional {DICV1MU.Value = 4} IMF CV03C
- ENSURE RCS and BAT boron concentration job aids updated – RCS 820 ppm X-01 BAT 7447 ppm
- ENSURE simulator Is in RUN

SIMULATOR OPERATOR NOTE

AFTER all JPMs are completed, update RCS and BAT boron concentration job aids to current IC boron concentration.

EXAMINER:

PROVIDE examinee SOP-104A:

- Section 8.1.1, Automatic Mode with Prerequisites 7.1 and 7.2 marked as completed (Pages 1-15) (Orange paper)

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps are from SOP-104A, Section 8.1.1.			
	<table border="1"> <tr> <td>NOTE:</td> <td> <ul style="list-style-type: none"> When a blended flow concentration of >1600 PPM is desired, the maximum Boric Acid flow should <u>NOT</u> be expected to exceed 27 gpm. Therefore, section 8.1.6, Manual Blended Makeup, or, 8.1.7, Multiple Manual Blended Makeups should be used for makeups >1600 ppm. 1/1-FCV-110A has non-linear flow characteristics below 4 gpm which could cause an inadvertent Boration during AUTO makeup to RCS. Therefore, for blended flow makeups, only Manual Blended Makeup should be used when B-10 Corrected RCS Boron Concentration is < 250 ppm. Sections 8.1.6 or 8.1.7 may be used, or, 8.1.3, EOL Dilution With RCS Cb < 250 PPM. </td> </tr> </table>		NOTE:	<ul style="list-style-type: none"> When a blended flow concentration of >1600 PPM is desired, the maximum Boric Acid flow should <u>NOT</u> be expected to exceed 27 gpm. Therefore, section 8.1.6, Manual Blended Makeup, or, 8.1.7, Multiple Manual Blended Makeups should be used for makeups >1600 ppm. 1/1-FCV-110A has non-linear flow characteristics below 4 gpm which could cause an inadvertent Boration during AUTO makeup to RCS. Therefore, for blended flow makeups, only Manual Blended Makeup should be used when B-10 Corrected RCS Boron Concentration is < 250 ppm. Sections 8.1.6 or 8.1.7 may be used, or, 8.1.3, EOL Dilution With RCS Cb < 250 PPM.
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Perform Step: 1 8.1.1 A	ENSURE the prerequisites of Section 7.1 and 7.2 are met.			
Standard:	DETERMINED from Initial Conditions that Section 7.1 and 7.2 were complete.			
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>			

Perform Step: 2 8.1.1 B	<table border="1"> <tr> <td style="background-color: #e0e0e0;">IF</td> <td> B. Any of the following conditions APPLY, <ul style="list-style-type: none"> Anticipated makeup will be >1000 gallons within a one hour period Desired blended flow concentration will be >1300 ppm (shutdown only). 1-FK-110, BA BLNDR FLO CTRL potentiometer will be adjusted to >6.0 (24 gpm). </td> </tr> <tr> <td style="background-color: #e0e0e0;">THEN</td> <td>NOTIFY Chemistry to prepare to obtain a sample of the blended flow.</td> </tr> </table>		IF	B. Any of the following conditions APPLY, <ul style="list-style-type: none"> Anticipated makeup will be >1000 gallons within a one hour period Desired blended flow concentration will be >1300 ppm (shutdown only). 1-FK-110, BA BLNDR FLO CTRL potentiometer will be adjusted to >6.0 (24 gpm). 	THEN	NOTIFY Chemistry to prepare to obtain a sample of the blended flow.
IF	B. Any of the following conditions APPLY, <ul style="list-style-type: none"> Anticipated makeup will be >1000 gallons within a one hour period Desired blended flow concentration will be >1300 ppm (shutdown only). 1-FK-110, BA BLNDR FLO CTRL potentiometer will be adjusted to >6.0 (24 gpm). 					
THEN	NOTIFY Chemistry to prepare to obtain a sample of the blended flow.					
Standard:	DETERMINED Chemistry did NOT require notification.					
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>					

Perform Step: 3 8.1.1 C	ENSURE 1/1-MU, RCS MU MAN ACT switch in STOP.	
Standard:	VERIFIED 1/1-MU, RCS MU MAN ACT switch in STOP.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	Perform Steps 4 through 7 may be completed in any order.	
Perform Step: 4 8.1.1 D & 1 ST bullet	ENSURE the following handswitches are in AUTO, AND the valves are CLOSED: <ul style="list-style-type: none"> 1/1-FCV-111A, RMUW BLNDR FLO CTRL VLV 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> VERIFIED 1/1-FCV-111A, RMUW BLNDR FLO CTRL VLV in AUTO and Closed 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 5 √ 8.1.1 D & 2 nd bullet	ENSURE the following handswitches are in AUTO, AND the valves are CLOSED: <ul style="list-style-type: none"> 1/1-FCV-111B, RCS MU TO VCT ISOL VLV 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-FCV-111B, RCS MU TO VCT ISOL VLV in AUTO (critical) VERIFIED Red light DARK and Green light LIT (not critical) 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 6 √ 8.1.1 D & 3 rd bullet	ENSURE the following handswitches are in AUTO, AND the valves are CLOSED: <ul style="list-style-type: none"> 1/1-FCV-110A, BA BLNDR FLO CTRL VLV 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-FCV-110A, BA BLNDR FLO CTRL VLV in AUTO (critical) VERIFIED Red light DARK and Green light LIT (not critical) 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 7 8.1.1 D & 4 th bullet	ENSURE the following handswitches are in AUTO, AND the valves are CLOSED: <ul style="list-style-type: none"> 1/1-FCV-110B, RCS MU TO CHRG PMP SUCT ISOL VLV 	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> VERIFIED 1/1-FCV-110B, RCS MU TO CHRG PMP SUCT ISOL VLV in AUTO and Closed 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 8 8.1.1 E	SET 1-FK-111, RMUW BLNDR FLO CTRL for approximately 90 gpm (5.63), OR as required.
Standard:	SET 1-FK-111, RMUW BLNDR FLO CTRL at 5.63 (5.62 to 5.64)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 9 √ 8.1.1 F	SET 1-FK-110, BA BLNDR FLO CTRL pot to provide a blended flow approximately equal to the B-10 Corrected RCS Boron Concentration: $127 \times \frac{820}{4} \frac{B-10 \text{ Corr RCS } C_B}{\text{BAT } C_B} = \text{Boric Acid Flowrate } \underline{13.98}$ <u>13.98</u> boric acid flowrate = 1-FK-110 pot setting <u>3.5</u>
Standard:	SET 1-FK-110, BA BLNDR FLO CTRL at 3.50 (3.45 to 3.55)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 10 √ 8.1.1 G	PLACE 43/1-MU, RCS MU MODE SELECT in AUTO.
Standard:	PLACED 43/1-MU, RCS MU MODE SELECT in AUTO.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 11 √ 8.1.1 H	PLACE 1/1-MU, RCS MU MAN ACT in START.
Standard:	PLACED 1/1-MU, RCS MU MAN ACT in START.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps constitute the Alternate Path of this JPM since a dilution will commence when 1/1-MU is placed in start.
Examiner Note:	The performer must stop dilution by taking manual action to stop dilution flow since an automatic system is not functioning properly (as required by ODA-102). The applicant may refer to ABN-105 which is available in the simulator for a Dilution Anomaly (Section 8.0, which directs closing 1/1-FCV-111A and 1/1-FCV-111B Step 6 RNO) or RMU malfunction (Section 6.0, which does not address the failure).
Perform Step: 12 ✓	Terminate the dilution.
Standard:	PERFORMED one of the following: <ul style="list-style-type: none"> • PLACED 1/1-FCV-111A, RMUW BLNDR FLO CTRL VLV in CLOSE <u>OR</u> • PLACED 1/1-FCV-111B, RCS MU TO VCT ISOL VLV in CLOSE <u>OR</u> • PLACED 43/1-MU, RCS MU MODE SELECT in OFF
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.

STOP TIME:	
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INITIAL CONDITIONS: Given the following conditions:

- A boration was just completed and the piping flushed with blend
- B10 weight fraction from CHORE is 0.1834
- RCS boron concentration is 820 ppm
- BAT boron concentration is 7447 ppm
- SOP-104A, Prerequisites 7.1 and 7.2 have been completed

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

- Realign the Reactor Makeup Control System for Automatic operation at a blended flow concentration of 820 ppm

Facility: CPNPP JPM # RO1519 Task # RO1519 K/A # E02.EA2.09 4.5 / 3.9 SF-2
Title: Reduce ECCS Flow Following SB LOCA

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- A small break LOCA occurred
- 1-04 RCP has been restarted
- Plant cooldown and depressurization is in progress to permit reducing ECCS flow per EOS-1.2A, Post LOCA Cooldown and Depressurization
- Another operator is monitoring cooldown

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

- Continue with EOS-1.2A at Step 16 to stop ECCS pumps

Task Standard: STOPPED one centrifugal charging pump and STOPPED one safety injection pump.

Required Materials: EOS-1.2A, Post LOCA Cooldown and Depressurization

Validation Time: 9 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**SIMULATOR OPERATOR:****INITIALIZE to IC-86**

- PLACE Foldout Page on Plant Monitor
- RUN EXAM SECURITY to clear recorders
- When examinee is ready, PLACE simulator in RUN

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

- INSERT malfunction RC19A f:1000 RCS Cold Leg Leak (Flow Scaling)
- COMPLETE EOP-0.0A, Reactor Trip or Safety Injection through Step 14 and transition to EOP-1.0A, Loss of Reactor or Secondary Coolant
- COMPLETE EOP-1.0A through Step 12 and transition to EOS-1.2A, Post LOCA Cooldown and Depressurization
- INITIATE cooldown and continue in EOS-1.2A to establish the following conditions:
 - RCS temperature greater than 350°F (CL 1-3 approximately 365°F/HL 1-3 approximately 355°F) to prevent LTOP from arming
 - CET temperature approximately 380°F (380°F to 385°F)
 - 1-04 RCP restarted
 - RCS subcooling greater than 125°F (145°F to 155°F)
 - RCS pressure approximately 900 psig
 - Two CCPs in service
 - Two Safety Injection Pumps in service
 - Close ARVs to approximately 10% demand (ensure both red and green indications lights remain on)
 - Stop or reduce AFW flow to minimum to maintain level at 50% to 60%
- PLACE Foldout Page on Plant Monitor
- PLACE Simulator in Freeze
- RUN EXAM SECURITY to clear recorders
- When examinee is ready, PLACE simulator in RUN

EXAMINER:**PROVIDE examinee EOS-1.2A with the following steps marked (Pages 1-28) (Orange paper):**

- 1 through 11 complete
- Mark Step 12 and mark Step 12 RNO complete
- Circle Step 25a and mark Step 25a RNO complete
- Circle Step 26a, mark Step 26a 1) and 2) RNO complete, and mark 26c and 26d complete
- 27 through 31 complete
- Circle Step 32a and mark Step 32a RNO complete
- Circle Step 33a and mark Step 33a RNO complete
- Circle Step 34a and 34b and mark Step 34a RNO complete
- Circle Step 35 and mark Step 35 RNO complete
- 13 through 15 complete
- Circle Step 16

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps are from EOS-1.2A.		
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><u>NOTE:</u> After stopping any ECCS pump, RCS pressure should be allowed to stabilize or increase before stopping another ECCS pump.</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p><u>NOTE:</u> The CCPs and SI pumps should be stopped on alternate ECCS trains when possible.</p> </div>		
Perform Step: 1 16 & 16a.	Check If One CCP Should Be Stopped: a. Two CCPs - RUNNING		
Standard:	DETERMINED two CCPs - RUNNING.		
Comment:			SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 2 16 & 16b.	Check If One CCP Should Be Stopped: b. Determine required RCS subcooling from Table 1																																			
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="5">TABLE 1</td> </tr> <tr> <td rowspan="3">SI PUMP STATUS</td> <td colspan="4">RCS SUBCOOLING (°F)</td> </tr> <tr> <td colspan="2">ANY RCP RUNNING</td> <td colspan="2">NO RCP RUNNING</td> </tr> <tr> <td>Normal</td> <td>Adverse</td> <td>Normal</td> <td>Adverse</td> </tr> <tr> <td>NONE RUNNING</td> <td>85°F</td> <td>160°F</td> <td>95°F</td> <td>165°F</td> </tr> <tr> <td>ONE RUNNING</td> <td>60°F</td> <td>130°F</td> <td>65°F</td> <td>130°F</td> </tr> <tr> <td>TWO RUNNING</td> <td>60°F</td> <td>125°F</td> <td>65°F</td> <td>130°F</td> </tr> </table>			TABLE 1					SI PUMP STATUS	RCS SUBCOOLING (°F)				ANY RCP RUNNING		NO RCP RUNNING		Normal	Adverse	Normal	Adverse	NONE RUNNING	85°F	160°F	95°F	165°F	ONE RUNNING	60°F	130°F	65°F	130°F	TWO RUNNING	60°F	125°F	65°F	130°F
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Standard:	DETERMINED two SI Pumps Running, Any RCP Running, and Adverse Containment conditions requires at least 125°F subcooling.																																			
Comment:			SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>																																	

Perform Step: 3 16 & 16c.	Check If One CCP Should Be Stopped: c. RCS subcooling – GREATER THAN REQUIRED SUBCOOLING		
Standard:	DETERMINED RCS subcooling is greater than 125°F.		
Comment:			SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 4 16 & 16d.	Check If One CCP Should Be Stopped: d. PRZR level – GREATER THAN 30% (50% FOR ADVERSE CONTAINMENT)
Standard:	DETERMINED Pressurizer level is greater than 50%.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The critical step is to stop one or the other CCP, but not both.
Perform Step: 5√ 16 & 16e.	Check If One CCP Should Be Stopped: e. Stop one CCP
Standard:	STOPPED 1-01 <u>OR</u> 1-02 CCP: <ul style="list-style-type: none"> • Momentarily PLACED 1/1-APCH1, CCP 1 in STOP (critical) and VERIFIED Red PUMP light DARK and Green PUMP light LIT (not critical) • Momentarily PLACED 1/1-APCH2, CCP 2 in STOP (critical) and VERIFIED Red PUMP light DARK and Green PUMP light LIT (not critical)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 6 17 & 17a.	Check If One SI Pump Should Be Stopped: a. Any SI pump - RUNNING
Standard:	<ul style="list-style-type: none"> • DETERMINED two SI Pumps RUNNING
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 7 17 & 17b.	Check If One SI Pump Should Be Stopped: b. Determine required RCS subcooling from Table 2																																																													
<table border="1"> <thead> <tr> <th colspan="9">TABLE 2</th> </tr> <tr> <th rowspan="3">SI PUMP STATUS</th> <th colspan="8">RCS SUBCOOLING (°F)</th> </tr> <tr> <th colspan="4">ONE CCP RUNNING</th> <th colspan="4">NO CCPS RUNNING</th> </tr> <tr> <th colspan="2">ANY RCP RUNNING</th> <th colspan="2">NO RCP RUNNING</th> <th colspan="2">ANY RCP RUNNING</th> <th colspan="2">NO RCP RUNNING</th> </tr> <tr> <th></th> <th>Normal</th> <th>Adverse</th> <th>Normal</th> <th>Adverse</th> <th>Normal</th> <th>Adverse</th> <th>Normal</th> <th>Adverse</th> </tr> </thead> <tbody> <tr> <td>ONE RUNNING</td> <td>130°F</td> <td>210°F</td> <td>145°F</td> <td>215°F</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>TWO RUNNING</td> <td>55°F</td> <td>120°F</td> <td>60°F</td> <td>120°F</td> <td>70°F</td> <td>135°F</td> <td>75°F</td> <td>140°F</td> </tr> </tbody> </table>		TABLE 2									SI PUMP STATUS	RCS SUBCOOLING (°F)								ONE CCP RUNNING				NO CCPS RUNNING				ANY RCP RUNNING		NO RCP RUNNING		ANY RCP RUNNING		NO RCP RUNNING			Normal	Adverse	Normal	Adverse	Normal	Adverse	Normal	Adverse	ONE RUNNING	130°F	210°F	145°F	215°F	-	-	-	-	TWO RUNNING	55°F	120°F	60°F	120°F	70°F	135°F	75°F	140°F
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Standard:	DETERMINED two SI Pumps Running, one CCP Running, Any RCP Running, and Adverse Containment conditions requires at least 120°F subcooling.																																																													
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>																																																													

Perform Step: 8 17 & 17c.	Check If One SI Pump Should Be Stopped: c. RCS subcooling – GREATER THAN REQUIRED SUBCOOLING
Standard:	DETERMINED RCS subcooling is greater than 120°F.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 9 17 & 17d.	Check If One SI Pump Should Be Stopped: d. PRZR level – GREATER THAN 30% (50% FOR ADVERSE CONTAINMENT)
Standard:	DETERMINED Pressurizer level is greater than 50%.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The critical step is to stop one or the other SI pump, but not both. Stopping the CCP and SIP in opposite trains is not critical.
Perform Step:10 √ 17 & 17e.	Check If One SI Pump Should Be Stopped: e. Stop one additional SI pump.
Standard:	STOPPED 1-01 <u>OR</u> 1-02 SI Pump: <ul style="list-style-type: none"> • Momentarily PLACED 1/1-APSI1, SIP 1 in STOP (critical) and VERIFIED Red PUMP light DARK and Green PUMP light LIT (not critical) • Momentarily PLACED 1/1-APSI2, SIP 2 in STOP (critical) and VERIFIED Red PUMP light DARK and Green PUMP light LIT (not critical)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 11 17 & 17f.	Return to Step 17a.
Standard:	RETURNED to Step 17a.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 12 17 & 17a.	Check If One SI Pump Should Be Stopped: a. Any SI pump - RUNNING
Standard:	<ul style="list-style-type: none"> • DETERMINED one SI Pump RUNNING
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 13 17 & 17b.	Check If One SI Pump Should Be Stopped: b. Determine required RCS subcooling from Table 2							
TABLE 2								
SI PUMP STATUS	RCS SUBCOOLING (°F)							
	ONE CCP RUNNING				NO CCPS RUNNING			
	ANY RCP RUNNING		NO RCP RUNNING		ANY RCP RUNNING		NO RCP RUNNING	
	Normal	Adverse	Normal	Adverse	Normal	Adverse	Normal	Adverse
ONE RUNNING	130°F	210°F	145°F	215°F	-	-	-	-
TWO RUNNING	55°F	120°F	60°F	120°F	70°F	135°F	75°F	140°F
Standard:	DETERMINED one SI Pump Running, one CCP Running, Any RCP Running, and Adverse Containment conditions requires at least 210°F subcooling.							
Comment:								SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 14 17 & 17c.	Check If One SI Pump Should Be Stopped: c. RCS subcooling – GREATER THAN REQUIRED SUBCOOLING							
Standard:	DETERMINED RCS subcooling is NOT greater than 210°F.							
Comment:								SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 15 17 & 17c. RNO	Check If One SI Pump Should Be Stopped: c. IF RCS hot leg temperatures greater than 345°F, THEN go to Step 25.							
Standard:	DETERMINED RCS hot leg temperatures greater than 345°F and TRANSITIONED to Step 25.							
Comment:								SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.							
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.							

STOP TIME:	
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INITIAL CONDITIONS: Given the following conditions:

- A small break LOCA occurred
- 1-04 RCP has been restarted
- Plant cooldown and depressurization is in progress to permit reducing ECCS flow per EOS-1.2A, Post LOCA Cooldown and Depressurization
- Another operator is monitoring cooldown

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

- Continue with EOS-1.2A at Step 16 to stop ECCS pumps

Facility: CPNPP JPM # RO1824 Task # RO1824 K/A # 010.A2.03 4.3 / 4.0 SF-3
Title: Wide Range Pressure Transmitter Failure in MODE 5

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 5.
- Residual Heat Removal System is being controlled by another operator.

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

- Respond to primary systems alarms.

Task Standard: CLOSED Block Valve associated with failed open PORV.

Required Materials: ALM-0053A, Alarm Procedure 1-ALB-5C
ABN-715, Wide Range RCS Pressure Instrument Malfunction
TDM-301A, RCS Temperature and Pressure Limits

Validation Time: 4 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SIMULATOR SETUP**SIMULATOR OPERATOR:****INITIALIZE to IC-59**

- HANG Caution Tag on 1/1-APPD, PDP handswitch.
- PLACE CB07 Computer Screen to GTGC MODE 5.
- When examinee is ready, PLACE simulator in RUN.
- When directed, EXECUTE **KEY 1**.

OR**INITIALIZE to IC-4 and load scenario file JPM S-3:**

- IMF RX13B f:3000 k:1
- IRF CVR27 f:0
- {DIRX455A.Value=0} IMF RX16A f:100
- HANG Caution Tag on 1/1-APPD, PDP handswitch.
- PLACE CB07 Computer Screen to GTGC MODE 5.
- When examinee is ready, PLACE simulator in RUN.
- When directed, EXECUTE **KEY 1**.

SIMULATOR OPERATOR NOTE:

After each JPM, VERIFY 1-ALB-5C, Window 1.4 – PORV 455A/456 NOT CLOSE alarm procedure pages are clean.

EXAMINER:**When referenced, PROVIDE examinee:**

- ALM-0053A Window 1.4, PORV 455A/456 NOT CLOSE (Pages 1-3, 12-15) (Blue paper)

If requested, PROVIDE examinee:

- ABN-715 (Pages 1-10) (Green paper)
- TDM-301A (Pages 1-8) (Yellow paper)

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	When KEY 1 is executed 1-PI-405, HL 1 PRESS WR fails high causing the PORV to fail open. The examinee may close the block valve using skill of craft per ODA-102, Conduct of Operations. This JPM may be performed using steps from ALM-0053A or ABN-715. ABN-715 steps begin on Page 5.
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Examiner Note:	The following steps are from ALM-0053A Window 1.4.
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Examiner Cue:	When examinee is ready, direct Simulator Operator to EXECUTE KEY 1 .
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CAUTION: When a safety valve actuation has resulted in plant shutdown, subsequent Mode 4 operation shall not be commenced until affected safety valve has been inspected.

Perform Step: 1 1	DETERMINE affected PORV.
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Standard:	DETERMINED 1/1-PCV-455A, PRZR PORV is affected PORV.
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Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
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Perform Step: 2 2 & 2.A	2. MONITOR pressurizer pressure. A. <u>IF</u> one channel is indicating >60 psig difference between the remaining operable channels, <u>THEN GO</u> to ABN-705.
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Standard:	DETERMINED ABN-705 is not applicable and REMAINED in ALM-0053A.
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Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
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Perform Step: 3 2 & 2.B	2. MONITOR pressurizer pressure. B. <u>IF</u> reactor is in Mode 1, 2 or 3 with pressurizer pressure <2335 psig, <u>THEN CLOSE</u> affected PORV. <ul style="list-style-type: none"> • 1/1-PCV-455A, PRZR PORV
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Standard:	DETERMINED Unit 1 is in MODE 5 and step is not applicable.
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Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
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Examiner Note:	Provide TDM-301A, if referenced. Examinee may also use job aid located in ALM holder to evaluate Pressurizer PORV LTOP setpoints.
Perform Step: 4 3	3. <u>WITH</u> reactor in Mode 4, 5 <u>OR</u> 6, <u>THEN</u> REFER to TDM-301A to determine RCS pressure <u>AND</u> temperature limits.
Standard:	<ul style="list-style-type: none"> REFERRED to TDM-301A, PRESSURIZER PORV LTOP SETPOINTS. DETERMINED RCS pressure below LTOP limit for current plant conditions.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 5 3.A.1 st bullet	<p>3. <u>WITH</u> reactor in Mode 4, 5 <u>OR</u> 6, <u>THEN</u> REFER to TDM-301A to determine RCS pressure <u>AND</u> temperature limits.</p> <p>A. <u>IF</u> RCS pressure is within the limits based on current RCS temperature, <u>THEN</u> CLOSE affected PORV.</p> <ul style="list-style-type: none"> 1/1-PCV-455A, PRZR PORV
Standard:	<p>PERFORMED the following:</p> <ul style="list-style-type: none"> PLACED 1/1-PCV-455A, PRZR PORV in CLOSE. OBSERVED Red OPEN light remains LIT.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	Applicant may close both block valves if using procedure ALM-0053A. Critical step is to close 1/1-8000A. If they close both block valves, examiner may need to ask follow-up question on why they couldn't determine which PORV was leaking?
Perform Step: 6 4.A.1 st bullet	<p>4. VERIFY pressurizer <u>OR</u> RCS wide range pressure stabilizes.</p> <p>A. <u>IF</u> pressure continues to decrease due to PORV leakage, <u>THEN</u> CLOSE both PORV block valves and determine affected PORV.</p> <ul style="list-style-type: none"> 1/1-8000A, PRZR PORV BLK VLV
Standard:	<p>PERFORMED the following:</p> <ul style="list-style-type: none"> PLACED 1/1-8000A, PRZR PORV Block Valve in CLOSE (critical). OBSERVED Green CLOSE light LIT (not critical).
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.

Examiner Note:	The following steps are from ABN-715, Section 2.0.	
Perform Step: 7 1 & 1 st bullet	1 VERIFY LTOP <u>NOT</u> actuated – PORVs NOT OPEN. <ul style="list-style-type: none"> 1/u-PCV-455A, PRZR PORV 	
Standard:	DETERMINED 1/1-PCV-455A, PRZR PORV is OPEN.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 8 1 RNO	Manually CLOSE the affected PORV.	
Standard:	PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-PCV-455A, PRZR PORV in CLOSE. OBSERVED Red OPEN light remains LIT. 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	Note that this step below is not in the ABN-715 procedure. If the block valve is closed, it will have to be skill of craft using Conduct of Operations ODA-102.	
Perform Step: 9√ ODA-102	Close the PORV Block valve.	
Standard:	DETERMINED 1/1-PCV-455A, PRZR PORV will NOT close and PERFORMED the following: <ul style="list-style-type: none"> PLACED 1/1-8000A, PRZR PORV Block Valve in CLOSE (critical). OBSERVED Green CLOSE light LIT (not critical). 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Terminating Cue:	JPM complete.	
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.	

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

- **Unit 1 is in MODE 5.**
- **Residual Heat Removal System is being controlled by another operator.**

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

- **Respond to primary systems alarms.**

Facility: CPNPP JPM # RO1507C Task # RO1507 K/A # 011 EA1.12 4.1 SF-4P
Title: Transfer to Cold Leg Recirculation from Hot Leg Recirculation

Examinee (Print): _____

Testing Method:

Simulated Performance: _____
Actual Performance: X
Alternate Path: _____
Time Critical: _____
Bank / Mod / New: B

Classroom: _____
Simulator: X
Plant: _____
Low Pwr: X RCA: _____
Emerg: _____ EN: X

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:
• A Large Break Loss of Coolant Accident occurred on Unit 1 27 hours ago.

Initiating Cue: The Unit Supervisor directs you to PERFORM the following:
• Align Train A and Train B Residual Heat Removal flow paths for Cold Leg Recirculation per EOS-1.4A, Transfer to Hot Leg Recirculation, Attachment 2, Transfer to Cold Leg Recirculation from Hot Leg Recirculation

Task Standard: COMPLETED designated critical steps, CLOSED RHR discharge cross-tie valves, OPENED RHR Cold Leg Injection valves, and CLOSED RHR Hot Leg Injection isolation valve.

Required Materials: EOS-1.4A, Transfer to Hot Leg Recirculation, Attachment 2, Transfer to Cold Leg Recirculation from Hot Leg Recirculation

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT ☹ UNSAT ☹

Examiner (Print / Sign): _____ Date: _____

SETUP**SIMULATOR OPERATOR:**

INITIALIZE to IC-56

ENSURE all keys are removed from control boards and returned to Key Box.

When examinee is ready, PLACE simulator in RUN

OR

INITIALIZE to IC-18 and PERFORM the following:

- **EXECUTE malfunction RC09A2, Cold Leg LB LOCA (Double-Ended).**
- **Perform Actions of EOP-0.0A, EOP-1.0A, EOS-1.3A, and EOS-1.4A to align ECCS for Hot Leg Recirculation and Containment Spray for Recirculation.**

PLACE simulator in FREEZE.

ENSURE all keys are removed from control boards and returned to Key Box.

When examinee is ready, PLACE simulator in RUN

SIMULATOR OPERATOR NOTE:

After each JPM:

- **ENSURE all keys are removed from control boards and returned to Key Box.**
- **ENSURE POWER switches are OFF:**
 - **69/1-8809A/B**
 - **69/1-8840**

EXAMINER:

PROVIDE examinee EOS-1.4A, Attachment 2, Transfer to Cold Leg Recirculation from Hot Leg Recirculation (Pages 1-2, 15-22) (Orange paper)

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps are from EOS-1.4A, Attachment 2					
<p><u>NOTE:</u> The transfer back to Hot Leg Recirculation is normally performed 24 hours after this attachment is complete. The Plant Staff may direct transfer to Hot Leg Recirculation at an interval less than 24 hours based on the possibility of core recriticality due to boron plateout.</p>						
Perform Step: 1 1. & 1.a.1)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: a. Perform the following to align Train A RHR to Cold Leg Recirculation: 1) CHECK RHR Train A in Hot Leg Recirculation					
Standard:	DETERMINED RHR Train A is in Hot Leg Recirculation by VERIFYING valve alignment <u>OR</u> OBSERVING flow on 1-FI-988, RHR TO HL 2 & 3 INJ FLO.					
Comment:	<table border="1"> <tr> <td>SAT</td> <td></td> <td>UNSAT</td> <td></td> </tr> </table>		SAT		UNSAT	
SAT		UNSAT				

Perform Step: 2 1. & 1.a.2)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: a. Perform the following to align Train A RHR to Cold Leg Recirculation: 2) CLOSE RHRP 1 XTIE VLV: 1/1-8716A					
Standard:	<ul style="list-style-type: none"> PLACED 1/1-8716A, RHRP 1 XTIE VLV in CLOSE (critical). VERIFIED Red light DARK and Green light LIT (not critical) 					
Comment:	<table border="1"> <tr> <td>SAT</td> <td></td> <td>UNSAT</td> <td></td> </tr> </table>		SAT		UNSAT	
SAT		UNSAT				

Perform Step: 3 1. & 1.a.3)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: a. Perform the following to align Train A RHR to Cold Leg Recirculation: 3) OPEN RHR TO CL 1 & 2 INJ ISOL VLV: 1/1-8809A					
Standard:	<ul style="list-style-type: none"> INSERTED key T-112, RHR System into 69/1-8809A POWER switch and TURNED to ON position (critical). PLACED 1/1-8809A, RHR TO CL 1 & 2 INJ ISOL VLV in OPEN (critical). VERIFIED Red light LIT and Green light DARK (not critical). 					
Comment:	<table border="1"> <tr> <td>SAT</td> <td></td> <td>UNSAT</td> <td></td> </tr> </table>		SAT		UNSAT	
SAT		UNSAT				

Perform Step: 4 1. & 1.a.4)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: a. Perform the following to align Train A RHR to Cold Leg Recirculation: 4) VERIFY RHR TO CL 1 & 2 INJ FLO, 1-FI-618					
Standard:	OBSERVED flow on 1-FI-618 RHR to CL 1 & 2 INJ FLO.					
Comment:	<table border="1"> <tr> <td>SAT</td> <td></td> <td>UNSAT</td> <td></td> </tr> </table>		SAT		UNSAT	
SAT		UNSAT				

Perform Step: 5 1. & 1.b.1)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: b. PERFORM the following to align Train B RHR to Cold Leg Recirculation: 1) CHECK RHR Train B in hot leg recirculation
Standard:	DETERMINED RHR Train B is in hot leg recirculation by VERIFYING valve alignment <u>OR</u> OBSERVING flow on 1-FI-988, RHR TO HL 2 & 3 INJ FLO
Comment:	SAT  UNSAT 

Perform Step: 6 [√] 1. & 1.b.2)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: b. PERFORM the following to align Train B RHR to Cold Leg Recirculation: 2) CLOSE RHRP 2 XTIE VLV: 1/1-8716B
Standard:	<ul style="list-style-type: none"> PLACED 1/1-8716B, RHRP 2 XTIE VLV in CLOSE (critical). VERIFIED Red light DARK and Green light LIT (not critical)
Comment:	SAT  UNSAT 

Perform Step: 7 [√] 1. & 1.b.3)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: b. PERFORM the following to align Train B RHR to Cold Leg Recirculation: 3) OPEN RHR TO CL 3 & 4 INJ ISOL VLV: 1/1-8809B
Standard:	<ul style="list-style-type: none"> INSERTED key T-112, RHR System into 69/1-8809B POWER switch and TURNED to ON position (critical). PLACED 1/1-8809B, RHR TO CL 3 & 4 INJ ISOL VLV in OPEN (critical). VERIFIED Red light LIT and Green light DARK (not critical).
Comment:	SAT  UNSAT 

Perform Step: 8 1. & 1.b.4)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: b. PERFORM the following to align Train B RHR to Cold Leg Recirculation: 4) VERIFY RHR to CL 3 & 4 INJ FLO, 1-FI-619
Standard:	OBSERVED flow on 1-FI-619 RHR to CL 3 & 4 INJ FLO
Comment:	SAT  UNSAT 

Examiner Cue:	If necessary, indicate that 1-FI-988, RHR TO HL 2 & 3 INJ FLO is at 0 GPM flow to hot legs.
Perform Step: 9 1. & 1.c.1)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: c. CHECK if RHR to HL 2 & 3 INJ ISOL VLV, 1/1-8840 should be closed: 1) CHECK that NO RHR pump is injecting into hot legs
Standard:	DETERMINED NO RHR pumps were injecting into hot legs by OBSERVING NO flow on 1-FI-988, RHR TO HL 2 & 3 INJ FLO
Comment:	SAT  UNSAT 

Perform Step: 10 [✓] 1. & 1.c.2)	1. Align RHR Flow Path For Cold Leg Recirculation One Train At A Time: c. CHECK if RHR to HL 2 & 3 INJ ISOL VLV. 1/1-8840 should be closed: 2) CLOSE RHR TO HL 2 & 3 INJ ISOL VLV: 1/1-8840
Standard:	<ul style="list-style-type: none"> • INSERTED key T-112, RHR System into 69/1-8840 POWER switch and TURNED to ON position (critical). • PLACED 1/1-8840, RHR TO HL 2 & 3 INJ ISOL VLV in CLOSE (critical). • VERIFIED Red light DARK and Green light LIT (not critical)
Comment:	SAT  UNSAT 

Terminating Cue:	JPM complete.
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.

STOP TIME:	
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Initial Conditions: Given the following conditions:

- **A Large Break Loss of Coolant Accident occurred on Unit 1 27 hours ago.**

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

- **Align Train A and Train B Residual Heat Removal flow paths for Cold Leg Recirculation per EOS-1.4A, Transfer to Hot Leg Recirculation, Attachment 2, Transfer to Cold Leg Recirculation from Hot Leg Recirculation**

Facility: CPNPP JPM # RO7003 Task # RO7003 K/A # 007.A2.02 3.6 / 3.1 SF-5
Title: Lower PRT pressure

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- PRT pressure trended up over the last three hours with PRT level and temperature remaining constant.
- 1-ALB-5B 3.3, PRT PRESS HI annunciated.
- The cause of the alarm was seat leakage through 1-8034, PRT 1-01 N2 SPLY PRESS REG VLV.
- PROMPT team adjusted 1-8034, which is now closed and appears to be responding normally.

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

- Restore PRT pressure to approximately 3 psig per SOP-109A, Pressurizer Relief Tank, Section 5.5, Pressure Adjustments in the PRT.

Task Standard: COMPLETED designated critical steps and LOWERED PRT pressure to approximately 3 psig.

Required Materials: SOP-109A, Pressurizer Relief Tank

Validation Time: 10 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**SIMULATOR OPERATOR:**

This JPM may be run independently via IC-52 or in parallel with JPM S-6 via IC-61.

INITIALIZE to IC-52 or IC-61.

- ENSURE PRT pressure is approximately 10 psig
- ENSURE 1-ALB-5B Window 3.3 PRT PRESS HI alarm in ON
- VERIFY PRT Level less than 74%
- VERIFY PRT Temperature less than 113°F
- PLACE simulator in RUN

OR

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

- INSERT remote function RCR06 PRT N2 Regulator Setpoint to 10 psig
- WHEN PRT pressure reaches approximately 10 psig, modify remote function RCR06 to 10.05 psig with a ramp of 120 minutes to maintain PRT pressure stable.
- INSERT the following conditionals:
 - {Key[1] !=0} IRF RCR05 f:1 to align PRT VENT to Stack via FCV-7896 & X-HCV-0014
 - {Key[1] !=0} IRF RCR06 f:3 r:0 to reset PRT N2 Regulator Setpoint to 3 psig
- ENSURE 1-ALB-5B Window 3.3 PRT PRESS HI alarm in ON
- VERIFY PRT level is less than 74% or override 1-LI-470 PRT LVL to approximately 70%
- VERIFY PRT Temperature less than 113°F
- SILENCE and acknowledge alarms
- ENSURE simulator in RUN

SIMULATOR OPERATOR NOTE:

RUN EXAM SECURITY between JPMs to clear PCS history.

EXAMINER:

PROVIDE examinee with the following:

- SOP-109A, Section 5.5, Pressure Adjustments in the PRT with Prerequisite 2.4 and Step 5.5.A marked as completed (Pages 1-6, 16-18) (Orange paper).

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	<p>The following steps are from SOP-109A, Section 5.5. If asked, REPORT STA-603 non-routine release permit has been initiated to vent the PRT to Auxiliary Building Ventilation System.</p>		
	<table border="1"> <tr> <td> <p>NOTE:</p> <ul style="list-style-type: none"> The ideal pressure in the PRT for normal operation is 3 psig. If PRT level is being lowered and N2 makeup is desired, then 1-8034 N2 SPLY PRESS REG VLV may need to be set between 4 and 7 psig When adding nitrogen to the PRT, the Excess Flow Check Valve may close isolating the Low Pressure Nitrogen header. To restore nitrogen flow, the Excess Flow Check Valve Bypass valve should be OPENED until the evolution has been completed and then closed. </td> </tr> </table>		<p>NOTE:</p> <ul style="list-style-type: none"> The ideal pressure in the PRT for normal operation is 3 psig. If PRT level is being lowered and N2 makeup is desired, then 1-8034 N2 SPLY PRESS REG VLV may need to be set between 4 and 7 psig When adding nitrogen to the PRT, the Excess Flow Check Valve may close isolating the Low Pressure Nitrogen header. To restore nitrogen flow, the Excess Flow Check Valve Bypass valve should be OPENED until the evolution has been completed and then closed.
<p>NOTE:</p> <ul style="list-style-type: none"> The ideal pressure in the PRT for normal operation is 3 psig. If PRT level is being lowered and N2 makeup is desired, then 1-8034 N2 SPLY PRESS REG VLV may need to be set between 4 and 7 psig When adding nitrogen to the PRT, the Excess Flow Check Valve may close isolating the Low Pressure Nitrogen header. To restore nitrogen flow, the Excess Flow Check Valve Bypass valve should be OPENED until the evolution has been completed and then closed. 			
Perform Step: 1 5.5 A. & Prerequisite 2.4 A.	VERIFY prerequisites in Section 2.4 are complete. 2.4 A. Nitrogen is available to supply the PRT.		
Examiner Cue:	Nitrogen is available to supply the PRT.		
Standard:	VERIFIED nitrogen is available to supply the PRT.		
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>		

Perform Step: 2 5.5 A. & Prerequisite 2.4 B.	VERIFY prerequisites in Section 2.4 are complete. 2.4 B. <u>IF</u> PRT pressure is to be reduced, <u>THEN</u> STA-603 non-routine release permit has been initiated to vent the PRT to the Auxiliary Building Ventilation System.	
Examiner Cue:	A release permit for venting the PRT to the Auxiliary Building Ventilation System has been initiated.	
Standard:	VERIFIED release permit has been initiated to vent the PRT.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 3 5.5 A.	VERIFY prerequisites in Section 2.4 are complete.	
Standard:	VERIFIED prerequisites are complete.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	The following step is not applicable since PRT pressure is high.	
Perform Step: 4 5.5 B.	IF PRT pressure needs to be increased, <u>THEN</u> PERFORM the following steps:	
Standard:	DETERMINED step is not applicable and steps and substeps are marked as N/A.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	Section 5.4 does not need to be performed since PRT LVL is between 64% and 88%	
Perform Step: 5 5.5 C. & 5.5 C.1)	IF PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 1) ENSURE 1-LI-470, PRT LVL, is between 64% and 88% per section 5.4.	
Standard:	VERIFIED PRT LVL is between 64% and 88%.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	PRT pressure regulator should be adjusted to 3 psig per note above Perform Step 1.	
Perform Step: 6 5.5 C. & 5.5 C. 2)	IF PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 2) ADJUST 1-8034, PRT 1-01 N2 SPLY PRESS REG VLV to the desired pressure. (SFGD 832', Rm 1-88, Penet Valve Room)	
Examiner Cue:	1-8034, PRT 1-01 N2 SPLY PRESS REG VLV is set at 3 psig	
Standard:	DISPATCHED operator to verify 1-8034 is adjusted to approximately 3 psig.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 7 ✓ 5.5 C. & 5.5 C 3)	IF PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 3) CLOSE 1NG-0028, N2 BULK SPLY SYS X-01 TO RC PRZR RLF TK 1-01 ISOL VLV.	
Examiner Cue:	1NG-0028, N2 BULK SPLY SYS X-01 TO RC PRZR RLF TK 1-01 ISOL VLV is closed	
Standard:	DISPATCHED operator to close 1NG-0028.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 8 √ 5.5 C & 5.5 C. 4)	<u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 4) NOTIFY Chemistry to install a sample flask on the PRT vent line.
Examiner Cue:	Chemistry reports that sample flask is installed on Unit 1 PRT vent line.
Standard:	Sample flask installed on Unit 1 PRT vent line
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 9 √ 5.5 C & 5.5 C. 5)	<u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 5) OPEN the following valves to align the sample flask: <ul style="list-style-type: none"> • 1RC-0026, PRT 1-01 WPS SMPL VSL IN ISOL VLV • 1RC-0027, PRT 1-01 WPS SMPL VSL OUT ISOL VLV
Examiner Cue:	1RC-0026, PRT 1-01 WPS SMPL VSL IN ISOL VLV and 1RC-0027, PRT 1-01 WPS SMPL VSL OUT ISOL VLV are open.
Standard:	DISPATCHED operator to open 1RC-0026 and 1RC-0027
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 10 √ 5.5 C & 5.5 C. 6)	<u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 6) <u>WHEN</u> the sample flask is installed, <u>THEN</u> CLOSE 1RC-8028, PRT 1-01 WPS SMPL VSL BYP VLV.
Examiner Cue:	1RC-8028, PRT 1-01 WPS SMPL VSL BYP VLV is closed.
Standard:	DISPATCHED operator to close 1RC-8028.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 11 √ 5.5 C & 5.5 C. 7)	<u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 7) NOTIFY Radwaste to align the GWPS for venting the PRT to the Auxiliary Building Ventilation System per RWS-201.
Examiner Cue:	The GWPS is aligned for venting Unit 1 PRT to Auxiliary Building Ventilation System per RWS-201.
Standard:	DISPATCHED operator to align GWPS for venting the PRT to the Auxiliary Building Ventilation System per RWS-201.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

<p>Perform Step: 12 5.5 C & 5.5 C. 8)</p>	<p><u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 8) <u>IF</u> the Pressurizer PORVs OR Safety Valves open at any time during PRT vent operations, <u>THEN</u> CLOSE the following valves until RCS pressure is stable AND all PORVs AND Safety Valves are CLOSED:</p>
<p>Standard:</p>	<p>CIRCLED step.</p>
<p>Comment: SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>	

<p>Perform Step: 13 √ 5.5 C & 5.5 C. 9)</p>	<p><u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 9) ENSURE the following valves are OPEN:</p> <ul style="list-style-type: none"> • 1/1-8026, PRT VENT ISOL VLV • 1/1-8027, PRT VENT ISOL VLV
<p>Standard:</p>	<ul style="list-style-type: none"> • PLACED 1/1-8026, PRT VENT ISOL VLV in Open (critical) AND VERIFIED Red light Lit, Green light Dark (not critical) • PLACED 1/1-8027, PRT VENT ISOL VLV in Open (critical) AND VERIFIED Red light Lit, Green light Dark (not critical)
<p>Comment: SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>	

<p>Perform Step: 14 5.5 C & 5.5 C. 10)</p>	<p><u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 10) <u>IF</u> an Alert condition is reached on X-RE-5701, X-RE-5570A or X-RE-5570B during PRT vent operation, <u>THEN</u> NOTIFY Radwaste to reduce PRT vent rate.</p>
<p>Standard:</p>	<p>CIRCLED step and MONITORED X-RE-5701, X-RE-5570A & X-RE-5570B.</p>
<p>Comment: SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>	

<p>Perform Step: 15 √ 5.5 C & 5.5 C. 11)</p>	<p><u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 11) NOTIFY Radwaste to commence venting the PRT per RWS-201.</p>
<p>Simulator Operator:</p>	<p>EXECUTE KEY 1 to insert remote function RCR05 to align PRT Vent to Stack via FCV-7896 and X-HCV-014.</p>
<p>Examiner Cue:</p>	<p>After KEY 1 is executed, REPORT: Commenced venting the Unit 1 PRT to Auxiliary Building Ventilation System per RWS-201.</p>
<p>Standard:</p>	<p>NOTIFIED radwaste to commence venting the PRT.</p>
<p>Comment: SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>	

<p>NOTE: The following two steps, 5.5.C12) and 5.5.C 13) may be performed out of sequence when the required conditions are met.</p>	
Examiner Note:	<ul style="list-style-type: none"> As pressure begins to lower, REPORT as Chemistry “Sampling has been completed”. As PRT pressure lowers, alarm PRT PRESS HI will clear at approximately 8 psig. Valves 1/1-8026 & 8027 should be closed at approximately 3 psig.
Perform Step: 16 √ 5.5 C & 5.5 C. 12). Note before 12)	<p>IF PRT pressure needs to be decreased, THEN PERFORM the following steps:</p> <p>12) WHEN 1-PI-469, PRT PRESS, has decreased to the desired pressure, THEN CLOSE the following valves:</p> <ul style="list-style-type: none"> 1/1-8026, PRT VENT ISOL VLV 1/1-8027, PRT VENT ISOL VLV
Examiner Cue:	If asked, acknowledge that the following valves need to be independently verified closed.
Standard:	<ul style="list-style-type: none"> Momentarily PLACED 1/1-8026, PRT VENT ISOL VLV in Close (critical) AND VERIFIED Red light Dark, Green light Lit (not critical) Momentarily PLACED 1/1-8027, PRT VENT ISOL VLV in Close (critical) AND VERIFIED Red light Dark, Green light Lit (not critical)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	If examinee closes 1/1-8026 and 1/1-8027 prior to reaching this step, the following cue may not be required since the PRT vent will be isolated.
Perform Step: 17 5.5 C & 5.5 C. 13) a)	<p>IF PRT pressure needs to be decreased, THEN PERFORM the following steps:</p> <p>13) WHEN Chemistry has determined that an adequate sample has been obtained, THEN PERFORM the following:</p> <p>a) IF PRT venting is still in progress, THEN NOTIFY Radwaste to closely monitor PRT vent rate while realigning the sample flask.</p>
Examiner Cue:	Radwaste will closely monitor PRT vent rate while realigning the sample flask.
Standard:	NOTIFIED Radwaste to closely monitor PRT vent rate while realigning the sample flask.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	Bulleted steps may be performed in any order and steps 12) and 13) may be performed in any order	
Perform Step: 18 √ 5.5 C & 5.5 C. 13) b)	<p><u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps:</p> <p>13) <u>WHEN</u> Chemistry has determined that an adequate sample has been obtained, <u>THEN</u> PERFORM the following:</p> <p>b) SLOWLY OPEN 1RC-8028, PRT 1-01 WPS SMPL VSL BYP VLV.</p>	
Examiner Cue:	1RC-8028, PRT 1-01 WPS SMPL VSL BYP VLV is open.	
Standard:	DISPATCHED operator to open 1RC-8028.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 19 √ 5.5 C. & 5.5 C. 13) c)	<p><u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps:</p> <p>13) <u>WHEN</u> Chemistry has determined that an adequate sample has been obtained, <u>THEN</u> PERFORM the following:</p> <p>c) CLOSE the following valves:</p> <ul style="list-style-type: none"> • 1RC-0026, PRT 1-01 WPS SMPL VSL IN ISOL • 1RC-0027, PRT 1-01 WPS SMPL VSL OUT ISOL 	
Examiner Cue:	1RC-0026, PRT 1-01 WPS SMPL VSL IN ISOL and 1RC-0027, PRT 1-01 WPS SMPL VSL OUT ISOL are closed.	
Standard:	DISPATCHED operator to close 1RC-0026 and 1RC-0027.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 20 5.5 C. & 5.5 C. 14)	<p><u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps:</p> <p>14) NOTIFY Radwaste that all PRT vent operations have been completed AND the GWPS may be realigned per RWS-201.</p>	
Examiner Cue:	PRT vent operations have been completed and the GWPS is realigned per RWS-201.	
Standard:	NOTIFIED Radwaste that all PRT vent operations have been completed AND the GWPS may be realigned per RWS-201.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Note:	PRT vent line was isolated in Step 20.
Perform Step: 21 √ 5.5 C & 5.5 C. 15)	<u>IF</u> PRT pressure needs to be decreased, <u>THEN</u> PERFORM the following steps: 15) <u>WHEN</u> the PRT vent line is isolated, <u>THEN</u> slowly OPEN 1NG-0028, N2 BULK SPLY SYS X-01 TO RC PRZR RLF TK 1-01 ISOL VLV.
Examiner Cue:	1NG-0028, N2 BULK SPLY SYS X-01 TO RC PRZR RLF TK 1-01 ISOL VLV is open.
Standard:	DISPATCHED an operator to open 1NG-0028.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	Step 5.5 D. is not applicable.
Perform Step: 22 5.5 D.	<u>IF</u> opened to increase PRT pressure in step 5.5.B.2 <u>THEN</u> ENSURE XNG-0164, N2 BULK SPLY SYS X-01 XS FLOW MNFLD LP FCV BYP VLV is CLOSED.
Standard:	DETERMINED step is not applicable and marked as N/A.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 23 5.5 E.	VERIFY 1-PI-469, PRT PRESS is at the desired pressure.
Standard:	VERIFIED 1-PI-469 is at the desired pressure (approximately 3 psig).
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	Step 5.5. F. is not applicable.
Perform Step: 24 5.5 F.	<u>IF</u> 1-8034, PRT 1-01 N2 SPLY PRESS REG VLV, was adjusted for PRT drain per step 5.5.B.3, <u>THEN</u> RESTORE 1-8034, PRT 1-01 N2 SPLY PRESS REG VLV, to a setpoint of 3 psig.
Standard:	DETERMINED step is not applicable and marked as N/A.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Terminating Cue:	JPM complete.
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.

STOP TIME:	
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INITIAL CONDITIONS: Given the following conditions:

- PRT pressure trended up over the last three hours with PRT level and temperature remaining constant.
- 1-ALB-5B 3.3, PRT PRESS HI annunciated.
- The cause of the alarm was seat leakage through 1-8034, PRT 1-01 N2 SPLY PRESS REG VLV.
- PROMPT team adjusted 1-8034, which is now closed and appears to be responding normally.

INITIATING CUE:

The Unit Supervisor directs you to perform the following:

- Restore PRT pressure to approximately 3 psig per SOP-109A, Pressurizer Relief Tank, Section 5.5, Pressure Adjustments in the PRT.

Facility: CPNPP JPM # RO4203A Task # RO4203 K/A # 064.A4.07 3.8 SF-6
 Title: Realign Safeguards Bus 1EA2 to Offsite Power

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 1.
- 1EA2-1 tripped open and slow transfer failed causing a temporary loss of power to 1EA2.
- Train B Diesel Generator emergency started and is supplying 6.9 kV Safeguards Bus 1EA2.
- ABN-602, Response to a 6900/480V System Malfunction, Section 8.0, Plant Recovery from a Blackout Sequencer Signal has been completed.
- The cause of the slow transfer failure has been identified and corrected.
- Troubleshooting on breaker 1EA2-1 is still in progress.

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

- Transfer 1EA2 from Train B Diesel Generator to XST1 per SOP-609A, Diesel Generator System, Section 5.7, Transferring from DG Supplying Alone to Normal or Alternate Supply.

Task Standard: COMPLETED designated critical steps, ADJUSTED Train B DG voltage and speed, CLOSED 1EA2-2 breaker, and RAISED Train B DG load to approximately 0.5 MW.

Required Materials: SOP-609A, Diesel Generator System
 ALM-0102A, Alarm Procedure 1-ALB-10B

Validation Time: 7 minutes

Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**SIMULATOR OPERATOR:**

This JPM may be run independently via IC-53 or in parallel with JPM S-5 via IC-61.

INITIALIZE to IC-53 or IC-61.

- ENSURE 1-ALB-10B 4.8 DG 2 TRBL is DARK.
- PLACE Out of Service job aid on 1EA2-1 handswitch.
- PLACE SYNCH SELECTOR SWITCH operating key in SS-1EG2, BKR 1EG2 SYNCHROSCOPE.
- PLACE Simulator in RUN.
- PLACE desk in front of CB-11.

OR

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

- EMERGENCY START Train B Diesel Generator
- PARALLEL the Diesel Generator with 1EA2
- PLACE 1EA2-1 in PULL-OUT **AND** PLACE Out of Service job aid on 1EA2-1 handswitch.
- LOWER 1-02 Diesel Generator Voltage to approximately 6800 volts
- ENSURE 1-ALB-10B 4.8 DG 2 TRBL is DARK.
- PLACE SYNCH SELECTOR SWITCH operating key in SS-1EG2, BKR 1EG2 SYNCHROSCOPE.
- ENSURE Simulator in RUN.
- PLACE desk in front of CB-11.

SIMULATOR OPERATOR NOTE:

After each JPM, MOVE SYNCH SELECTOR SWITCH operating key to SS-1EG2, BKR 1EG2 SYNCHROSCOPE.

EXAMINER:

PROVIDE examinee SOP-609A:

- Section 5.7, Transferring from DG Supplying Alone to Normal or Alternate Supply (Pages 1-2, 11-23, 68-70) (Orange paper).

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps are from SOP-609A, Section 5.7.	
Examiner Cue:	If asked, REPORT the area around the bus has been cleared of personnel and no work is in progress at the bus.	
Perform Step: 1 √ 5.7 A. 4rd bullet	TURN the synchroscope for the selected breaker ON. <ul style="list-style-type: none"> SS-1EA2-2 BKR 1EA2-2 SYNCHROSCOPE 	
Standard:	<ul style="list-style-type: none"> PLACED SS-1EA2-2, BKR 1EA2-2 SYNCHROSCOPE to ON (critical) OBSERVED synchroscope move slowly in the slow direction (not critical). 	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

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

Perform Step: 2 √ 5.7 B.	Using the DG VOLT CTRL, ADJUST running voltage to match incoming voltage.	
Standard:	ADJUSTED 90-1EG2, DG 2 VOLT CTRL to RAISE or LOWER DG Output Voltage to MATCH Running Volts (V-RUN) with Incoming Volts (V-IN).	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

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

Perform Step: 3 √ 5.7 C.	Using the DG SPD CTRL, ADJUST the speed so that the synchroscope is moving 2 to 4 RPM in the SLOW direction.	
Standard:	ADJUSTED 65-1EG2, DG 2 SPD CTRL until the synchroscope is moving 2 to 4 RPM (not critical) in the SLOW direction (critical).	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

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

- DG MW's exceed 7 MW in an unexpected manner.
- DG Frequency falls below 59.9 Hz due to grid instability.
- DG Voltage falls below 6480 Volts due to grid instability.

Perform Step: 4 5.7 D.	<u>IF</u> Grid induced load, voltage, <u>OR</u> frequency fluctuations occur while the DG is synchronized to the bus, <u>THEN</u> OPEN the DG Output Breaker:
Standard:	CIRCLED step.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

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

Perform Step: 5 ✓ 5.7 E.	CLOSE the feeder breaker when the synchroscope is slightly before the 12 o'clock position <u>AND</u> moving 2 to 4 RPM in the SLOW direction.
Standard:	PLACED CS-1EA2-2, INCOMING BKR 1EA2-2 in CLOSE (critical) and VERIFIED Red light LIT, Green light DARK (not critical).
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 6 ✓ 5.7 F.	RAISE DG load to 0.5 MW as necessary, to prevent a reverse power trip using SPD CTRL handswitch.
Standard:	ADJUSTED 65-1EG2, DG 2 SPD CTRL until W-1EG2, DG 2 MEGAWATT indicates approximately 0.5 MW.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Terminating Cue:	JPM complete.
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.

STOP TIME:	
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INITIAL CONDITIONS:

Given the following conditions:

- Unit 1 is in MODE 1.
- 1EA2-1 tripped open and slow transfer failed causing a temporary loss of power to 1EA2.
- Train B Diesel Generator emergency started and is supplying 6.9 kV Safeguards Bus 1EA2.
- ABN-602, Response to a 6900/480V System Malfunction, Section 8.0, Plant Recovery from a Blackout Sequencer Signal has been completed.
- The cause of the slow transfer failure has been identified and corrected.
- Troubleshooting on breaker 1EA2-1 is still in progress.

INITIATING CUE:

The Unit Supervisor directs you to PERFORM the following:

- Transfer 1EA2 from Train B Diesel Generator to XST1 per SOP-609A, Diesel Generator System, Section 5.7, Transferring from DG Supplying Alone to Normal or Alternate Supply.

Facility: CPNPP JPM # RO4103 Task # RO4103 K/A # 072.A3.01 3.3 SF-7
 Title: Respond to Control Room Radiation Monitor Alarm X-RE-5895A/B

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

Initial Conditions: Given the following conditions:

- Unit 1 is in MODE 1 at 100% power.
- A Dry Fuel Storage Campaign is in progress.

Initiating Cue: Monitor plant conditions and respond to alarms.

Task Standard: COMPLETED designated critical steps, STARTED Emergency Pressurization and Filtration Units, and STOPPED the operating Control Room makeup supply fan.

Required Materials: ALM-3200, Alarm Procedure DRMS
 ABN-902, Release of Radioactive/Toxic Gas
 SOP-802, Control Room Ventilation System

Validation Time: 15 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**SIMULATOR OPERATOR:**

This JPM may be run independently via IC-54 or in parallel with JPM S-1 via IC-62.

INITIALIZE to IC-54 or IC-62.

PLACE simulator in RUN

When directed, EXECUTE **KEY 1**.

OR

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

- INSERT the following malfunctions:

Control Room HVAC Radiation Monitor alarms

IMF RM053 f:0.0015 d:5 r:30 k:1

IMF RM054 f:0.0017 r:30 k:1

Emergency Recirc Automatic actuation failure

IMF CH19A f:1

IMF CH19B f:1

- INSERT the following override:

Override Emergency actuation handswitch to normal

IOR DICHHS5877 f:0

PLACE simulator in RUN

When directed, EXECUTE **KEY 1**.

SIMULATOR OPERATOR NOTE:

Consider clearing malfunction after the examinee enters SOP-802 to prevent having to reboot PC-11 to clear history between JPMs.

ENSURE radiation monitors CRV053 and CRV054 10-minute trend history is cleared between each JPM.

EXAMINER:

When requested, PROVIDE examinee:

- ALM-3200, CHANNEL IN HIGH ALARM (Pages 1-4, 44-49, 89) (Blue paper)
- ABN-902, Section 2.0, Release of Radioactive Gas (Pages 1-11) (Green paper)
- SOP-802, Section 5.3.2, Emergency Recirculation Manual Initiation (Pages 1-8, 17-20) (Yellow paper)

√ - Check Mark Denotes Critical Step

START TIME:

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Examiner Note:	Examinee may enter ALM-3200 or ABN-902 to verify automatic actions.
Simulator Operator:	EXECUTE KEY 1 at examiner's direction.
Perform Step: 1	Determine CRV053 (X-RE-5895A) and CRV054 (X-RE-5895B), CR HVAC, N VENT, is in HIGH alarm.
Standard:	DETERMINED CR HVAC N VENT rad monitors are in alarm.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	When requested, provide ALM-3200 to examinee.
Examiner Note:	The following steps are from ALM-3200, Channel in High Alarm. ABN-902 actions start at Perform Step 7.
Perform Step: 2 1	DETERMINE the affected monitor.
Standard:	IDENTIFIED CRV053 and CRV054 in High alarm (Red).
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following step is not applicable.
Perform Step: 3 2	<u>IF</u> any of the following monitors are affected, <u>THEN</u> NOTIFY Radwaste personnel of the alarm condition.
Standard:	DETERMINED step is not applicable.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following step is not applicable.
Perform Step: 4 3	<u>IF</u> any of the following monitors are affected with the unit in Mode 1, 2, 3 OR 4, <u>THEN</u> PERFORM OPT-303 to determine whether a change in RCS leakage has occurred.
Standard:	DETERMINED step is not applicable.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The examinee may go to ABN-902 to verify automatic actions now or continue in ALM-3200 to identify the automatic actions.	
Perform Step: 5 4	REFER to the applicable procedure as follows: SYSTEM / MONITOR AFFECTED Gas system monitor (ventilation OR steam system)	PROCEDURE ABN-902
Standard:	DETERMINED gas monitor is affected and transitions to ABN-902 or continues in ALM-3200.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 6 5	REFER to Attachment 3 AND ENSURE the automatic actions have occurred as required due to the high radiation alarm.	
Standard:	DETERMINED Control Room Air Supply (Gas) monitors X-RE-5895A and X-RE-5895B initiate Control Room Emergency Recirculation on High Radiation.	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Examiner Cue:	When requested, provide ABN-902 to examinee.			
Examiner Note:	The following steps are from ABN-902, Section 2.0 Release of Radioactive Gas.			
<table border="1"> <tr> <td>NOTE:</td> <td>Unit 1 typically handles response for common alarms (e.g. vent stack). However, Unit 2 should be informed to check the ABN to ensure applicable steps addressed for that unit.</td> </tr> </table>			NOTE:	Unit 1 typically handles response for common alarms (e.g. vent stack). However, Unit 2 should be informed to check the ABN to ensure applicable steps addressed for that unit.
NOTE:	Unit 1 typically handles response for common alarms (e.g. vent stack). However, Unit 2 should be informed to check the ABN to ensure applicable steps addressed for that unit.			
Perform Step: 7 1 a.	Verify applicable Automatic Action has occurred with related alarm: a. Verify Containment air radiation alarms - CLEAR			
Standard:	DETERMINED Containment air radiation alarms - CLEAR			
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>			

Perform Step: 8 1 b.	Verify applicable Automatic Action has occurred with related alarm: 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 • ABV098 (X-RE-5701), AUX BLDG VENT DUCT 	
Standard:	DETERMINED radiation alarms - CLEAR	
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>	

Perform Step: 9 1 c.	Verify applicable Automatic Action has occurred with related alarm: 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
Standard:	DETERMINED radiation alarms – NOT CLEAR
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 10 1 c. RNO c. 1)	ENSURE Emergency Recirculation Automatic Initiation has occurred (X-ZL-5877A/B, CR EMER RECIRC)
Standard:	DETERMINED X-ZL-5877A/B, CR EMER RECIRC – DARK
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The examinee may actuate X-HS-5877 per ODA-102 since the automatic action has not occurred.
Perform Step: 11 1 c. RNO c. 1)	Manually initiate Emergency Recirculation per SOP-802.
Standard:	TRANSITIONED to SOP-802, Section 5.3.2 Emergency Recirculation Manual Initiation.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Cue:	When requested, provide SOP-802 to examinee.
Examiner Note:	The following steps are from SOP-802 Section 5.3.2 Emergency Recirculation Manual Initiation.
<div style="border: 2px solid black; padding: 5px; margin-bottom: 10px;"> <p>CAUTION: Emergency Recirculation can cause high differential pressure across the control room door. Signs may be posted to warn personnel that the control room door is difficult to open.</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p>NOTE: The cooling and heating capacities of the Control Room A/C Units are based on a maximum outdoor air temperature of 110°F and a minimum outdoor air temperature of 20°F in order to prevent the indoor temperature from exceeding or falling below the indoor design limits.</p> </div>	

Perform Step: 12 5.3.2 A.	VERIFY outside ambient air temperature is between 20°F to 110°F.
Standard:	DETERMINED outside ambient air temperature is between 20°F to 110°F using plant computer, meteorological tower trend recorders, or personal knowledge.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

CAUTION: Do NOT ALLOW both Pressurization 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)

- NOTE:**
- Run times are tracked any time Control Room Emergency Pressurization and Filtration fans are run with the charcoal adsorbers in operation per OPT-115.
 - Alarms X-ALB-13A, 3.16 and 4.16, will come in when Emergency Recirculation is initiated.

Examiner Cue:	Another operator is tracking run times per OPT-115, Charcoal Adsorber Runtime Monitoring.
Perform Step: 13 5.3.2 B.	PLACE handswitch X-HS-5877, EMER RECIRC MAN ACT in ACTUATE AND VERIFY the following occur:
Standard:	PLACED X-HS-5877 EMER RECIRC MAN ACT in ACT and DETERMINED required equipment failed to start.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps constitute the Alternate Path of this JPM.
Examiner Cue:	If required, cue examinee to ensure both trains of Control Room HVAC are properly aligned for Emergency Recirculation.
Perform Step: 14 √ 5.3.2 B. 1)	PLACE handswitch X-HS-5877, EMER RECIRC MAN ACT in ACTUATE AND VERIFY the following occur: 1) The Pressurization and Filtration Unit fans have started AND the associated inlet dampers have opened. Train A <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) Train B <ul style="list-style-type: none"> • X-HS-5834A, CR EMER PRZN FN 6 (X-HV-5834 on X-HS-5834D) • X-HS-5846, CR EMER FILT FN 24 & FILT IN DMPR 42 (X-HV-5840)
Standard:	PLACED Pressurization and Filtration Unit fans in START (critical) AND VERIFIED associated inlet dampers have opened (not critical). Train A <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) Train B <ul style="list-style-type: none"> • X-HS-5834A, CR EMER PRZN FN 6 (X-HV-5834 on X-HS-5834D) • X-HS-5846, CR EMER FILT FN 24 & FILT IN DMPR 42 (X-HV-5840)
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

<p>Perform Step: 15 ✓ 5.3.2 B. 2)</p>	<p>PLACE handswitch X-HS-5877, EMER RECIRC MAN ACT in ACTUATE AND VERIFY the following occur: 2) The operating supply and exhaust fans have stopped.</p> <ul style="list-style-type: none"> • X-HS-5825A, CR MU AIR SPLY FN 37 & SUCT DMPR 16 (X-HV-5825A) • X-HS-5828A, CR MU AIR SPLY FN 38 & SUCT DMPR 19 (X-HV-5828A) • X-HS-5855, CR EXH FN 1, (X-PV-5855 on X-HS-5855A) • X-HS-5856, CR EXH FN 2, (X-PV-5856 on X-HS-5856A) • X-HS-5857, CR KTCHN & TOIL EXH FN 3 & SUCT DMPR 27 (X-HV-5857) • X-HS-5858, CR KTCHN & TOIL EXH FN 4 & SUCT DMPR 28 (X-HV-5858)
<p>Standard:</p>	<p>PLACED the operating supply and exhaust fans in STOP:</p> <ul style="list-style-type: none"> • X-HS-5825A, CR MU AIR SPLY FN 37 & SUCT DMPR 16 (X-HV-5825A) (critical) • X-HS-5828A, CR MU AIR SPLY FN 38 & SUCT DMPR 19 (X-HV-5828A) (not critical) • X-HS-5855, CR EXH FN 1, (X-PV-5855 on X-HS-5855A) (not critical) • X-HS-5856, CR EXH FN 2, (X-PV-5856 on X-HS-5856A) (not critical) • X-HS-5857, CR KTCHN & TOIL EXH FN 3 & SUCT DMPR 27 (X-HV-5857) (not critical) • X-HS-5858, CR KTCHN & TOIL EXH FN 4 & SUCT DMPR 28 (X-HV-5858) (not critical)
<p>Comment: SAT <input type="checkbox"/> UNSAT <input type="checkbox"/></p>	
<p>Terminating Cue:</p>	<p>JPM complete.</p>
<p>Termination Criteria:</p>	<p>Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.</p>

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

- Unit 1 is in MODE 1 at 100% power
- A Dry Fuel Storage Campaign is in progress.

INITIATING CUE:**Monitor plant conditions and respond to alarms.**

Facility: CPNPP JPM # RO3809 Task # RO3809 K/A # 075.A2.02 3.9 SF-8
 Title: Respond to Circulating Water Pump Trip During Startup

Examinee (Print): _____

Testing Method:

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

CUE EXAMINEE

Provide Initial Conditions and Initiating Cue sheet to Examinee. Procedures and handouts are designated on Setup sheet. Special conditions or instructions are contained within the JPM.

- Initial Conditions: Given the following conditions:
- Unit 1 is at 8% reactor power with Main Turbine rolling at 500 RPM per IPO-003A, Power Operations
 - 1-01 and 1-02 Circulating Water Pumps (CWP) are in service
 - Unit 1 Main Condenser outlet valves have been throttled in preparation for starting 1-03 CWP
 - Personnel are standing by to adjust CWP power factor and Main Condenser outlet valves after 1-03 CWP pump start
 - CWP currents and discharge pressures will be adjusted within steady state limits specified in SOP precautions after 1-03 CWP start

- Initiating Cue: The Unit Supervisor directs you to PERFORM the following:
- Continue startup of 1-03 CWP per SOP-310A, Circulating Water System, Section 5.1, Startup at Step 5.1 Z.2).

Task Standard: TRIPPED the main turbine and CLOSED all MSIVs or TRIPPED the reactor and CLOSED all MSIVs.

Required Materials: SOP-310A, Circulating Water System
 ALM-0091A, Alarm Procedure 1-ALB-9A
 ABN-304, Main Condenser and Circulating Water System Malfunction

Validation Time: 7 minutes Completion Time: _____ minutes

Comments:

Result: SAT UNSAT

Examiner (Print / Sign): _____ Date: _____

SETUP**SIMULATOR OPERATOR:****INITIALIZE to IC-58**

- When examinee is ready, PLACE simulator in RUN
- If conditionals fail to trip CWPs after 1-03 CWP PUMP red light energizes, EXECUTE **KEY 1**.

OR**Reset to IC-11 and PERFORM the following:**

- Complete IPO-003A Steps 5.1.17 through 5.1.19 to raise turbine speed to 500 RPM

- INSERT the following conditionals:

CWP's 1,2 and 3 trip when CWP 3 red light energizes resulting in a loss of all CWPs**{LOCWHS2802_3.Value=1}IMF CW02A f:1 d:3****{LOCWHS2802_3.Value=1}IMF CW02B f:1 d:5****{LOCWHS2802_3.Value=1}IMF CW02C f:1 d:1****Key 1 conditionals to be used as a backup for the conditional****{Key[1] != 0}IMF CW02A f:1 d:3****{Key[1] != 0}IMF CW02B f:1 d:5****{Key[1] != 0}IMF CW02C f:1 d:1****When examinee is ready, PLACE simulator in RUN****If conditionals fail to trip CWPs after 1-03 CWP PUMP red light energizes, EXECUTE **KEY 1**.****EXAMINER:****PROVIDE examinee:**

- SOP-310A, Section 5.1, Startup with 2.1 Prerequisites, Steps 5.1 A through 5.1 Z. 1), and Attachment 3 Steps A. and C. to place Main and Auxiliary Condenser Waterbox Gauge Glasses in service marked as completed (Pages 1-29, 157-164) (Orange paper)

When requested, PROVIDE examinee:

- ALM-0091A, Alarm Procedure 1-ALB-9A (Page 1-3, 302-307) (Blue paper)
- ABN-304, Section 2.0 (Pages 1-8) (Green paper)

√ - Check Mark Denotes Critical Step

START TIME:	
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Examiner Note:	The following steps are from SOP-310A, Section 5.1.
Examiner Note:	Once 1-03 CWP handswitch is placed in start, the discharge valve will stroke open for approximately 30 seconds before the pump starts. Once the pump starts (red PUMP light LIT), all three CWPs will trip sequentially 1-03, 1-01, and then 1-02.
Perform Step: 1 5.1 Z 2)	Z. <u>IF</u> it is desired to START a third CWP, <u>THEN</u> perform the following: 1) START a third CWP (MCB): <ul style="list-style-type: none"> • 1-HS-2802A, CWP 3
Standard:	<ul style="list-style-type: none"> • PLACE 1-HS-2802A, CWP 3 in START • OBSERVE 1-ZI-2802, CWP 3 DISCH VLV POSN rising • OBSERVE Orange MISMATCH and White TRIP light on pump handswitch
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The examinee should recognize with no CWPs running that entry into ABN-304 is required but may reference ALM-0091A, Alarm Procedure 1-ALB-9A Window 8.11, ANY CWP OVRLOAD/TRIP, which requires entry into ABN-304. ABN-304 steps begin at Perform Step 4.
Examiner Note:	The following steps constitute the Alternate Path for this JPM.
Examiner Cue:	Provide procedure ALM-0091A when requested.
Examiner Note:	The following steps are from ALM-0091A, Window 8.11.
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>NOTE: If CWP is <u>NOT</u> tripped, probable cause of alarm is a motor overload condition. The 74 (overload) alarm relay must be reset at breaker, with a key, after overload condition is corrected. For a CWP trip due to loss of excitation voltage, power factor field monitor must be reset locally at switchgear. CWP 1 and 2 monitors are located in auxiliary cabinet in 1A1 and 1A2 respectively. CWP 3 and 4 monitors are located in CWP breaker compartment on 1A3 and 1A4 respectively.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>NOTE: Circ Water Pump discharge valve should close automatically on a pump trip.</p> </div> <div style="border: 2px solid black; padding: 5px;"> <p>CAUTION: If CWP damage is indicated, 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> </div>	
Perform Step: 2 1.	DETERMINE if a pump tripped. <ul style="list-style-type: none"> • 1-HS-2800A, CWP 1 • 1-HS-2801A, CWP 2 • 1-HS-2802A, CWP 3 • 1-HS-2803A, CWP 4
Standard:	<ul style="list-style-type: none"> • DETERMINED 1-01, 1-02, and 1-03 CWPs have tripped.

Perform Step: 3 1. A.	<u>IF</u> a CWP tripped, <u>THEN</u> GO to ABN-304 for Circulating Water Pump Trip.
Standard:	<ul style="list-style-type: none"> • TRANSITION to ABN-304, Main Condenser and Circulating Water System Malfunction, Section 2.0 Circulating Water Pump Trip.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The following steps are from ABN-304.
Examiner Cue:	Provide procedure ABN-304 when requested.

NOTE: If all running Circulating Water Pumps trip simultaneously, discharge valves will remain open until CWP handswitches are placed in STOP.

CAUTION:

- Operation with one Circulating Water Pump may result in pump runout and insufficient waterbox level, which may cause condenser tube degradation.
- With NO Circulating Water Pumps operating, a rapid shutdown of equipment cooled by TPCW, per ABN-306, may be necessary to prevent equipment damage and possible Main Generator hydrogen release.

Perform Step: 4 2.3 1	1 VERIFY Circulating Water Pumps - AT LEAST ONE OPERATING <ul style="list-style-type: none"> • 1-HS-2800A, CWP 1 • 1-HS-2801A, CWP 2 • 1-HS-2802A, CWP 3 • 1-HS-2803A, CWP 4
Standard:	OBSERVE no CWPs are operating.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	The examinee may elect to trip the reactor since loss of all CWPs results in loss of cooling to all turbine generator and main feedwater support systems. If the examinee DOES trip the reactor, then proceed to Perform Step 10.
Perform Step: 5 2.3 1 RNO 1 st bullet	<ul style="list-style-type: none"> • <u>IF</u> Reactor Power is greater than or equal to 10%, <u>THEN</u> TRIP Reactor <u>AND</u> GO TO EOP-0.0A/B while others continue this procedure.
Standard:	RECOGNIZE Reactor Power is less than 10% and step is not applicable.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 6 [√] Step 2.3 1 RNO 2 nd bullet	<ul style="list-style-type: none"> • <u>IF</u> Reactor Power is less than 10%, <u>THEN</u> TRIP Turbine <u>AND</u> perform ABN-403 while continuing this procedure.
Examiner Cue:	After the turbine is tripped, REPORT another operator will perform ABN-403 while you continue with ABN-304.
Standard:	<ul style="list-style-type: none"> • Momentarily DEPRESS 1-TTSW Turbine Trip Pushbutton (critical) • VERIFY Turbine is tripped – HP Turbine Stop Valves CLOSED – Green lights LIT, Red lights DARK (not critical) <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
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 7 2.3 1 RNO 3 rd bullet	<ul style="list-style-type: none"> • <u>IF</u> ALB-9A 8.9, CNDSR PIT LVL TRIP/TRIP BYP-LIT, <u>THEN</u> PERFORM Section 5.3, this procedure, while continuing this section.
Standard:	RECOGNIZE ALB-9A Window 8.9 is DARK and step is not applicable
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 8 2.3 1 RNO 4 th bullet	<ul style="list-style-type: none"> • <u>IF NO</u> Circulating Water Pumps operating, <u>THEN</u> SHUTDOWN secondary plant per ABN-306, Loss of TPCW Section, as necessary to maintain affected temperatures within limits.
Examiner Cue:	REPORT another operator will perform ABN-306 while you continue with ABN-304.
Standard:	RECOGNIZE all CWPs are tripped and ABN-306 implementation is required.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	Only one of the following actions is required to satisfy the critical step.	
Perform Step: 9√ 2.3 1 RNO 5 th bullet	<ul style="list-style-type: none"> • <u>IF NO</u> Circulating Water Pumps operating, <u>THEN</u> SHUT MSIVs. 	
Standard:	PERFORM one of the following: <ul style="list-style-type: none"> • PLACE 1-HS-2337A, MSL ISOL MAN ACT/RESET in CLOSE <u>OR</u> • PLACE 1-HS-2337B, MSL ISOL MAN ACT/RESET in CLOSE <u>OR</u> • PLACE each MSIV handswitch in CLOSE: <ul style="list-style-type: none"> • 1-HS-2333A, MSIV 1 • 1-HS-2334A, MSIV 2 • 1-HS-2335A, MSIV 3 • 1-HS-2336A, MSIV 4 	
Comment:		
		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.	
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.	

STOP TIME:	
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Examiner Note:	The examinee may elect to trip the reactor since loss of all CWPs results in loss of cooling to all turbine generator and main feedwater support systems. If the examinee DOES trip the reactor, then proceed with the following steps.
Examiner Cue:	REPORT another operator will perform EOP-0.0A actions while you continue with ABN-304.
Perform Step: 10 2.3 1 RNO 1 st bullet	<ul style="list-style-type: none"> • <u>IF</u> Reactor Power is greater than or equal to 10%, <u>THEN</u> TRIP Reactor <u>AND</u> GO TO EOP-0.0A/B while others continue this procedure.
Standard:	DETERMINES loss of all secondary system cooling warrants reactor trip and PLACES 1/1-RTC, RX TRIP BKR <u>OR</u> 1/1-RT, RX TRIP in TRIP.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	If the examinee tripped the reactor, the following step is not applicable since the turbine is tripped automatically.
Perform Step: 11 Step 2.3 1 RNO 2 nd bullet	<ul style="list-style-type: none"> • <u>IF</u> Reactor Power is less than 10%, <u>THEN</u> TRIP Turbine <u>AND</u> perform ABN-403 while continuing this procedure.
Examiner Cue:	If required, REPORT another operator will perform ABN-403 while you continue with ABN-304.
Standard:	<ul style="list-style-type: none"> • RECOGNIZE turbine tripped automatically and step is not applicable.

Perform Step: 12 2.3 1 RNO 3 rd bullet	<ul style="list-style-type: none"> • <u>IF</u> ALB-9A 8.9, CNDSR PIT LVL TRIP/TRIP BY-LIT, <u>THEN</u> PERFORM Section 5.3, this procedure, while continuing this section.
Standard:	RECOGNIZE ALB-9A Window 8.9 is DARK and step is not applicable
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Perform Step: 13 2.3 1 RNO 4 th bullet	<ul style="list-style-type: none"> • <u>IF</u> <u>NO</u> Circulating Water Pumps operating, <u>THEN</u> SHUTDOWN secondary plant per ABN-306, Loss of TPCW Section, as necessary to maintain affected temperatures within limits.
Examiner Cue:	REPORT another operator will perform ABN-306 while you continue with ABN-304.
Standard:	RECOGNIZE all CWPs are tripped and ABN-306 implementation is required.
Comment:	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

Examiner Note:	Only one of the following actions are required to satisfy the critical step.	
Perform Step: 14 2.3 1 RNO 5 th bullet	<ul style="list-style-type: none"> • <u>IF NO</u> Circulating Water Pumps operating, <u>THEN</u> SHUT MSIVs. 	
Standard:	PERFORM one of the following: <ul style="list-style-type: none"> • PLACE 1-HS-2337A, MSL ISOL MAN ACT/RESET in CLOSE <u>OR</u> • PLACE 1-HS-2337B, MSL ISOL MAN ACT/RESET in CLOSE <u>OR</u> • PLACE each MSIV handswitch in CLOSE: <ul style="list-style-type: none"> • 1-HS-2333A, MSIV 1 • 1-HS-2334A, MSIV 2 • 1-HS-2335A, MSIV 3 • 1-HS-2336A, MSIV 4 	
Comment:		
		SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
Terminating Cue:	JPM complete.	
Termination Criteria:	Task completion. Not making adequate progress after twice validation time. Failed to meet task standard.	

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

- **Unit 1 is at 8% reactor power with Main Turbine rolling at 500 RPM per IPO-003A, Power Operations**
- **1-01 and 1-02 Circulating Water Pumps (CWP) are in service**
- **Unit 1 Main Condenser outlet valves have been throttled in preparation for starting 1-03 CWP**
- **Personnel are standing by to adjust CWP power factor and Main Condenser outlet valves after 1-03 CWP pump start**
- **CWP currents and discharge pressures will be adjusted within steady state limits specified in SOP precautions after 1-03 CWP start**

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

- **Continue startup of 1-03 CWP per SOP-310A, Circulating Water System, Section 5.1, Startup at Step 5.1 Z.2).**

NRC EXAM

Facility:	CPNPP 1 & 2	Scenario No.:	1
Examiners:	_____	Operators:	_____
	_____		_____
	_____		_____
Initial Conditions: 100% power MOL.			
Turnover: Maintain steady-state power conditions.			
Critical Tasks:			
<ul style="list-style-type: none"> • Manually Insert Rods When Rod Speed Falls Below 48 Steps/Minute Until Reactor Power is Below 5% Power Range Indication and Intermediate Range Channels Indicate Negative Startup Rate Per FRS-0.1A, Response to Nuclear Power Generation/ATWT. • Initiate Emergency Boration During Anticipated Transient Without Trip Prior to Exiting FRS-0.1A, Response to Nuclear Power Generation/ATWT. • Dispatch Operator to Locally Trip Reactor Trip Breakers During Anticipated Transient Without Trip Prior to Exiting FRS-0.1A, Response to Nuclear Power Generation/ATWT. 			
Event No.	Malf. No.	Event Type*	Event Description
1	RP05B	(I, MC) RO (TS) SRO	Loop 2 T _C Fails High
2	CV16A	(I, MC) RO	VCT Level Channel LT-112 Fails Low
3	ED05I	(C) BOP, RO (TS) SRO	86-1 Lockout on 1EA2
4	RC03B RP01 RP13C DIED1B41 DIEDT1B4	(C) RO (C) RO, BOP (M) RO, BOP, SRO	1-02 RCP High Shaft Vibration Reactor Fails to Auto Trip (ATWT) Manual Trip Failure from CB-02 and CB-07 Override 1B4-1 Handswitch to Close Override T1B4-1 Handswitch to Close
5	RP14A	(C) RO, BOP	Safety Injection Actuation - Spurious Train A Safety Injection
6	SI04C	(C, MC) BOP	1-01 SI Pump SI Sequencer Fail to Start
7	CS02G	(C, MC) RO	1-03 CS Pump SI Sequencer Fail to Start
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specifications, (MC)Manual Control			

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Table 3.4-1

Actual	Initial Target Attributes
3	Events after EOP entry (1-2)
4	Abnormal events (2-4)
1	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
1	Entry into a contingency EOP with substantial actions – 1 per scenario set
3	Preidentified CTs (2 or more)

Table 3.4-2

Event/Evolution Type	Applicant Position			
	RO	BOP	SRO-I	SRO-U
Reactivity Manipulation	0	0	0	0
Normal Evolution	0	0	0	0
Instrument/Component (I/C) Failure	5	4	7	7
Major Transient	1	1	1	1
Manual Control of Automatic Function	3	1	na	na
TS Evaluation	na	na	2	2

Scenario Objectives:

Demonstrate control of Loop 2 Tcold failure (high)

Demonstrate control of VCT LT-112 failure (low)

Demonstrate control of 86-1 electrical lockout on 1EA2 safety bus

Demonstrate control of RCP 1-02 shaft vibration

Demonstrate control of major event (ATWT)

Demonstrate control of CT 1, 2, and 3 (see CT tables)

Demonstrate control of post-major malfunctions by manually starting 1-01 SI pump and 1-03 CS pump.

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SCENARIO SUMMARY

OBJECTIVE: Demonstrate crew competency in responding to abnormal and emergency events which are potential contributors to challenging fission product barriers necessary for the protection of the health and safety of the public.

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 Loop 2 T_{Cold} resulting in automatic rod insertion. Crew actions are per ABN-704, Tc/N-16 Instrumentation Malfunction and will include placing rod control in manual and restoring Reactor Coolant System temperature with manual rod withdrawal. The failed channel will be defeated, and rod control should remain in manual. The SROs will refer to Technical Specifications.

The second event is VCT level channel LT-112 failure low. This will result in an automatic makeup. The RO will respond in accordance with ALM-0061A, Alarm Procedure 1-ALB-6A to stop automatic makeup. The crew will refer to ABN-105, Chemical and Volume Control System Malfunction and SOP-104A, Reactor Make-up and Chemical Control System to restore makeup system alignment.

The third event is an 86-1 lockout relay actuation resulting in a loss of 6.9 KV Safeguards Bus 1EA2. The crew will respond per ABN-602, Response to a 6900/480V System Malfunction. Actions include placing Emergency Diesel Generator 1-02 (without Station Service Water flow) in Pull-Out. Additionally, the crew will perform actions per ABN-602 to ensure necessary plant equipment is operating and affected equipment is placed in PULL OUT. The SRO will refer to Technical Specifications.

The major event is initiated by 1-02 RCP high vibration. The crew will initially respond per ABN-101, RCP Trip/Malfunction, which will direct reactor trip. The event is complicated when the reactor fails to trip from either hand switch on the main control board and one of the non-safeguard buses cannot be de-energized to permit tripping the associated rod drive motor generator. The crew will respond per EOP-0.0A, Reactor Trip or Safety Injection, attempt to momentarily de-energize non-safety 480-volt buses, and then transition to FRS-0.1A, Response to Nuclear Power Generation/ATWT. The crew will then insert control rods, emergency borate, start AFW, and dispatch an operator to locally open the reactor trip breakers.

After the reactor is tripped and FRS-0.1A steps are completed, the crew will return to EOP-0.0A. The crew will then transition to EOS-0.1A, Reactor Trip Response when it is determined that a Safety Injection is not required.

After actions are taken in EOS-0.1A, the abnormal event after EOP entry is triggered for a spurious Train A safety injection, which requires re-entry into EOP-0.0A. The response is complicated by failure of 1-01 Safety Injection Pump and 1-03 Containment Spray Pump to start.

Scenario will be terminated when 1-01 SI Pump and 1-03 Containment Spray Pump are restarted or at the discretion of the Lead Examiner.

NRC EXAM
Critical Task Determination

Critical Task	Safety Significance	Initiating Cue	Measurable Performance Standard	Performance Feedback
Ensure Control Rods are inserting at greater than or equal to 48 Steps / Minute until Reactor Power is below 5% Power Range indication and Intermediate Range Channels Indicate Negative Startup Rate, per FRS-0.1A, Response to Nuclear Power Generation / ATWT.	Take actions to insert Control Rods at the fastest rate speed available to prevent challenges to plant's heat removal capability and fuel integrity.	Procedurally driven from FRS-0.1A to reduce the heat input to the RCS to only that of decay heat and reactor coolant pump heat.	If the reactor is not tripped, the intent of the RNO actions is to insert rods at fastest rate available. If RCS temperature increased above current reference temperature, then rods should automatically be driven in by Rod Control System. When Rod Control System signal decreases to less than speed for manual rod insertion, operator is required to manually insert rods to maximize negative reactivity addition.	Neutron flux lowering and indication of rods driving into the core by DRPI and step counters.
Initiate Emergency Boration During Anticipated Transient Without Trip Prior to Exiting FRS-0.1A, Response to Nuclear Power Generation / ATWT.	Take one or more actions that would prevent challenges to plant's heat removal capability and fuel integrity.	Procedurally driven from FRS-0.1A to add negative reactivity to the core.	The operator will realign charging pump suction to the RWST and raise charging flow to maximum.	Valve position indication and charging flow indication on CB-06.
Dispatch Operator to Locally Trip Reactor Trip Breakers During Anticipated Transient Without Trip Prior to Exiting FRS-0.1A, Response to Nuclear Power Generation / ATWT.	Recognize a failure or an incorrect automatic actuation of an ESF system or component.	Procedurally driven from FRS-0.1A to add negative reactivity to the core and properly align the P-4 signal.	The operator will contact an operator outside the control room to locally trip the reactor trip breakers.	Indication of reactor trip breaker position on CB--07.
<p>NOTE: 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>				

NRC EXAM

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC 18 and 2023 NRC Simulator Scenario 1 Scenario File.

EVENT	TYPE	MALF #	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
SETUP					
2	COND		Remove LT-112 Failure {Key[15]!=0} DMF CV16A		K15
3	RF	EAR101	De-energize Train B Sequencer	f:0	K16
3	RF	EAR498	De-energize Train B Sequencer	f:0	K16
4	IMF	RP01	Reactor Fails to Auto Trip	f:1	K0
4	IMF	RP13C	Manual Trip Failure from CB-02 and CB-07	f:1	K0
4	RF	RPR112	Open Reactor Trip Breakers A	f:2	K17
4	RF	RPR113	Open Reactor Trip Breakers B	f:2	K17
4	IOR	DIED1B41	Override 1B4-1 Handswitch to Close	f:3	K0
4	IOR	DIEDT1B4	Override T1B4 Handswitch to Close	f:3	K0
6	IMF	SI04C	1-01 SI Pump SI Sequencer Fail to Start	f:1	K0
7	IMF	CS02G	1-03 CS Pump SI Sequencer Fail to Start	f:1	K0
1	IMF	RP05B	Loop 2 T _c NR Temperature (TE-421A) Fails High	f:630	K1
2	IMF	CV16A	VCT Level Channel LT-112 Fails Low	f:0	K2
3	IMF	ED05I	86-1 Lockout on 1EA2	f:1	K3
4	IMF	RC03B	1-02 RCP High Shaft Vibration	f:21 r:120	K4
5	IMF	RP14A	Spurious Train A Safety Injection	f:1	K5

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Simulator Operator: Initialize to IC 18 and LOAD 2023 NRC Simulator Scenario 1 Scenario File.

ENSURE procedures in progress are on SRO desk:

- **COPY of IPO-003A, Power Operations, Section 5.5 Operating at Constant Turbine Load.**

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**

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Lead Evaluator Record Start Time: _____

Simulator Operator: When directed, EXECUTE **KEY 1**.

Event 1 - RP05B, Loop 2 T_{COLD} NR temperature instrument (TE-421A) fails high.

Indications Available:

- 5C-1.5 – ANY N16 DEV HI / LO
- 5C-2.5 – 1 OF 4 OT N16 HI
- 5C-3.5 – ANY T_{AVE} DEV HI / LO
- 6D-1.10 – AVE T_{AVE} T_{REF} DEV
- 6D-2.10 – AVE T_{AVE} HI
- 6D-3.14 – 1 OF 4 OT N16 ROD STOP & TURB RUNBACK
- 1-TI-421A, CL 2 TEMP (NR) CHAN IV indication failed high
- 1-TI-422, RC LOOP 2 T_{AVE} CHAN IV indication failed high

	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE Control Rods inserting due to T _{COLD} failed high.
		<ul style="list-style-type: none"> • IDENTIFY Loop 2 T_c at 1-TI-421A on CB 07 has failed high.
	US	DIRECT implementation of ABN-704, T _c / N-16 Instrumentation Malfunction, Section 2.0.
<p>NOTE:</p> <ul style="list-style-type: none"> • If the failed channel was reading lower than the substituted channel, then AVE T_{ave} will increase when the failed channel is defeated due to another channel being substituted for the failed signal to maintain accurate averaging. • Rod Control should remain in MANUAL until all channels are operable. This does not preclude placing rods in AUTO during rapidly changing transient conditions such as runbacks, etc. as long as rod control is returned to MANUAL when the plant is stabilized. 		
	RO	PLACE 1/1-RBSS, CONTROL ROD BANK SELECT Switch in MANUAL [Step 2.3.1].
Examiner Note: The crew may take manual control of charging due to rise in Pressurizer level setpoint.		
	RO	VERIFY Pressurizer level maintained at program [Step 2.3.2].
	RO	PLACE 1-TS-412T, T _{AVE} Channel Defeat in LOOP 2 position [Step 2.3.3].

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	BOP	VERIFY Steam Dump System is NOT actuated and NOT armed [Step 2.3.4].
	RO	Using Control Rods, RESTORE T _{AVE} to within 1°F of T _{REF} [Step 2.3.5].
		<ul style="list-style-type: none"> WITHDRAW Control Rods in ≤ 5 step increments until Control Bank D is at 215 steps.
	RO/BOP	PLACE 1/1-JS-411E, N16 Power Channel Defeat in LOOP 2 position [Step 2.3.6].
	RO	ENSURE valid N16 channel supplying recorder on 1/1-TS-411E, 1-TR-411 CHAN SELECT [Step 2.3.7].
	BOP	VERIFY Steam Dump System – NOT ARMED [Step 2.3.8].
		<ul style="list-style-type: none"> PCIP Window 3.4 – TURB LOAD REJ STM DMP ARMED C-7 is DARK
	US/BOP	VERIFY Steam Dumps were NOT blocked (Step is not applicable) [Step 2.3.9].
	US/RO	CHECK 1-LK-459, PRZR LVL CTRL AND 1-FK-121, CCP CHR G FLO CTRL in AUTO [Step 2.3.10].
		<ul style="list-style-type: none"> RESTORE controllers to automatic, as required.
<p>Examiner Note: ABN-704 Steps 2.3.11 and 2.3.12 are performed in conjunction with troubleshooting activities when I&C personnel are available and will not be performed during this scenario.</p>		
	US	EVALUATE Technical Specifications [Step 2.3.13].
		<ul style="list-style-type: none"> LCO 3.3.1, Reactor Trip System Instrumentation (Function 6, Overtemperature N-16 & Function 7, Overpower N-16). CONDITION E - One channel inoperable. ACTION E.1 - Place channel in trip within 72 hours, <u>OR</u> ACTION E.2 - Be in MODE 3 within 78 hours.
	US	INITIATE an issue report per STA-421 [Step 2.3.14].
<p>When Technical Specifications have been addressed or at Lead Examiner's discretion, proceed to Event 2.</p>		

NRC EXAM

Simulator Operator: When directed, EXECUTE KEY 2.

Event 2

- CV16A, Volume Control Tank (LT-112) failed low.

Indications Available:

6A-3.5 – VCT LVL LO

6A-4.5 – VCT LVL LO-LO

1-LI-112A – VCT LVL level indication fails low

	RO	RECOGNIZE VCT level transmitter (LT-112) failed low.
	RO	STOP Auto Makeup by PLACING 1/1-MU, RCS MU MAN ACT in STOP.
	US	DIRECT performance of ALM-0061A, 1-ALB-6A, Window 4.5 - VCT LVL LO-LO <u>or</u> ABN-105, Chemical and Volume Control System Malfunction, Section 6.0, Reactor Makeup System Malfunction.

Examiner Note: The following steps are from 1-ALB-6A, Window 4.5 - VCT LVL LO-LO.

Simulator Operator: When maintenance is contacted, wait 2 minutes and then inform the control room that cleaners have bumped the transmitter and it appears the equalizing valve is open. Request permission to close the equalizing valve.

When permission is given, EXECUTE KEY 15 to delete malfunction CV16A and REPORT I&C has closed the equalizing valve and the level transmitter is operating normally.

	RO	IF the charging pump suction shifts to the RWST and the PDP is operating, THEN perform the following per SOP-103A: Step is N/A [Step 1]
	RO	MONITOR VCT level on 1-LI-112A, VCT LVL and 1-LI-185, VCT LVL. [Step 2]
		<ul style="list-style-type: none"> If both VCT levels indicate low, ENSURE charging pump suction is aligned to the RWST. Step is N/A [Step 2.A]
	RO	MONITOR other indication for possible charging pump gas intrusion such as: [Step 2.B] <ul style="list-style-type: none"> Window 1.5 – VCT PRESS H/LO Window 1.8 – PDP SUCT STAB LVL HI-HI Window 3.4 – CHRG FLO HI/LO CHRG PMP pressure or flow oscillations

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	RO	If gas intrusion is indicated, REFER to ABN-105 for Gas Binding/Cavitation of Charging Pumps. Step is N/A [Step 2.C]
	RO	MONITOR charging and letdown flow on 1-FI-121A, CHRГ FLO, and 1-FI-132, LTDN FLO. [Step 3]
		<ul style="list-style-type: none"> If charging flow is > 15 gpm above letdown flow, REFER to ABN-103 and ABN-105. [Step 3.A]
	RO	<ul style="list-style-type: none"> IF BOTH VCT levels indicate low, THEN perform the following. Step is N/A [Step 4]
	RO	IF BOTH VCT levels indicate different, THEN perform the following: [Step 5]
		<ul style="list-style-type: none"> CHECK 1-PI-115, VCT PRESS (should be approximately 30 psig.) [Step 5.A]
		<ul style="list-style-type: none"> IF 1-LI-112A is low WITH 1-LI-185 AND VCT pressure high, THEN check 1-LT-0112, CVCS VOLUME CONTROL TANK 1-01 LEVEL TRANSMITTER for malfunction. [Step 5.B]
		<ul style="list-style-type: none"> STOP Auto Makeup by PLACING 1/1-MU, RCS MU MAN ACT in STOP. [Step 5.B.1]]
		<ul style="list-style-type: none"> REDUCE VCT level on 1-LI-185 to between 46% and 56% by placing 1/1-LCV-112A, VCT LVL CTRL VLV in HUT. [Step 5.B.2]]
		<ul style="list-style-type: none"> ENSURE 1-LI-185, VCT LVL and 1-PI-115, VCT PRESS are decreasing. [Step 5.B.3]]
		<ul style="list-style-type: none"> REFER to ABN-105. [Step 5.B.4]]
	RO	IF 1-LI-185 is low WITH 1-LI-112A AND VCT pressure normal, check 1-LT-0185, CVCS VOLUME CONTROL TANK 1-01 LEVEL TRANSMITTER 0185 for malfunction. Step is N/A [Step 5.C]
	RO	When VCT level has lowered to desired value, PLACE 1/1-LCV-112A, VCT LVL CTRL VLV in VCT. [Step 5.D]
	RO	VERIFY 1-LK-112C, VCT LVL CTRL potentiometer is set per TDM-203A. [Step 6]
	US	CORRECT the condition or initiate a work request per STA-606. [Step 7]

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Examiner Note: The following steps are from ABN-105, Chemical and Volume Control System Malfunction, Section 6.0, Reactor Makeup System Malfunction.

NOTE: Normal Operating Mode of the Reactor Makeup System includes the following Modes:

- Automatic Mode
- Borate Mode
- Dilute Mode
- Alternate Dilute Mode

	RO	VERIFY Reactor Makeup System in – NORMAL OPERATING MODE [Step 6.3.1]
		<ul style="list-style-type: none"> • ENSURE Reactor makeup System aligned per SOP-104A [Step 6.3.1.a] • PERFORM the applicable subsection of SOP-104A for normal operations. [Step 6.3.1.c] • RETURN to procedure and step in effect. [Step 6.3.1.c]

Examiner Note: The following steps are from SOP-104A, Reactor Make-up and Chemical Control System, Section 8.1.1, Automatic Mode.

Step 8.1.1.F, reactivity briefing sheet may be used to validate pot settings.

NOTE:

- When a blended flow concentration of >1600 PPM is desired, the maximum Boric Acid flow should NOT be expected to exceed 27 gpm. Therefore, section 8.1.6, Manual Blended Makeup, or , 8.1.7, Multiple Manual Blended Makeups should be used for makeups >1600 ppm.
- 1/1-FCV-110A has non-linear flow characteristics below 4 gpm which could cause an inadvertent Boration during AUTO makeup to RCS. Therefore, for blended flow makeups, only Manual Blended Makeup should be used when B-10 Corrected RCS Boron Concentration is < 250 ppm. Sections 8.1.6 or 8.1.7 may be used, or , 8.1.3, EOL Dilution With RCS Cb < 250 PPM.

	RO	ENSURE the prerequisites of Section 7.1 and 7.2 are met. [Step 8.1.1.A]
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	RO	IF	<p>B. Any of the following conditions APPLY,</p> <ul style="list-style-type: none"> • Anticipated makeup will be >1000 gallons within a one hour period • Desired blended flow concentration will be >1300 ppm (shutdown only). • 1-FK-110, BA BLNDR FLO CTRL potentiometer will be adjusted to >6.0 (24 gpm).
		THEN	NOTIFY Chemistry to prepare to obtain a sample of the blended flow.
[Step 8.1.1. B]			
	RO	ENSURE 1/1-MU, RCS MU MAN ACT in STOP. [Step 8.1.1.C]	
	RO	<p>ENSURE the following handswitches are in AUTO, <u>AND</u> the valves are CLOSED: [Step 8.1.1.D]</p> <ul style="list-style-type: none"> • 1/1-FCV-111A, RMUW BLNDR FLO CTRL VLV • 1/1-FCV-111B, RCS MU TO VCT ISOL VLV • 1/1-FCV-110A, BA BLNDR FLO CTRL VLV • 1/1-FCV-110B, RCS MU TO CHRГ PMP SUCT ISOL VLV [Step 8.1.1.D] 	
	RO	SET 1-FK-111, RMUW BLNDR FLO CTRL for approximately 90 gpm (5.63), OR as required. [Step 8.1.1.E]	
	RO	<p>SET 1-FK-110, BA BLNDR FLO CTRL pot to provide a blended flow approximately equal to the B-10 Corrected RCS Boron Concentration. [Step 8.1.1.F]</p> $127 \times \frac{\text{B-10 Corr RCS } C_B}{\text{BAT } C_B} = \text{Boric Acid Flowrate}$ <p style="text-align: center;">_____</p> $\frac{\text{_____ boric acid flowrate}}{4} = \text{1-FK-110 pot setting}$ <p style="text-align: center;">_____</p>	
	RO	PLACE 43/1-MU, RCS MU MODE SELECT in AUTO. [Step 8.1.1.G]	
	RO	PLACE 1/1-MU, RCS MU MAN ACT in START. [Step 8.1.1.H]	
<i>When Reactor Makeup is returned to Automatic or at Lead Examiner's discretion, proceed to Event 3.</i>			

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 3**.

Event 3 - ED05I, 86-1 LOR 6.9KV Safeguards Bus 1EA2

Indications Available:

- 10B-2.5 – 6.9 KV BUS 1EA2 LOR TRIP
 - 10B-2.6 – 6.9 KV BUS 1EA1 / 1EA2 VOLT LOSS
 - 10B-3.6 – 6.9 KV BUS 1EA1 / 1EA2 NOT PWRD FROM PREF OFFSITE PWR
 - 10B-4.5 – 6.9 KV / 480 V ANY 1E SECOND LVL UNDERVOLT
- Multiple Safeguards Bus Loss of Voltage alarms**

	RO	RESPOND to Annunciator Alarm Procedures.
	RO/BOP	RECOGNIZE loss of Safeguards Bus 1EA2.
	US	DIRECT performance of ABN-602, Response to a 6900/480V System Malfunction, Section 2.0, Safeguard 6.9 KV Bus Fault (Modes 1, 2, 3, and 4).

Examiner Note: The following steps are from ABN-602, Response to a 6900/480V System Malfunction, Section 2.0, Safeguard 6.9 KV Bus Fault (Modes 1, 2, 3, and 4).

CAUTION:

- Only ONE attempt to close a tripped breaker should be allowed; provided **NO** obvious equipment damage or fault is indicated. Further attempts should **NOT** be made until checked by Electrical Maintenance.
- When a 6.9 KV safeguard bus fault prevents running a SSWP, DG run time should be limited to approximately 15 minutes unloaded, 1 minute loaded to prevent damage due to loss of cooling.
- Following overcurrent or instantaneous overcurrent relay operations, the CTs should be checked by Meter & Relay for proper operation. (ONE 97-806)
- After approximately 120 seconds BOS Operator Lockout (OL) signal automatically resets, as indicated by associated BOS OL light OFF and RMUW pump restart when BOS has timed out. Should an OL not automatically reset, resetting the sequencer may correct the condition.

	US	Check Unit MODE – 1, 2, 3 OR 4 [Step 2.3.1].
	BOP	Check 6.9 KV safeguard bus – AT LEAST ONE ENERGIZED [Step 2.3.2]

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- CAUTION:**
- If power is greater than 10%. MDAFW should be allowed to run until the sequencer times out. The pumps will be stopped in Section 8.0, if not required. DO NOT throttle AFW above 10% power.
 - The AFWP flow control and isolation valves are required to be fully open when above 10% power per TS 3.7.5.

- NOTE:**
- An emergency start will allow DG breaker to automatically close on a phase to ground bus fault (LOR 86-2/EA1 or 86-2/EA2).
 - DG breaker will not automatically or manually close when a phase to phase bus fault (LOR 86-1) is present.
 - An Operator Lockout signal from Blackout Sequencer (BOS) opens TDAFWP steam supply valves. The BOS also starts associated train MDAFWP. It may be necessary to limit AFW flow to prevent excessive RCS cooldown, or other adverse condition. Placing the TDAFW Pump in PULL-OUT with one safeguards bus de-energized will result in two inoperable AFW Pumps per TS 3.7.5. Throttling any train of AFW above 10% power renders the train INOPERABLE.
 - Attachment 4 contains steps to deenergize the sequencer if the bus will not be needed. This would restore common equipment available to the other unit (e.g CRACs, UPS).

Examiner Note: The TDAFWP will start when the Blackout Sequencer Operator Lockout is initiated. The crew may initiate a 50 MW load reduction to maintain power less than 100%.

Simulator Operator: When contacted to check TDAFW Pump and Train A equipment, acknowledge request.

	BOP	Check 6.9 KV safeguards buses – BOTH ENERGIZED [Step 2.3.3]
		<ul style="list-style-type: none"> • Perform the following: <ul style="list-style-type: none"> • Maintain Reactor Power ≤ 100% [Step 2.3.3 RNO 1]
		<ul style="list-style-type: none"> • IF adequate feed flow available, THEN place affected TDAFWP steam supply valve handswitch in AUTO after CLOSE if BOS OL cleared or PULL-OUT if BOS OL not clear [Step 2.3.3 RNO 2]
	US	<ul style="list-style-type: none"> • DIRECT TDAFWP be secured by placing Steam Supply valve in PULL-OUT since BOS OLs will not clear (BOS will not actuate without power on the bus preventing Operator Lockouts from clearing).
	BOP	<ul style="list-style-type: none"> • PLACE 1-HS-2452-2, AFWPT STM SPLY VLV MSL 1 in PULL-OUT based on condition of BOS OL
	BOP	<ul style="list-style-type: none"> • IF power < 10%, THEN control AFW flow as necessary [Step 2.3.3 RNO 3]

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Simulator Operator: When contacted to investigate the cause of the bus loss, wait 2 minutes and REPORT an 86-1/1EA2 Lockout Relay is energized on 1EA2. There are no visible signs of damage at the bus.

	US	<ul style="list-style-type: none"> • Check for fault condition locally (86-1/86-2) [Step 2.3.3 RNO 4] • Dispatch operator to check for fault condition locally
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<p>NOTE: Step 3 RNO 6 should be performed for loss of a safeguards bus when the associated DG is not needed immediately. Placing the affected DG in PULL-OUT may be performed prior to this step and should be verified as part of Step 3 performance.</p>

	US	<ul style="list-style-type: none"> • IF bus needed immediately, THEN GO TO Step 4 (Bus is not needed immediately, step is N/A) [Step 2.3.3 RNO 5]
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	US	<ul style="list-style-type: none"> • IF DG running AND SSW not available, THEN place the affected DG in PULL-OUT to shutdown the DG [Step 2.3.3 RNO 6]
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	US	<ul style="list-style-type: none"> • DIRECT BOP operator to PLACE CS-1DG2E, DG 2 EMER STOP/START handswitch in PULL-OUT
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	BOP	<ul style="list-style-type: none"> • PLACE CS-1DG2E, DG 2 EMER STOP/START handswitch in PULL-OUT to shutdown the Diesel Generator.
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Examiner Note: Event 4 may proceed after:

- TDAFWP is stopped AND
- 1-02 Diesel Generator is placed in PULL OUT

Simulator Operator: If requested to assist with ABN-602 actions, acknowledge request.

	US	<ul style="list-style-type: none"> • IF bus lockout actuated AND bus NOT needed immediately, THEN restore affected bus per Attachment 4 AND GO TO Step 5 [Step 2.3.3 RNO 7]
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	US	<ul style="list-style-type: none"> • INITIATE Attachment 4 to restore Safeguards Bus 1EA2.
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NRC EXAM

Simulator Operator: Simulator is not modeled with breakers for BOS Sequencer. If operator goes to SI/BOS Sequencer Cabinet, inform crew Unit 2 will complete actions to de-energize the Train B BOS. When contacted to de-energize Train B BOS, wait 1 minute and EXECUTE KEY 16 to insert EAR101 and EAR498 to OFF		
Examiner Note: The following two steps describe Control Room activities performed by the BOP per ABN-602 Attachment 4. Most Attachment 4 actions are performed locally.		
	BOP	De-energize BOS by opening the breaker in the bottom of the Sequencer Cabinet for the affected bus. [Attachment 4 Step 1]
	BOP	Ensure affected bus supply breaker handswitches in PULL OUT: <ul style="list-style-type: none"> • CS-1EA2-1 INCOMING BKR 1EA2-1 • CS-1EA2-2 INCOMING BKR 1EA2-2 • CS-1EG2 DG 2 BKR 1EG2 [Attachment 4 Step 2]
	RO/BOP	MONITOR Blackout Sequencer status: [Step 2.3.5] <ul style="list-style-type: none"> • Affected bus – ENERGIZED [Step 2.3.5.a] <ul style="list-style-type: none"> • Ensure all affected equipment – PULL OUT (Use Attachment 4, Step 6 for guidance, if necessary) [Step 2.3.5.a RNO a] <ul style="list-style-type: none"> • Component Cooling Water Pump 1-02. • HVAC Chiller 2 – LOCAL. • Motor Driven AFW Pump 1-02. • Containment Spray Pumps 1-02 and 1-04. • Residual Heat Removal Pump 1-02. • Safety Injection Pump 1-02. • Centrifugal Charging Pump 1-02. • Station Service Water Pump 1-02. • Transformer T1EB2 – NO PULLOUT position. • Transformer T1EB4 – NO PULLOUT position.

NRC EXAM

Examiner Note: The crew may contact Unit 2 to align common equipment.		
	RO/BOP	<ul style="list-style-type: none"> • Verify Blackout Sequencer – OPERATED [Step 2.3.5.b] • OUTPUT-STEP TIME lights – ALL DARK OR • Automatic lockouts AL light - DARK
	RO/BOP	Align necessary equipment to unaffected train, using Attachment 2 for guidance [Step 2.3.5.b RNO b]
		• Component Cooling Water Pump 1-01. (Already running)
		• CRDM Vent Fan 1-01. (Already running)
		• Station Service Water Pump 1-01. (Already running)
		• Start Containment Fan Cooler 1-03. Containment Fan Cooler 1-01 (Already running).
		• Neutron Detector Well Fan Cooler 9 (Already running).
		• Chill Water Recirc Pumps 1-02 and 1-04. (1-01 and 1-04 Already running)
		• CR A/C X-01. (Already running)
		• Instrument Air Compressor 1-01. (Already running)
		• Start UPS & DISTR RM Fan A/C 1. (CV-01) (X-HS-3631)
		• RMUWP 1-01. (Already running)
		• Start Vent Chiller Vent Chiller X-03.
Examiner Note: Step 2.3.5.d is Not Applicable since the Blackout Sequencer did not operate because power has not been restored to the bus.		
	US	Recover from blackout sequencer operation per Section 8 while continuing (Step is N/A) [Step 2.3.5.d]
	US/BOP	Check 138 KV/345 KV voltages [Step 2.3.6] <ul style="list-style-type: none"> • 138 KV, 135 – 144 KV • 345 KV, 340 – 361 KV
	US/BOP	Check 6.9 KV and 480V safeguard bus voltages [Step 2.3.7] <ul style="list-style-type: none"> • 6.9 KV, 6480 – 7150V • 480V, 455 – 508V

NRC EXAM

	RO/BOP	Check all MCCs and loads restored to normal configuration [Step 2.3.8]
		<ul style="list-style-type: none"> • Ensure SFP cooling in operation [Step 2.3.8.a]
	US	DETERMINE LIMITING CONDITION FOR OPERATION (MODE 1, 2, 3, OR 4) [STEP 2.3.9]
		<ul style="list-style-type: none"> • Check TS: [Step 2.3.9.a] <ul style="list-style-type: none"> • 3.7.5 A TDAFWP steam supply in Pull Out due to Train B BOS OL remaining energized • 3.7.5 B, Train B MDAFW Pump loss of power • 3.7.5 C, TDAFW and Train B MDAFW Pumps inoperable • 3.8.1 B, Train B DG inoperable • 3.8.9, Train B bus de-energized
<p>Examiner Note: If Pressurizer pressure decreases below 2220 psig with 4 Pressurizer pressure channels in service -OR- 2222 psig with 3 Pressurizer pressure channels in service, LCO 3.4.1 will apply during the time pressure is low due to Pressurizer pressure being below the specified limit in the COLR.</p>		
		LCO 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits
		<ul style="list-style-type: none"> • ACTION A.1 – Restore RCS DNB parameter to within limit within 2 hours
		LCO 3.8.9.A, Distribution Systems - Operating.
		<ul style="list-style-type: none"> • CONDITION A - One AC electrical power distribution subsystem inoperable. • ACTION A.1 - Restore AC electrical power distribution subsystem to OPERABLE status within 8 hours.
	US	Perform OPT-215 to complete within one hour, as applicable. [Step 2.3.9.b]
	BOP	Reset CVI, if necessary [Step 2.3.10]
	US	Check RV-5100 [Step 2.3.11]
	US	Notify Chemistry to determine if release permit required for TDAFW operation [Step 2.3.12]

NRC EXAM

	US	Refer to EPP-201 [Step 2.3.13]
	US	Enter into issue reporting program IAW STA-421 [Step 2.3.14]
<i>When Technical Specifications have been addressed or at Lead Examiner's discretion, proceed to Event 4.</i>		

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 4**.

Event 4

- RC03B, 1-02 RCP Shaft Vibration
- RP01, Automatic Reactor Trip Failure
- RP13C, Manual Reactor Trip Failure from Either Switch
- DIED1B41, 1B4-1 Handswitch Override in Close
- DIEDT1B4, T1B4 Handswitch Override in Close

Indications Available:

5B-2.5 – RCP 2 VIB HI

Examiner Note: 1-02 RCP vibration will exceed RCP trip criteria.

The crew will enter EOP-0.0A, Reactor Trip or Safety Injection and transition to FRS-0.1A, Response to Nuclear Power Generation/ATWT at Step 1.

NOTE: Amplitude trip rate of 1 mil/hr is based on operation at 100% power. IF not in Mode 1, THEN the amplitude rate of change may be ignored. IF DAS connected to the vibration monitoring panel, THEN filtered data should be used to determine trip criteria. (EVAL-2000-002454-01)

NOTE: On the Reactor Coolant Pump Vibration Monitor Rack, each vibration probe is shown. If one probe is significantly higher and the other shaft and frame vibrations are normal, that would be an indication of a failed probe and not an actual pump vibration event.

Examiner Note: The following steps are from ABN-101, Reactor Coolant Pump Trip/Malfunction.

	BOP	CHECK RCP Vibration – WITHIN LIMITS [Step 6.3.1.a].
		<ul style="list-style-type: none"> • At RCP vibration panel: <ul style="list-style-type: none"> • Click “CHAN Value” • Select channel using “Incr” or “Decr” • Top left of blue box displays channel number “C#” • Select C02 and C06 for 1-02 RCP • RECOGNIZE shaft vibration - BETWEEN 15 AND 20 MILS AND INCREASING GREATER THAN 1 MIL/HR OR GREATER THAN 20 MILS.
	US	DIRECT performance of ABN-101, Reactor Coolant Pump Trip/Malfunction Section 6.

NRC EXAM

Examiner Note: RCP vibration exceeds limits requiring a reactor trip. Reactor trip switches are failed and bus 1B4 cannot be de-energized to trip the reactor.

	US	DIRECT reactor trip, stopping 1-02 RCP, and TRANSITION to EOP-0.0A, Reactor Trip or Safety Injection [Step 6.3.1.a RNO].
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Examiner Note: The following steps are from EOP-0.0A, Reactor Trip or Safety Injection.

	RO	Manually INITIATE a Reactor Trip [Step 1].
		<ul style="list-style-type: none"> • PLACE 1/1-RTC, RX TRIP Switch in TRIP at CB-07 [Step 1.a RNO]. • DETERMINE Reactor is NOT tripped.
	BOP	Manually INITIATE a Reactor Trip [Step 1].
		<ul style="list-style-type: none"> • PLACE 1/1-RT, RX TRIP Switch in TRIP at CB-10 [Step 1.a RNO]. • DETERMINE Reactor is NOT tripped.
		<ul style="list-style-type: none"> • IF Reactor will NOT trip, THEN momentarily de-energize 480 V normal switchgear 1B3 AND 1B4
		<ul style="list-style-type: none"> • OPEN CS-1B3-1, INCOMING BKR 1B3-1 and OBSERVE green TRIP light lit.
		<ul style="list-style-type: none"> • OPEN CS-1B4-1, INCOMING BKR 1B4-1 and OBSERVE red CLOSE light lit.
		<ul style="list-style-type: none"> • CLOSE CS-1B3-1, INCOMING BKR 1B3-1 and OBSERVE red CLOSE light lit.
		<ul style="list-style-type: none"> • CLOSE CS-1B4-1, INCOMING BKR 1B4-1 and OBSERVE red CLOSE light lit.
		<ul style="list-style-type: none"> • IDENTIFY Bus 1B4 – FAILED TO DE-ENERGIZE
		<ul style="list-style-type: none"> • IDENTIFY Reactor Trip Breakers – REMAIN CLOSED.
	US	TRANSITION to FRS-0.1A, Response to Nuclear Power Generation/ATWT, Step 1.

NRC EXAM

Examiner Note: The following steps are from FRS-0.1A, Response to Nuclear Power Generation/ATWT.

	RO	VERIFY Reactor Trip [Step 1]:
		<ul style="list-style-type: none"> IDENTIFY Reactor Trip Breakers – NOT OPEN.
		<ul style="list-style-type: none"> IDENTIFY Neutron flux – NOT DECREASING.
		<ul style="list-style-type: none"> IDENTIFY all Control Rod Position Rod Bottom Lights – NOT ON
	RO	ENSURE manual reactor trip attempted [Step 1 RNO].
CRITICAL TASK STATEMENT		Place Control Rods in Manual and insert rods when rod speed falls below 48 Steps/Minute until Reactor Power is below 5% Power Range indication and Intermediate Range Channels indicate negative startup rate per FRS-0.1A, Response to Nuclear Power Generation / ATWT.
CRITICAL TASK	RO	<u>IF</u> Reactor NOT tripped, <u>THEN</u> INSERT Control Rods ≥ 48 steps/minute. [Step 1 RNO]
		<ul style="list-style-type: none"> When rod speed is < 48 steps/minute, PLACE rods in MANUAL and insert control rods
	BOP	VERIFY Turbine Trip [Step 2]:
		<ul style="list-style-type: none"> IDENTIFY all HP Turbine Stop Valves – OPEN.
		<ul style="list-style-type: none"> Manually TRIP Turbine [Step 2 RNO]. <ul style="list-style-type: none"> DEPRESS 1-TTSW Turbine Trip Pushbutton
		<ul style="list-style-type: none"> VERIFY all HP Turbine Stop Valves – CLOSED.
	BOP	VERIFY Total AFW Flow – GREATER THAN 860 GPM [Step 3]:

NRC EXAM

CRITICAL TASK STATEMENT	Initiate Emergency Boration During Anticipated Transient Without Trip Prior to Exiting FRS-0.1A, Response to Nuclear Power Generation / ATWT.	
	RO/BOP	INITIATE Emergency Boration of Reactor Coolant System [Step 4].
Examiner Note: The following steps are from FRS-0.1A, Response to Nuclear Power Generation/ATWT, Attachment 1.F, Initiate Emergency Boration.		
	RO/BOP	[1.F] ENSURE at least one Centrifugal Charging Pump – RUNNING [Step 4.a].
		[1.F] VERIFY Charging flow – GREATER THAN 30 GPM [Step 4.b].
		[1.F] ALIGN Boration flowpath [Step 4.c]:
		[1.F] PLACE 1/1-APBA1, BA XFER PMP 1 and 1/1-APBA2, BA XFER PMP 2 (no power) in START [Step 4.c1)].
		[1.F] DETERMINE 1/1-8104, EMER BORATE VLV is de-energized [Step 4.c2)].
CRITICAL TASK		[1.F] Shift charging pump suction to the RWST by performing the following: <ul style="list-style-type: none"> • OPEN 1/1-LCV-112D • CLOSE 1/1-LCV-112B • ADJUST charging flow control valve to establish maximum charging flow
	RO/BOP	NOTIFY Unit Supervisor Attachment 1.F instructions complete <u>AND</u> Emergency Boration has been initiated.
	US/RO	CHECK Pressurizer pressure – LESS THAN 2335 psig [Step 5].

NRC EXAM

Simulator Operator: After being contacted to locally trip the Reactor AND after Emergency Boration is initiated, EXECUTE KEY 17 remote functions RPR112 and RPR113 to open reactor trip breakers locally.		
	US/RO	CHECK If The Following Trips Have Occurred [Step 6]:
		IDENTIFY Reactor – NOT TRIPPED.
CRITICAL TASK STATEMENT		Dispatch Operator to Locally Trip Reactor Trip Breakers During Anticipated Transient Without Trip Prior to Exiting FRS-0.1A, Response to Nuclear Power Generation/ATWT.
CRITICAL TASK	RO	DISPATCH operator to locally trip Reactor [Step 6.a RNO].
	BOP	VERIFY Turbine – TRIPPED [Step 6.b]
<div style="border: 2px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p>CAUTION: If an SI signal exists or occurs, Steps 1 through 8 of EOP-0.0A, REACTOR TRIP OR SAFETY INJECTION should be performed while continuing with this procedure.</p> </div>		
	RO/BOP	VERIFY Containment Ventilation Isolation – APPROPRIATE MLB LIGHT INDICATION [Step 7].
	US/RO	CHECK If Reactor Is Subcritical [Step 8]:
		<ul style="list-style-type: none"> • VERIFY Power Range indication – LESS THAN 5%. • VERIFY Intermediate Range Channels – NEGATIVE STARTUP RATE. • GO to Step 18.
	US/RO	CHECK if RCPs Should be Stopped [Step 18]:
		<ul style="list-style-type: none"> • CHECK RCS subcooling – GREATER THAN 25°F [Step 18.a] • Go to Step 18d.
	RO	CHECK RCP operating parameters – WITHIN LIMITS [Step 18.d]
		<ul style="list-style-type: none"> • IDENTIFY 1-02 RCP vibration – NOT WITHIN LIMITS • STOP 1-02 RCP [Step 18.d RNO].

NRC EXAM

<p>CAUTION: Boration should continue to obtain adequate shutdown margin during subsequent actions.</p>

	US	TRANSITION to EOP-0.0A, Reactor Trip or Safety Injection [Step 19].
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Examiner Note: The following steps are from EOP-0.0A, Reactor Trip or Safety Injection.

	RO	VERIFY Reactor Trip [Step 1]:
		VERIFY Reactor Trip Breakers – OPEN.
		VERIFY Neutron flux – DECREASING.
		VERIFY all Control Rod Position Rod Bottom Lights – ON.

	BOP	VERIFY Turbine Trip [Step 2]:
		<ul style="list-style-type: none"> • All HP Turbine Stop Valves – CLOSED.

	BOP	VERIFY Power to AC Safeguards Buses [Step 3]:
		<ul style="list-style-type: none"> • VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. • VERIFY AC Safeguards Buses – ONE ENERGIZED. <ul style="list-style-type: none"> • DISPATCH personnel to restore de-energized bus per ABN-602, RESPONSE TO A 6900/480 VOLT SYSTEM MALFUNCTION

	RO	CHECK SI status [Step 4]:
		<ul style="list-style-type: none"> • CHECK if SI is actuated [Step 4.a]. • CHECK if SI is required [Step 4.a RNO]: <ul style="list-style-type: none"> • VERIFY Steam Line Pressure GREATER THAN 610 PSIG • VERIFY Pressurizer Pressure GREATER THAN 1820 PSIG • VERIFY Containment Pressure LESS THAN 3.0 PSIG

	US	TRANSITION to EOS-0.1A, Reactor Trip Response [Step 4.a RNO].
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NRC EXAM

Examiner Note: The following steps are from EOS-0.1A, Reactor Trip Response.

CAUTION: If SI actuation occurs during this procedure, EOP-0.0A, REACTOR TRIP OR SAFETY INJECTION shall be performed.

	RO	CHECK RCS Temperature [Step 1]:
		<ul style="list-style-type: none"> CHECK RCPs – ANY RUNNING. VERIFY RCS average temperature stable at or trending to 557°F.

NOTE: When establishing feedwater to SGs, at least two SGs should be used. If RCPs are not running, feedwater should be established to all four SGs when possible.

	RO/BOP	CHECK FW Status [Step 2]:
	RO	<ul style="list-style-type: none"> VERIFY Reactor Trip Breakers – OPEN
	BOP	<ul style="list-style-type: none"> CHECK RCS average temperature LESS THAN 564°F
	BOP	<ul style="list-style-type: none"> VERIFY Feedwater Isolation – COMPLETE
	BOP	<ul style="list-style-type: none"> VERIFY total AFW flow to SGs – GREATER THAN 460 GPM

	RO	CHECK PRZR Level Control [Step 3]:
		<ul style="list-style-type: none"> VERIFY PRZR Level – GREATER THAN 17%. VERIFY Charging – IN SERVICE VERIFY Letdown – IN SERVICE VERIFY PRZR Level – TRENDING TO 25%

	RO	CHECK PRZR Pressure Control [Step 4]:
		<ul style="list-style-type: none"> VERIFY Pressurizer Pressure – GREATER THAN 1820 PSIG. VERIFY Pressurizer Pressure – STABLE AT OR TRENDING TO 2235 PSIG

NRC EXAM

	BOP	CHECK Steam Generator Levels [Step 5]:
		<ul style="list-style-type: none">• VERIFY Steam Generator Level – GREATER THAN 43%
		<ul style="list-style-type: none">• MAINTAIN total feed flow greater than 460 GPM until narrow range level greater than 43% in at least one SG
		<ul style="list-style-type: none">• Control feed flow to maintain narrow range level between 43% and 60%
<u>Examiner Note:</u> Per the CAUTION prior to Step 1 in EOS-0.1A, Reactor Trip Response, the Unit Supervisor should transition back to EOP-0.0A when Safety Injection occurs.		
<i>When Reactor Trip Breakers are open and the crew has transitioned to EOS-0.1A or at Lead Examiner's discretion, proceed to Event 5.</i>		

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 5**.

Events 5, 6, and 7

- RP14A, Spurious Train A Safety Injection
- SI04C, 1-01 SI Pump SI Sequencer Fail to Start
- CS02G, 1-03 CS Pump SI Sequencer Fail to Start

Indications Available:

PCIP-1.8 – SI ACT - flashing

Examiner Note: The operator may manually initiate Safety Injection after determining only single train actuation occurred

	RO/BOP	RECOGNIZE single train safety injection.
	US	DIRECT implementation of EOP-0.0A, Reactor Trip or Safety Injection.
Examiner Note: The following steps are from EOP-0.0A, Reactor Trip or Safety Injection.		
	RO	VERIFY Reactor Trip [Step 1]:
		<ul style="list-style-type: none"> • VERIFY Reactor Trip Breakers – OPEN. • VERIFY Neutron flux – DECREASING. • Verify all Control Rod Position Rod Bottom Lights – ON.
	BOP	VERIFY Turbine Trip [Step 2]:
		<ul style="list-style-type: none"> • VERIFY all HP Turbine Stop Valves – CLOSED.
	BOP	VERIFY Power to AC Safeguards Buses [Step 3]:
		<ul style="list-style-type: none"> • VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. • VERIFY AC Safeguards Buses – ONE ENERGIZED.
	RO	CHECK SI status [Step 4]:
		<ul style="list-style-type: none"> • CHECK SI is actuated. • VERIFY both trains SI actuated: <ul style="list-style-type: none"> • SI Actuated blue status light – ON FLASHING. • Manually initiate Safety Injection

NRC EXAM

Examiner Note: EOP-0.0A, Attachment 2 steps performed by the BOP are identified later in the scenario.

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 unless directed by this procedure.

	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2 [Step 5].
	RO	VERIFY AFW Alignment [Step 6]:
		<ul style="list-style-type: none"> • VERIFY 1-01 MDAFW Pump – RUNNING. • VERIFY TDAFW Pump - RUNNING. • VERIFY AFW total flow – GREATER THAN 460 GPM. • VERIFY AFW valve alignment - PROPER ALIGNMENT.
	RO	VERIFY Containment Spray NOT Required [Step 7]:
		<ul style="list-style-type: none"> • 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].

NRC EXAM

Examiner Note: Attachment 2 steps are being performed by the BOP. The RO may identify 1-03 Containment Spray pump failed to start and manually start it prior to the BOP reaching the step in Attachment 2.		
	BOP	<ul style="list-style-type: none"> • VERIFY Containment Spray Pumps – 1-01 and 1-03 RUNNING [Step 7.c].
		<ul style="list-style-type: none"> • DETERMINE 1-03 Containment Spray Pump failed to start and MANUALLY START 1-03 Containment Spray Pump [Step 7.c RNO]
	RO	CHECK if Main Steam lines should be ISOLATED [Step 8]:
		<ul style="list-style-type: none"> • VERIFY Containment pressure – LESS THAN 6.0 PSIG.
		<ul style="list-style-type: none"> • VERIFY Steam Line pressure – GREATER THAN 610 PSIG.
	RO	CHECK RCS Temperature [Step 9]:
		<ul style="list-style-type: none"> • VERIFY RCS Average Temperature – STABLE AT OR TRENDING TO 557°F.
		<ul style="list-style-type: none"> • If temperature less than 557°F, PERFORM the following [Step 9 RNO]:
		<ul style="list-style-type: none"> • STOP dumping steam.
		<ul style="list-style-type: none"> • If cooldown continues, MINIMIZE AFW flow as required.
		<ul style="list-style-type: none"> • If cooldown continues, CLOSE MSIVs.
	RO	CHECK PRZR Valve Status [Step 10]:
		<ul style="list-style-type: none"> • VERIFY PRZR Safeties – CLOSED.
		<ul style="list-style-type: none"> • VERIFY Normal PRZR Spray Valves – CLOSED.
		<ul style="list-style-type: none"> • VERIFY PORVs – CLOSED.
		<ul style="list-style-type: none"> • VERIFY Power to at least 1 Block Valve – AVAILABLE.
		<ul style="list-style-type: none"> • VERIFY Block Valves – AT LEAST ONE OPEN.
	RO	CHECK if RCPs Should Be Stopped [Step 11]:
		<ul style="list-style-type: none"> • VERIFY RCS subcooling – GREATER THAN 25°F
		<ul style="list-style-type: none"> • Go to Step 12.

NRC EXAM

	RO/BOP	CHECK if Any Steam Generator Is Faulted [Step 12]:
		<ul style="list-style-type: none"> • VERIFY NO Steam Generator pressure – DECREASING IN AN UNCONTROLLED MANNER.
		<ul style="list-style-type: none"> • VERIFY Steam Generator pressure – NONE COMPLETELY DEPRESSURIZED.
	RO/BOP	CHECK if Steam Generator Tubes Are NOT Ruptured [Step 13]:
		<ul style="list-style-type: none"> • VERIFY Condenser Off Gas radiation – NORMAL.
		<ul style="list-style-type: none"> • VERIFY Main Steam Line radiation – NORMAL.
		<ul style="list-style-type: none"> • VERIFY SG Blowdown Sample Radiation Monitor – NORMAL.
		<ul style="list-style-type: none"> • VERIFY levels in all Steam Generators – NONE INCREASING IN UNCONTROLLED MANNER.
	RO/BOP	CHECK if RCS is Intact [Step 14]:
		<ul style="list-style-type: none"> • VERIFY Containment pressure – LESS THAN 1.3 PSIG.
		<ul style="list-style-type: none"> • VERIFY Containment recirculation sump levels – NORMAL.
		<ul style="list-style-type: none"> • VERIFY Containment radiation levels –NORMAL.
	US	CHECK If ECCS Flow Should Be Reduced [Step 15]:
		a. VERIFY Secondary Heat Sink <ul style="list-style-type: none"> • Narrow range level in at least one SG – GREATER THAN 43% • Total AFW flow to SGs – GREATER THAN 460 GPM
		b. VERIFY RCS subcooling – GREATER THAN 25°F
		c. VERIFY RCS pressure – STABLE OR INCREASING
		d. VERIFY PRZR level – GREATER THAN 13%
	US	Transition to EOS-1.1A, Safety Injection Termination, Step 1 [Step 15 e.]
<p><i>When 1-01 SI Pump and 1-03 Containment Spray Pump is restarted or at Lead Examiner's discretion, terminate the scenario.</i></p>		

Lead Evaluator Record End Time: _____

NRC EXAM

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 1-01 SSW Pump – RUNNING. • VERIFY EDG Cooler SSW return flow.
	BOP	VERIFY 1-01 Safety Injection Pump– RUNNING [Step 2].
		DETERMINE 1-01 SI Pump failed to start and MANUALLY START SI Pump 1-01.
	BOP	VERIFY Containment Isolation Phase A – APPROPRIATE MLB LIGHT INDICATION (RED WINDOWS) [Step 3].
		<ul style="list-style-type: none"> • MANUALLY actuate Phase A. • DETERMINE penetrations isolated on at least one side.
	BOP	VERIFY Containment Ventilation Isolation – APPROPRIATE MLB LIGHT INDICATION (GREEN WINDOWS) [Step 4].
	BOP	VERIFY 1-01 CCW Pump– RUNNING [Step 5].
	BOP	VERIFY 1-01 RHR Pump – RUNNING [Step 6].
	BOP	VERIFY Proper CVCS Alignment [Step 7]:
		<ul style="list-style-type: none"> • VERIFY 1-01 CCP – RUNNING. • VERIFY Letdown Relief Valve Isolation: <ul style="list-style-type: none"> • Letdown Orifice Isolation Valves – CLOSED. • Letdown Isolation Valves 1/1-LCV-459 & 1/1-LCV-460 – CLOSED.

NRC EXAM

	BOP	VERIFY ECCS flow [Step 8]:
		<ul style="list-style-type: none"> • CCP SI flow indicator – CHECK FOR FLOW.
		<ul style="list-style-type: none"> • RCS pressure – LESS THAN 1700 PSIG (1800 PSIG FOR ADVERSE CONTAINMENT).
		<ul style="list-style-type: none"> • SIP discharge flow indicator – CHECK FOR FLOW.
		<ul style="list-style-type: none"> • RCS pressure – GREATER THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT).
	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 1-01 Diesel Generator – RUNNING [Step 10].
	BOP	VERIFY Monitor Lights for SI Load Shedding on 1-MLB-9 and 1-MLB10 – LIT [Step 11].
<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <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>		
<p>Examiner Note: Attachment 2 steps are being performed by the BOP. The RO may identify 1-03 Containment Spray pump failed to start and manually start it prior to the BOP reaching the step in Attachment 2.</p>		
	BOP	VERIFY Proper SI alignment – PROPER MLB LIGHT INDICATION [Step 12].

NRC EXAM

	BOP	IDENTIFY 1-MLB-4A1 2.2 CSP 3 RUN – LIGHT IS DARK [Step 12 RNO].
		<ul style="list-style-type: none"> MANUALLY ACTUATE SI.
		<ul style="list-style-type: none"> PLACE 1/1-SIA1 SI MAN ACT at CB02 or 1/1-SIA2 SI MAN ACT at CB07 in ACT position
		<ul style="list-style-type: none"> DETERMINE 1-03 CSP – FAILED TO START
		<ul style="list-style-type: none"> START 1-03 Containment Spray Pump

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/H.S. IN CLOSED
		CB-06	1/1-8154	XS LTDN ISOL VLV	CLOSED/H.S. IN 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

NRC EXAM

	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.

	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

NRC EXAM

	BOP	NOTIFY Unit Supervisor: <ul style="list-style-type: none">• Attachment 2 instructions complete, and• Unit 2 notified of Common Equipment Monitoring AND 1-hour limit for CR HVAC realignment with actual SI conditions,• IMPLEMENT FRGs as required.
<i>EOP-0.0A, Attachment 2 steps are now complete.</i>		

NRC EXAM

;2023 NRC Simulator Scenario 1
;Revision: 01/17/23
;100%
;ATWT/Spurious SI

;Event 1 Loop 2 Tc NR Temp (TE-421B) Fails High
IMF RP05B f:630 k:1

;Event 2 VCT LT-112 fail low
IMF CV16A f:0 k:2

;Remove LT-112 Failure
{Key[15]!=0} DMF CV16A

;Event 3 86-1 Lockout on 1EA2
IMF ED05I k:3

;De-energize Train B BOS
IRF EAR101 f:0 k:16
IRF EAR498 f:0 k:16

;Event 4 1-02 RCP Vibration @ 21 mils with
;Automatic and Manual Reactor Trip Failure from CB-02 and CB-07
IMF RC03B f:21 r:120 k:4
IMF RP01 f:1
IMF RP13C f:1
IOR DIED1B41 f:3
IOR DIEDT1B4 f:3

;Open Rx Trip BKRS
IRF RPR112 f:2 k:17
IRF RPR113 f:2 k:17

;Event 5 Spurious Train A SI
IMF RP14A f:1 k:5

;Event 6 1-01 SI Pump SI Sequencer Fail to Start
IMF SI04C f:1

;Event 7 1-03 CS Pump SI Sequencer Fail to Start
IMF CS02G f:1

UNIT SUPERVISOR RELIEF CHECKLIST

UNIT: 1
OFF-GOING US: Joe Unit Supervisor SHIFT: Nights DATE: Today
ON-COMING US: _____ SHIFT: _____

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: None

2.0 PLANT AND EQUIPMENT STATUS:

2.1 Technical Specification Related Equipment Summary: None

2.2 Non-Technical Specification Equipment Summary: None

UNIT SUPERVISOR RELIEF CHECKLIST

3.0 General Information: Diluted 60 gallons, three times last shift.

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
 COMP ACTIONS REVIEWED X
 SYNTEMPO VERIFICATION X

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

1.0 CRITICAL PARAMETERS:
 MODE: 1 REACTOR POWER: 100 Mwe: 1264
 RCS TAVE: 585 °F CONTROL ROD POSITION 215 ON BANK D
 Cb: 771 ppm RCS PRESS: 2235 psig

2.0 STATUS REVIEW:

<input checked="" type="checkbox"/>	UNIT LOGS
[C] <input checked="" type="checkbox"/>	* * LCOAR AND SYSTEMS IMPORTANT TO SAFETY STATUS [26082, 23486]
<input checked="" type="checkbox"/>	UNIT DIFFERENCES (If last watch was on opposite unit)
<input checked="" type="checkbox"/>	SHIFT ORDERS
<input checked="" type="checkbox"/>	BOARD WALKDOWN
<input checked="" type="checkbox"/>	* POD
[C] <input checked="" type="checkbox"/>	CONDITIONAL SURVEILLANCE STATUS BOARD [23486]
<input checked="" type="checkbox"/>	LOCATION OF SAFEGUARDS INFORMATION
<input checked="" type="checkbox"/>	* RISK PROFILE FOR SHIFT

PROTECTED TRAIN Train "A" Train "B"

* May be completed after turnover.
 * * Each US's (U1 & U2) status review is to include the U1 & Common LCOAR & SIS Logs for Common equipment.

SHIFT RELIEF: _____ / _____ / _____
 ON-COMING US SIGNATURE DATE TIME

Joe Unit Supervisor

 OFF-GOING US SIGNATURE

 ON-COMING FSS REVIEW

 SHIFT MANAGER REVIEW

NRC EXAM

Table 3.4-1

Actual	Initial Target Attributes
3	Events after EOP entry (1-2)
2	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
0	Entry into a contingency EOP with substantial actions – 1 per scenario set
3	Preidentified CTs (2 or more)

Table 3.4-2

Event/Evolution Type	Applicant Position			
	RO	BOP	SRO-I	SRO-U
Reactivity Manipulation	0	0	0	0
Normal Evolution	0	1	1	1
Instrument/Component (I/C) Failure	4	3	7	7
Major Transient	1	1	1	1
Manual Control of Automatic Function	2	2	na	na
TS Evaluation	na	na	2	2

Scenario Objectives:

Demonstrate control of shifting control room ventilation

Demonstrate control of failure of PK-0131

Demonstrate control of 1-01 CCP shaft shear

Demonstrate control of Loss of 1EA1 bus

Demonstrate control of major (LBLOCA)

Demonstrate control of CT 1, 2, and 3 (see CT tables)

Demonstrate control of post-major malfunctions as required by CT tables since they are incorporated into these malfunctions.

NRC EXAM

SCENARIO SUMMARY

OBJECTIVE: Demonstrate crew competency in responding to abnormal and emergency events which are potential contributors to challenging fission product barriers necessary for the protection of the health and safety of the public.

The crew will assume the watch at 100% power per IPO-003A, Power Operations with instructions to place Train B Control Room Ventilation in service.

The first event is realignment of Control Room Ventilation system to satisfy equipment rotation requirements per OWI-409, Equipment Rotation Program. Crew actions will be to shift alignment of Control Room Ventilation from Train A in service to Train B in service per SOP-802, Control Room Ventilation System.

The second event is failure of 1-PCV-131, U1 LTDN HX OUT PRESS CTRL VLV. The control valve slowly fails open resulting in loss of letdown pressure control. The crew will respond per ALM-0061A, Alarm Procedure 1-ALB-6A. Actions include placing 1-PK-131, LTDN HX OUT PRESS CTRL in manual, adjusting letdown pressure to approximately 310 psig, and dispatching personnel to determine cause of the failure. Once the cause is corrected, 1-PK-131 is restored to automatic control.

The third event is a failure low of 1-03 Main Steam Line Pressure Instrument 1-PT-0535. Crew actions are in accordance with ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 2.0. Actions include taking manual control of 1-FCV-0530, stabilizing SG 1-03 level, and transferring to an alternate steam flow controlling channel. SG level control will be restored to automatic control. The SRO will refer to Technical Specifications.

The next event is a sheared shaft of the running Centrifugal Charging Pump (CCP). When low flow alarms are received, initial operator actions of ABN-105, Chemical and Volume Control System Malfunction, Section 3.0 will be performed to start the standby CCP. Any delay in determining cause of the low charging flow will result in letdown isolation, which will be restored prior to proceeding. The SRO will refer to Technical Specifications.

The major event is a Loop 1 RCS cold leg large break LOCA. The response is complicated by a loss of Train A electrical bus, failure of 1-02 RHR pump automatic start, failure of 1-02 Containment Spray heat exchanger outlet valve to automatically open, and failure of Phase B to isolate RCP thermal barrier CCW return Containment isolation valve. The crew will initially respond per EOP-0.0A, Reactor Trip or Safety Injection and transition to EOP-1.0A, Loss of Reactor or Secondary Coolant. The Unit Supervisor will address safety functions by entry into and out of FRP-0.1A, Response to Imminent Pressurized Thermal Shock Condition, depending on plant conditions, and entry into FRZ-0.1A, Response to High Containment Pressure.

Scenario will be terminated when the crew has transitioned to EOP-1.0A or at the discretion of the Lead Examiner.

NRC EXAM
Critical Task Determination

Critical Task	Safety Significance	Initiating Cue	Measurable Performance Standard	Performance Feedback
Manually Align Containment Spray Due to Failure to Automatically Align Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection.	Recognize failure of an automatic actuation of an ESF component. Containment Spray is required to reduce challenge to Containment integrity.	Procedurally driven from EOP-0.0A, which provides instructions for manual alignment of Containment Spray upon failure of automatic actuation.	The operator will manually open 1-HV-4777 1-02 Containment Spray Heat Exchanger Outlet Valve.	Indication of valve position including light indication, Containment Spray flow, and lowering Containment pressure.
Dispatch Operator to Locally Align Train B Containment Isolation Phase B RCP Thermal Barrier CCW Return Valve Due to Failure to Automatically Align Prior To Exiting EOP-0.0A, Reactor Trip or Safety Injection.	Recognize failure of an automatic actuation of an ESF component. Phase B isolation is required to isolate Containment atmosphere from the environment to preclude radioactive release.	Procedurally driven from EOP-0.0A, which provides instructions for manual alignment of Phase B valves upon failure of automatic actuation.	The operator will dispatch an operator to locally close 1-HV-4709 Thermal Barrier Cooler CCW Return Isolation Valve.	Report from the field that the valve is closed and MLB indication for valve position on CB-02.
Manually Start 1-02 RHR pump prior to completing Attachment 2 of EOP-0.0A, Reactor Trip or Safety Injection.	Recognize a failure of automatic actuation of an ESF component. RHR flow is required to remove decay heat following a large break LOCA.	Procedurally driven from EOP-0.0A, Attachment 2 to provide adequate ECCS flow during accident conditions.	The operator will start 1-02 RHR Pump using the handswitch on CB-04.	Indication of pump start including light indication, flow and discharge pressure on CB-04.
<p>NOTE: 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>				

NRC EXAM

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC 18 and 2023 NRC Simulator Scenario 2 Scenario File.

EVENT	TYPE	MALF #	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
SETUP					
2	COND		Remove 1-PK-0131 Failure {Key[11]!=0} DMF CV37		K11
4	RF	CVR05	Stop CCP 1-01 Auxiliary Lube Oil Pump	f:0	K12
4	RF	CVR06	CCP 1-02 Auxiliary Lube Oil Pump to AUTO	f:1	K12
6	IMF	CS07B	1-02 Containment Spray Heat Exchanger Outlet Valve Fails to Automatically Open	f:1	K0
7	IMF	RH01D	1-02 RHR Pump SI Sequencer Fail to Start	f:1	K0
8	IOR	DICCHS4709	Override1-HS-4709 Handswitch to Open	f:2	K0
8	IMF	CC05A	Thermal Barrier Cooler Leakage Loop 1	f:5	K5
8	IRF	CCR43	1-HV-4709 Thermal Barrier Cooler CCW Return Isolation Valve Local Breaker Off	f:0	K13
8	IRF	CCR33	1-HV-4709 Thermal Barrier Cooler CCW Return Isolation Valve Manually Close	f:0	K13
2	IMF	CV37	1-PK-0131 Fails Causing PCV-0131 to Open	i:17 f:100 r:400	K2
3	IMF	RP03H	1-03 Steam Line Pressure Transmitter PT-535 Channel II fails low	f:0	K3
4	IMF	CV31A	1-01 Centrifugal Charging Pump Sheared Shaft	f:1	K4
5	IMF	RC09A2	RCS CL Loop 1 LBLOCA Double Ended	f:1	K5
5	IMF	ED05H	Loss of 6.9kV Bus 1EA1 (86-1)	f:1	K5 + 5

NRC EXAM

Simulator Operator: INITIALIZE to IC 18 and LOAD 2023 NRC Simulator Scenario 2 Scenario File.

ENSURE procedures in progress are on SRO desk:

- COPY of IPO-003A, Power Operations, Section 5.5 Operating at Constant Turbine Load.
- Ensure Train A Control Room Ventilation System is in service per SOP-802, Control Room Ventilation System.
- Perform light check on CR HVAC panel to ensure no fan and damper lights are burned out.
- Ensure a copy of SOP-802 Section 5.3.10 is available for markup.

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

NRC EXAM

Lead Evaluator Record Start Time: _____

Event 1 – Place Train B Control Room Ventilation System in service per SOP-802, Section 5.3.10.		
<u>Indications Available:</u> None		
<u>Examiner Note:</u> If crew asks whether CR AC units need to be rotated, state the AC units currently in service will remain in service.		
	BOP	ENSURE both trains of Control Room ventilation are in the NORMAL MODE of operation [Step 5.3.10 A].
	RO	SELECT the Control Room Ventilation Train to be used [Step 5.3.10 B].
		<ul style="list-style-type: none"> • SELECT Train B
	BOP	VERIFY both train intake dampers are open [Step 5.3.10 C].
		<ul style="list-style-type: none"> • X-HS-5837A, CR N. INTK DMPR 14 (TRN A) - RED LIGHT LIT. • X-HS-5838A, CR S. INTK DMPR 15 (TRN B) - RED LIGHT LIT.
	BOP	START the selected train makeup supply fan and VERIFY the suction AND discharge dampers open [Step 5.3.10 D].
		<ul style="list-style-type: none"> • START X-HS-5828A, CR MU AIR SPLY FN 38 & SUCT DMPR 19. • VERIFY X-HS-5828A, CR MU AIR SPLY FN 38 starts – RED LIGHT LIT • VERIFY X-HV-5828A, DMPR 19 (on X-HS-5828A) is open– RED LIGHT LIT. • VERIFY X-HV-5828B, DMPR 20 (on X-HS-5828D) is open – RED LIGHT LIT.

NRC EXAM

NOTE: The fan will trip if the damper fails to open within 10 seconds after fan start.

	BOP	START both exhaust fans for the selected train AND VERIFY the associated suction dampers open: [Step 5.3.10 E].
		<ul style="list-style-type: none"> START X-HS-5856, CR EXH FN 2
		<ul style="list-style-type: none"> VERIFY X-HS-5856, CR EXH FN 2 starts – RED LIGHT LIT.
		<ul style="list-style-type: none"> VERIFY CR EXH FN 2 suction damper opens (X-PV-5856 on X-HS-5856A) – RED LIGHT LIT
		<ul style="list-style-type: none"> START X-HS-5858, CR KTCHN & TOIL EXH FN 4 & SUCT DMPR 28
		<ul style="list-style-type: none"> VERIFY X-HS-5858, CR KTCHN & TOIL EXH FN 4 starts - RED LIGHT LIT
		<ul style="list-style-type: none"> VERIFY X-HS-5858, CR KTCHN & TOIL EXH FN 4 SUCT DMPR 28 (X-HV-5858) opens – RED LIGHT LIT

NOTE: One train of the Control Room Ventilation System must be in operation at all times.

	BOP	SELECT the Control Room Ventilation Train to be shutdown [Step 5.3.10 F].
		<ul style="list-style-type: none"> SELECT Train A

	BOP	STOP both exhaust fans for the selected train AND VERIFY the associated suction damper closes [Step 5.3.10 G].
		<ul style="list-style-type: none"> STOP X-HS-5855, CR EXH FN 1
		<ul style="list-style-type: none"> VERIFY X-HS-5855, CR EXH FN 1 stops – GREEN LIGHT LIT.
		<ul style="list-style-type: none"> VERIFY CR EXH FN 1 suction damper closes (X-PV-5855 on X-HS-5855A) – GREEN LIGHT LIT
		<ul style="list-style-type: none"> STOP X-HS-5857, CR KTCHN & TOIL EXH FN 3 & SUCT DMPR 27
		<ul style="list-style-type: none"> VERIFY X-HS-5857, CR KTCHN & TOIL EXH FN 3 stops - GREEN LIGHT LIT
		<ul style="list-style-type: none"> VERIFY X-HS-5857, CR KTCHN & TOIL EXH FN 3 & SUCT DMPR 27 (X-HV-5857) closes – GREEN LIGHT LIT

NRC EXAM

	BOP	STOP the makeup supply fan for the selected train AND VERIFY the associated suction and discharge dampers close [Step 5.3.10 H].
		<ul style="list-style-type: none"> • STOP X-HS-5825A, CR MU AIR SPLY FN 37 & SUCT DMPR 16.
		<ul style="list-style-type: none"> • VERIFY X-HS-5825A, CR MU AIR SPLY FN 37 stops – GREEN LIGHT LIT
		<ul style="list-style-type: none"> • VERIFY X-HV-5825A, DMPR 16 (on X-HS-5825A) is closed – GREEN LIGHT LIT.
		<ul style="list-style-type: none"> • VERIFY X-HV-5825B, DMPR 17 (on X-HS-5825D) is closed – GREEN LIGHT LIT.
	BOP	THROTTLE the selected train’s CR exhaust fan suction damper by holding the handswitch in CLOSE or OPEN to obtain greater than or equal to 0.125-inch water gage pressure on X-PI-5855, CR PRESS, or X-PI-5856, CR PRESS [Step 5.3.10 I].
		<ul style="list-style-type: none"> • THROTTLE X-HS-5856A, CR EXH FN 2 SUCT DMPR 6 OPEN or CLOSED as required to obtain greater than or equal to 0.125-inch water gage pressure on X-PI-5855, CR PRESS, or X-PI-5856, CR PRESS.
	BOP	ENSURE the selected train is in operation by observing light indication of Attachment 3.
		<ul style="list-style-type: none"> • ENSURE light indication is appropriate for Train B in operation per SOP-802 Attachment 3 Page 2 of 2.
<p><i>When Train B Control Room Ventilation System has been placed in service or at Lead Examiner’s discretion, proceed to Event 2.</i></p>		

NRC EXAM

Simulator Operator: When directed, EXECUTE KEY 2.

Event 2 – CV37, Fail PK-0131 to Set PCV-0131 Position

Indications Available:

6A-3.8 – CVCS HELB PS-5385A

6A-4.8 – CVCS HELB PS-5385

Lowering letdown pressure

1-PK-0131, LTDN HX OUT PRESS CTRL demand indication rising

	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE letdown pressure lowering.
	US	DIRECT performance of ALM-0061A, Alarm Procedure 1-ALB-6A.

Examiner Note: The following steps are from ALM-0061A for Window 3.8 or 4.8. Actions for both alarms are the same.

NOTE: This alarm condition will exist during plant heatup and cooldown when letdown header pressure is under manual operator control or at power when normal letdown is isolated.

- NOTE:**
- Letdown flow is limited to 140 gpm with 1 or 2 demins in service when RCS temp is ≥ 500 degrees. REF: SMF-2007-001435
 - Letdown flow is limited to 170 gpm (when RCS temp is < 500 degrees) with 1 demin in service.
 - Letdown flow is limited to 195 gpm (when RCS temp is < 500 degrees) with 2 demins in service.

NOTE: 1-PCV-131, LTDN HX OUT PRESS CTRL VLV fails open on loss of air or loss of power to Process Control Cabinet 07.

NOTE: A steam leak may cause actuation of ionization chamber alarms or sprinkler heads which would aid in determining the leak location.

	RO	Monitor 1-FI-132, LTDN FLO [Step 1].
		<ul style="list-style-type: none"> • DETERMINE letdown flow – NORMAL AT APPROXIMATELY 75 GPM
	RO	Monitor 1-PI-131, LTDN HX OUT PRESS [Step 2].
		<ul style="list-style-type: none"> • DETERMINE letdown heat exchanger outlet pressure – LOWERING
	RO	PLACE 1-PK-131, LTDN HX OUT PRESS CTRL in manual and adjust pressure to approximately 310 psig [Step 2A].

NRC EXAM

Examiner Note: The crew may not restore control to automatic before dispatching personnel to observe field conditions.

	RO	VERIFY 1-PK-131, LTDN HX OUT PRESS CTRL potentiometer is set correctly per TDM-203A and restore automatic control [Step 2B].
		<ul style="list-style-type: none">• DETERMINE 1-PK-131 potentiometer is set correctly.
		<ul style="list-style-type: none">• DISPATCH personnel to observe field conditions.

Simulator Operator: When contacted to check 1-PCV-0131 locally, wait 1 minute and report personnel cleaning in the area bumped the air positioner filter housing petcock partially open. Request permission to close the filter housing petcock.

When permission is given, EXECUTE **KEY 11** to remove CV37 malfunction.

If required, as the Shift Manager, direct restoring 1-PK-131 to automatic control.

	RO	PLACE 1-PK-131, LTDN HX OUT PRESS CTRL in AUTO.
--	----	---

When 1-PK-131 has been restore to automatic or at Lead Examiner's discretion, proceed to Event 3.

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 3**.

Event 3 - RP03H, 1-03 Steam Line Pressure Transmitter PT-535 Channel II fails low.

Indications Available:

8A-3.7 – MSL 3 1 OF 3 PRESS LO

8A-3.8 – SG 3 STM & FW FLO MISMATCH

8A-3.16 – SG 3 1 OF 3 PRESS RATE HI

1-PI-535A, MSL 3 PRESS CHAN II indication fails low

	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Steam Line Pressure 1-PT-535 transmitter failure.
Examiner Note: Steam Line Pressure Channel failure low will cause the controlling steam flow channel to fail low, feedwater flow to lower, and Feedwater Pumps speed to lower due to reduction in total steam flow.		
Examiner Note: The crew may initially enter ABN-707, Steam Flow Instrument Malfunction, but will be directed to ABN-709 based on diagnosis. The following steps are from ABN-709.		
	US	DIRECT implementation of ABN-709, Steam Line Pressure, Steam Header Pressure, Turbine 1 st Stage Pressure, and Feed Header Pressure Instrument Malfunction, Section 2.0.
	BOP	IDENTIFY Main Steam Line 1-03 Pressure Transmitter (PT-535) – GREATER THAN 60 PSIG difference between remaining channels [Step 2.3.1].
	BOP	VERIFY Steam Generator Atmospheric Relief Valves – CLOSED [Step 2.3.2].
		• 1-ZL-2325, SG 1 ATMOS RLF VLV
		• 1-ZL-2326, SG 2 ATMOS RLF VLV
		• 1-ZL-2327, SG 3 ATMOS RLF VLV
		• 1-ZL-2328, SG 4 ATMOS RLF VLV

NRC EXAM

	BOP	VERIFY following channels are indicating – NORMAL [Step 2.3.2].
		<ul style="list-style-type: none"> • 1-PI-2325, MSL 1 PRESS
		<ul style="list-style-type: none"> • 1-PI-2326, MSL 2 PRESS
		<ul style="list-style-type: none"> • 1-PI-2327, MSL 3 PRESS
		<ul style="list-style-type: none"> • 1-PI-2328, MSL 4 PRESS
<p>Examiner Note: Crew may initiate a load reduction if indicated power exceeds 100%.</p>		
<p>NOTE: If a non-controlling channel has failed, steps 3 through 8 may not need to be performed. Refer to ABN-707, Attachment 1, STEAM FLOW WITH STEAM PRESSURE COMPENSATION TRANSMITTERS.</p>		
	BOP	PLACE 1-FK-530, SG 3 FW FLO CTRL in MANUAL and CONTROL Steam Generator 1-03 level in normal operating range [Step 2.3.3].
	BOP	Manually CONTROL 1-SK-509A, FWPT MASTER SPD CTRL, as necessary [Step 2.3.4].
	BOP	SELECT Alternate Steam Flow Channel 1-FY-532B [Step 2.3.5].
		<ul style="list-style-type: none"> • Loop 3, 1-FS-532C, SG 3 STM FLO CHAN SELECT.
	BOP	VERIFY Steam Generator 1-03 Level – STABLE AT PROGRAM LEVEL [Step 2.3.6].
		<ul style="list-style-type: none"> • Steam flow and Feed flow – MATCHED.
<p>Examiner Note: Crew may proceed to step 2.3.8 if level is not on program per 2.3.6 RNO step.</p>		
	BOP	PLACE 1-FK-530, SG 3 FW FLO CTRL in AUTO and VERIFY steam generator level – CONTROLLING IN NORMAL OPERATING RANGE [Step 2.3.7].
	BOP	VERIFY 1-SK-509A, FWPT MASTER SPD CTRL in AUTO and CONTROLLING NORMALLY [Step 2.3.8].

NRC EXAM

Examiner Note: Applicant may identify Technical Specification Table 3.3.2-1, Function 4.d.2 for tracking purposes as this Function is applicable only in MODE 3.

	US	EVALUATE Technical Specifications [Step 2.3.11].
		<ul style="list-style-type: none">• LCO 3.3.2, ESFAS Instrumentation (Function 1.e and 4.d.1 – Steam Line 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.
	US	INITIATE an issue report per STA-421 [Step 2.3.12].
<i>When Technical Specification have been addressed or at Lead Examiner’s discretion, proceed to Event 4.</i>		

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 4**.

Event 4 - CV31A, Centrifugal Charging Pump 1-01 sheared shaft

Indications Available:

5A-1.6 – ANY RCP SEAL WTR INJ FLO LO

6A-1.4 – REGEN HX LTDN OUT TEMP HI

6A-3.4 – CHG FLO HI / LO

1-FI-121A, CHRG FLO lowers to zero (0) GPM

Examiner Note: Applicant may isolate letdown flow due to loss of charging flow.

	RO	RESPOND to Annunciator Procedure Alarms.
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	RO	RECOGNIZE loss of charging flow.
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	US	DIRECT performance of ABN-105, Chemical and Volume Control System Malfunction, Section 3.0.
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Examiner Note: The following steps are from ABN-105.

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

- CAUTION:**
- With NO Seal Injection flow AND NO Thermal Barrier cooling the affected RCP must be secured PROMPTLY (Within approximately FOUR minutes) to prevent damage to the RCP Seal.
 - Consideration should be given to ensure gas binding not a factor before starting a charging pump. Indications of potential gas binding are:
 - PDP SUCT STAB LVL HI-HI (6A-1.8)
 - CHRG FLO HI/LO (6A-3.4)
 - VCT LVL LO-LO (6A-4.5)
 - Fluctuating charging header pressure/flow prior to pump trip.
 - Section 7.0 provides for recovery from gas binding of a charging pump.

NOTE: Diamond step 1 denotes Initial Operator Action. Step 1 RNO actions may be performed concurrently.

	◊ RO ◊	START Centrifugal Charging Pump 1-02. [Step 3.3.1]
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NRC EXAM

NOTE: IF NO Charging Pump available, THEN Plant Management should be notified prior to shutdown due to NO boration path.

RO	VERIFY 1-02 Centrifugal Charging Pump – RUNNING. [Step 3.3.2]
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RO	VERIFY Seal Injection Flow to each RCP – BETWEEN 6 GPM AND 13 GPM. [Step 3.3.3]
----	---

Simulator Operator: When contacted, REPORT shaft of CCP 1-01 is sheared between motor and speed increaser.

RO	STOP 1-01 Centrifugal Charging Pump.
----	--------------------------------------

Simulator Operator: When contacted, EXECUTE **KEY 12** remote functions CVR05 to stop CCP 1-01 Auxiliary Oil Pump and CVR06 to return CCP 1-02 Auxiliary Oil Pump to AUTO.

BOP	VERIFY RCP parameters in – NORMAL OPERATING RANGE. [Step 3.3.4]
-----	---

PARAMETER	RCP 1	RCP 2	RCP 3	RCP 4
LOW SEAL WTR BEARING TEMP (Pump Radial)	T0417A	T0437A	T0457A	T0477A
SEAL WTR IN TEMP	T0181A	T0182A	T0183A	T0184A
SEAL LKOFF FLO	<u>u</u> -FR-157	<u>u</u> -FR-156	<u>u</u> -FR-155	<u>u</u> -FR-154

RO	VERIFY PRZR level – GREATER THAN 17% AND RISING. [Step 3.3.5]
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NRC EXAM

Examiner Note: If 1-02 CCP is started quickly, letdown may not be isolated. If letdown flow is isolated, letdown flow may be re-established using Letdown Restoration Job Aid.

	RO	If isolated in Step 1, ESTABLISH normal letdown [Step 3.3.6].
		<ul style="list-style-type: none"> • OPEN LTDN ISOL VLV 1/1-LCV-460 & 1/1-LCV 459.
		<ul style="list-style-type: none"> • VERIFY LTDN CNTMT ISOL VLV ORC 1/1-8152 and IRC 1/1-8160 – OPEN.
		<ul style="list-style-type: none"> • Manually OPEN 1-PK-131, LTDN HX OUT PRESS CTRL to 30% (75 GPM).
		<ul style="list-style-type: none"> • Manually OPEN 1-TK-130, LTDN HX OUT TEMP CTRL to 50% DEMAND.
		<ul style="list-style-type: none"> • ADJUST charging to desired flow while MAINTAINING seal injection flow between 6 and 13 GPM.
		<ul style="list-style-type: none"> • OPEN selected Letdown Orifice Isolation Valves.
		<ul style="list-style-type: none"> • 1/1-8149A, LTDWN ORIFICE ISOL VLV (45 GPM) • 1/1-8149B, LTDWN ORIFICE ISOL VLV (75 GPM) • 1/1-8149C, LTDWN ORIFICE ISOL VLV (75 GPM)
		<ul style="list-style-type: none"> • ADJUST 1-PK-131, LTDN HX OUT PRESS CTRL to maintain approximately 310 psig on 1-PI-131, LTDN HX OUT PRESS and PLACE in AUTO.
		<ul style="list-style-type: none"> • ADJUST 1-TK-130, LTDN HX OUT TEMP CTRL to obtain approximately 95°F on 1-TI-130, LTDN HX OUT TEMP and PLACE in AUTO.
	RO	VERIFY RCS leakage – NORMAL: [Step 3.3.7]
		<ul style="list-style-type: none"> • VERIFY PRZR level stable at or trending to program. [Step 3.3.7.a]
		<ul style="list-style-type: none"> • VERIFY Charging flow less than 15 GPM above Letdown flow. [Step 3.3.7.b]

NRC EXAM

Examiner Note: Technical Requirements Manual TR LCO 13.1.31, Borating Injection System – Operating may also be referenced.

	US	EVALUATE Technical Specifications [Step 3.3.8].
		<ul style="list-style-type: none">• LCO 3.5.2.A, ECCS - Operating.
		<ul style="list-style-type: none">• CONDITION A - One train inoperable because of the inoperability of a centrifugal charging pump.• ACTION A.1 - Restore pump to OPERABLE status within 7 days.
	US	INITIATE a Condition Report per STA-421 [Step 3.3.9].
<i>When Technical Specifications are addressed or at Lead Examiner discretion, proceed to Event 5.</i>		

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 5**.

Event 5, 6, 7, and 8

- RC09A2, RCS CL Loop 1 LBLOCA Double Ended
- ED05H, Loss of 6.9kV Bus 1EA1 (86-1)
- CS07B, 1-02 CS HX Outlet Valve 1-HV-4777 Fails to Automatically Open
- RH01D, 1-02 RHR Pump SI Sequencer Fail to Start
- IOR DICCHS4709, 1-HS-4709 Thermal Barrier Cooler CCW Return Isolation Valve Fails to Automatically or Manually Close from the Control Room
- CC05A, Thermal Barrier Cooler Leakage Loop 1

Indications Available:

Numerous Reactor Trip, Safety Injection, and 1EA1 loss of power related alarms

Examiner Note: The following steps are from 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.
		<ul style="list-style-type: none"> • VERIFY Neutron flux – DECREASING.
		<ul style="list-style-type: none"> • VERIFY all Control Rod Position Rod Bottom Lights – ON.
	BOP	VERIFY Turbine Trip [Step 2]:
		<ul style="list-style-type: none"> • VERIFY all HP Turbine Stop Valves – CLOSED.
	BOP	VERIFY Power to AC Safeguards Buses [Step 3]:
		<ul style="list-style-type: none"> • VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED [Step 3a].
		<ul style="list-style-type: none"> • VERIFY AC Safeguards Buses – ONE ENERGIZED [Step 3b]. <ul style="list-style-type: none"> • DISPATCH personnel to restore de-energized bus per ABN-602, RESPONSE TO A 6900/480 VOLT SYSTEM MALFUNCTION [Step 3b RNO]

NRC EXAM

Examiner Note: 1-01 DG is operating unloaded without SSW cooling and should be stopped here or per Attachment 2 within 15 minutes from starting.

	BOP	PLACE CS-1DG1E, DG 1 EMER STOP/START in PULL OUT.
	RO	CHECK SI status [Step 4]:
		<ul style="list-style-type: none"> • VERIFY SI Actuated – FIRST OUT ANNUNCIATOR LIT • VERIFY Both Trains SI Actuated: <ul style="list-style-type: none"> • SI Actuated blue status light – ON <u>NOT</u> FLASHING.

Examiner Note: EOP-0.0A, Attachment 2 steps performed by BOP are identified later in the scenario.
The RCPs should be tripped as subcooling is observed to be < 55°F.
RCP seal injection should be adjusted in accordance with Attachment 1A.

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 unless directed by this procedure.

	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2 [Step 5].
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Examiner Note: The operator may stop 1-02 MD AFW Pump and feed all Steam Generators using the TD AFW Pump.

	RO	VERIFY AFW Alignment [Step 6]:
		<ul style="list-style-type: none"> • VERIFY 1-02 MDAFW Pump – RUNNING. • START TDAFW Pump. • VERIFY AFW total flow – GREATER THAN 460 GPM. • VERIFY AFW valve alignment - PROPER ALIGNMENT.

NRC EXAM

Examiner Note: With loss of Train A Safeguard Bus, examinees will prioritize alignment of Train B equipment.		
CRITICAL TASK STATEMENT	Manually Align Containment Spray Due to Failure to Automatically Align Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection.	
	RO	VERIFY Containment Spray NOT Required [Step 7]:
		<ul style="list-style-type: none"> VERIFY 1-ALB-2B, Window 1-8, CS ACT –ILLUMINATED [Step 7a].
		<ul style="list-style-type: none"> VERIFY 1-ALB-2B, Window 4-11, CNTMT ISOL PHASE B ACT – ILLUMINATED [Step 7a].
		<ul style="list-style-type: none"> VERIFY Containment pressure – GREATER THAN 18.0 PSIG [Step 7a].
		<ul style="list-style-type: none"> VERIFY Containment Spray and Phase B Actuation initiated [Step 7a1) RNO].
		<ul style="list-style-type: none"> DETERMINE MLB indication for CNTMT SPRAY (BLUE WINDOWS) – NOT COMPLETE [Step 7a2) RNO]
CRITICAL TASK		<ul style="list-style-type: none"> MANUALLY OPEN 1-HS-4777, CS HX 2 OUT VLV and verify Containment Spray flow [Step 7a2) RNO].
CRITICAL TASK STATEMENT	Dispatch Operator to Locally Align Train B Containment Isolation Phase B RCP Thermal Barrier CCW Return Valve Due to Failure to Automatically Align Prior To Exiting EOP-0.0A, Reactor Trip or Safety Injection.	
Simulator Operator: When contacted to locally close 1-HV-4709, wait 2 minutes, then EXECUTE KEY 13 remote functions CCR43 and CCR33 to locally open the valve breaker and manually reposition the valve closed. Valve close stroke time is approximately 13 seconds. Ensure valve indicates closed on 1-MLB-4B3 2.9 and then REPORT valve is locally closed.		
		<ul style="list-style-type: none"> DETERMINE MLB indication for PHASE B (ORANGE WINDOWS) – NOT COMPLETE [Step 7a2) RNO]
		<ul style="list-style-type: none"> ATTEMPT to manually close 1-HS-4709, THBR CLR CCW RET ISOL VLV [Step 7a2) RNO].
CRITICAL TASK		<ul style="list-style-type: none"> DISPATCH an operator to locally close 1-HV-4709, THBR CLR CCW RET ISOL VLV [Step 7a2) RNO].
		<ul style="list-style-type: none"> VERIFY Containment Spray Flow [Step 7a3) RNO]
		<ul style="list-style-type: none"> VERIFY CHEM ADD TK DISCH VLVs – OPEN [Step 7a4 RNO]
		<ul style="list-style-type: none"> STOP ALL RCPs [Step 7a5) RNO]

NRC EXAM

	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 8a]
		<ul style="list-style-type: none"> • VERIFY Steam Line pressure – GREATER THAN 610 PSIG [Step 8a]
	RO	VERIFY Main Steam Line Isolation Complete [Step 8b]:
		<ul style="list-style-type: none"> • Main Steam Isolation Valves - CLOSED.
		<ul style="list-style-type: none"> • Before MSIV Drippot Isolation Valves - CLOSED.
	RO	CHECK RCS Temperature [Step 9]:
		<ul style="list-style-type: none"> • VERIFY RCS Average Temperature – NOT STABLE OR TRENDING TO 557°F
		<ul style="list-style-type: none"> • If temperature less than 557°F, PERFORM the following: <ul style="list-style-type: none"> • STOP dumping steam [Step 9a RNO]. • If cooldown continues, MINIMIZE AFW flow as required [Step 9b RNO]. • If cooldown continues, CLOSE MSIVs [Step 9c RNO].
	RO	CHECK PRZR Valve Status [Step 10]:
		<ul style="list-style-type: none"> • VERIFY PRZR Safeties – CLOSED.
		<ul style="list-style-type: none"> • VERIFY Normal PRZR Spray Valves – CLOSED.
		<ul style="list-style-type: none"> • VERIFY PORVs – CLOSED.
		<ul style="list-style-type: none"> • VERIFY Power to at least one block valve – AVAILABLE.
		<ul style="list-style-type: none"> • VERIFY Block Valves – AT LEAST ONE OPEN.
	RO	CHECK if RCPs should be stopped [Step 11]:
		<ul style="list-style-type: none"> • VERIFY ALL RCPs STOPPED.
	RO/BOP	CHECK if Any Steam Generator Is Faulted [Step 12]:
		<ul style="list-style-type: none"> • VERIFY Steam Generator pressure – NONE DECREASING IN AN UNCONTROLLED MANNER.
		<ul style="list-style-type: none"> • VERIFY Steam Generator pressure – NONE COMPLETELY DEPRESSURIZED.

NRC EXAM

	RO/BOP	CHECK if Steam Generator Tubes Are NOT Ruptured [Step 13]:
		<ul style="list-style-type: none"> • VERIFY Condenser Off Gas radiation – NORMAL.
		<ul style="list-style-type: none"> • VERIFY Main Steam Line radiation – NORMAL.
		<ul style="list-style-type: none"> • VERIFY SG Blowdown Sample Radiation Monitor – NORMAL.
		<ul style="list-style-type: none"> • VERIFY levels in all Steam Generators – UNDER OPERATOR CONTROL
	RO/BOP	CHECK if RCS is Intact [Step 14]:
		<ul style="list-style-type: none"> • VERIFY Containment pressure – GREATER THAN 1.3 PSIG
		<ul style="list-style-type: none"> • VERIFY Containment recirculation sump levels – NOT NORMAL
		<ul style="list-style-type: none"> • VERIFY Containment radiation levels – NOT NORMAL
		<ul style="list-style-type: none"> • GO to EOP-1.0A, Loss of Reactor or Secondary, Step 1 [Step 14 RNO].
	US	TRANSITION to EOP-1.0A, Loss of Reactor or Secondary Coolant, Step 1.
<p>Examiner Note: EOP-1.0A, Loss of Reactor or Secondary Coolant, steps begin immediately following FRP-0.1A and FRZ-0.1A Step 1. When Attachment 2 is complete, Step 1 of FRP-0.1A and FRZ-0.1A may require completion. The US will proceed through EOP-1.0A until Attachment 2 is complete.</p>		
FRP-0.1A	US	CHECK RCS Pressure – LESS THAN 425 PSIG [Step 1].
		<ul style="list-style-type: none"> • CHECK RHR flow – GREATER THAN 750 GPM [Step 1 RNO].
		<ul style="list-style-type: none"> • Return to procedure and step in effect [Step 1 RNO].
FRZ-0.1A	US	CHECK Containment Pressure – LESS THAN 50 PSIG [Step 1].
		<ul style="list-style-type: none"> • VERIFY Containment Spray alignment performed in EOP-0.0A [Step 1 RNO].
		<ul style="list-style-type: none"> • Return to procedure and step in effect [Step 1 RNO].

NRC EXAM

Examiner Note: The following steps are from EOP-1.0A, Loss of Reactor or Secondary Coolant.

CAUTION: Following a high energy line rupture inside containment, the operator should not rely upon steam generator water level indications in any depressurized steam generators.

NOTE: As PRZR Temperature decreases the error on indicated PRZR level will increase. Attachment 2 may be used to determine actual PRZR level.

	US	CHECK if RCPs Should Be Stopped [Step 1]:
		<ul style="list-style-type: none"> • DETERMINE all RCPs STOPPED.
	BOP	CHECK if Any Steam Generator Is Faulted [Step 2]:
		<ul style="list-style-type: none"> • VERIFY Steam Generator pressure – NONE DECREASING IN AN UNCONTROLLED MANNER. • VERIFY Steam Generator pressure – NONE COMPLETELY DEPRESSURIZED.
	BOP	CHECK Intact Steam Generator Levels [Step 3]:
		<ul style="list-style-type: none"> • DETERMINE Narrow range levels – GREATER THAN 50%. • CONTROL AFW flow to maintain NR level between 50% and 60%.
	BOP	CHECK Secondary Radiation NORMAL [Step 4]:
		<ul style="list-style-type: none"> • VERIFY Condenser off gas radiation – NORMAL. • VERIFY Main Steam Line radiation – NORMAL. • VERIFY SG Blowdown Sample Radiation Monitor – NORMAL.

When the crew has transitioned to EOP-1.0A or at the Lead Examiner's discretion, terminate the scenario.

Lead Evaluator Record End Time: _____

NRC EXAM

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.

Examiner Note: 1-01 DG is operating unloaded without SSW cooling and should be stopped within 15 minutes of start.

	BOP	VERIFY SSW Alignment [Step 1]:
		<ul style="list-style-type: none"> • VERIFY 1-02 SSW Pump – RUNNING. • VERIFY 1-02 EDG Cooler SSW return flow. • PLACE CS-1DG1E, DG 1 EMER STOP/START in PULL OUT.
	BOP	VERIFY 1-02 Safety Injection Pump– RUNNING [Step 2].
	BOP	VERIFY Containment Isolation Phase A – APPROPRIATE MLB LIGHT INDICATION (RED WINDOWS) [Step 3].
		<ul style="list-style-type: none"> • MANUALLY actuate Phase A. • DETERMINE penetrations isolated on at least one side.
	BOP	VERIFY Containment Ventilation Isolation – APPROPRIATE MLB LIGHT INDICATION (GREEN WINDOWS) [Step 4].
	BOP	VERIFY 1-02 CCW Pump– RUNNING [Step 5].
CRITICAL TASK STATEMENT		Manually Start 1-02 RHR pump prior to completing Attachment 2 of EOP-0.0A, Reactor Trip or Safety Injection.
	BOP	VERIFY 1-02 RHR Pump – RUNNING [Step 6].
CRITICAL TASK		DETERMINE 1-02 RHR Pump failed to start and MANUALLY START 1-02 RHR Pump.

NRC EXAM

	BOP	VERIFY Proper CVCS Alignment [Step 7]:
		<ul style="list-style-type: none"> • VERIFY 1-02 CCP – RUNNING.
		<ul style="list-style-type: none"> • VERIFY Letdown Relief Valve Isolation:
		<ul style="list-style-type: none"> • Letdown Orifice Isolation Valves – CLOSED.
		<ul style="list-style-type: none"> • Letdown Isolation Valves 1/1-LCV-459 & 1/1-LCV-460 – CLOSED.
	BOP	VERIFY ECCS flow [Step 8]:
		<ul style="list-style-type: none"> • CCP SI flow indicator – CHECK FOR FLOW.
		<ul style="list-style-type: none"> • RCS pressure – LESS THAN 1800 PSIG FOR ADVERSE CONTAINMENT
		<ul style="list-style-type: none"> • SIP discharge flow indicator – CHECK FOR FLOW.
		<ul style="list-style-type: none"> • RCS pressure – LESS THAN 425 PSIG FOR ADVERSE CONTAINMENT
		<ul style="list-style-type: none"> • RHR TO CL INJ flow indicators - CHECK FOR FLOW
	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 1-02 Diesel Generator – RUNNING [Step 10].
	BOP	VERIFY Monitor Lights for SI Load Shedding on 1-MLB-9 and 1-MLB10 – LIT [Step 11].

NRC EXAM

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.

Examiner Note: With loss of Train A Safeguard Bus, examinees will prioritize alignment of Train B equipment.

	BOP	VERIFY Proper SI alignment – PROPER MLB LIGHT INDICATION [Step 12].
		Manually ACTUATE SI [Step 12 RNO].
		ENSURE at least one safeguard train available [Step 12 RNO]

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.			
		<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/H.S. IN CLOSED
		CB-06	1/1-8154	XS LTDN ISOL VLV	CLOSED/H.S. IN 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

NRC EXAM

	CB-09	1-HS-2490	CNDS XFER PUMP	STOPPED (MCC DEENERGIZED ON SI)
	CV-01	X-HS-6181	PRI PLT SPLY FN 17 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6188	PRI PLT SPLY FN 18 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6195	PRI PLT SPLY FN 19 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6202	PRI PLT SPLY FN 20 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6209	PRI PLT SPLY FN 21 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6216	PRI PLT SPLY FN 22 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6223	PRI PLT SPLY FN 23 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6230	PRI PLT SPLY FN 24 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-3631	UPS & DISTR RM A/C FN 1 & BSTR FN 42	STARTED
	CV-01	X-HS-3632	UPS & DISTR RM A/C FN 2 & BSTR FN 43	STARTED
	CV-01	1-HS-5600	ELEC AREA EXH FN 1	STOPPED/DEENERGIZED
	CV-01	1-HS-5601	ELEC AREA EXH FN 2	STOPPED/DEENERGIZED
	CV-01	1-HS-5602	MS & FW PIPE AREA EXH FN 3 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5603	MS & FW PIPE AREA EXH FN 4 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5618	MS & FW PIPE AREA SPLY FN 17	STOPPED/DEENERGIZED
	CV-01	1-HS-5620	MS & FW PIPE AREA SPLY FN 18	STOPPED/DEENERGIZED
	CV-03	X-HS-5855	CR EXH FN 1	STOPPED/DEENERGIZED
	CV-03	X-HS-5856	CR EXH FN 2	STOPPED/DEENERGIZED
	CV-03	X-HS-5731	SFP EXH FN 33	STOPPED/DEENERGIZED
	CV-03	X-HS-5733	SFP EXH FN 34	STOPPED/DEENERGIZED
	CV-03	X-HS-5727	SFP EXH FN 35	STOPPED/DEENERGIZED
	CV-03	X-HS-5729	SFP EXH FN 36	STOPPED/DEENERGIZED

NRC EXAM

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

	CB-03	2-HS-5538	AIR PRG EXH ISOL DMPR	CLOSED
	CB-03	2-HS-5539	AIR PRG EXH ISOL DMPR	CLOSED
	CB-03	2-HS-5537	AIR PRG SPLY ISOL DMPR	CLOSED
	CB-03	2-HS-5536	AIR PRG SPLY ISOL DMPR	CLOSED
	BOP	NOTIFY Unit Supervisor: <ul style="list-style-type: none">• Attachment 2 instructions complete, and• Unit 2 notified of Common Equipment Monitoring AND 1-hour limit for CR HVAC realignment with actual SI conditions,• IMPLEMENT FRGs as required.		
<i>EOP-0.0A, Attachment 2 steps are now complete.</i>				

NRC EXAM

;2023 NRC Simulator Scenario 2

;Revision: 01/17/23

;100%

;LBLOCA

;Event 1 Place Train B Control Room Ventilation in service

;Event 2 1-PK-0131 Fails Causing PCV-0131 to Open

IMF CV37 i:17 f:100 r:400 k:2

;Remove 1-PK-0131 Failure

{Key[11]!=0} DMF CV37

;Event 3 1-03 Steam Line Pressure Transmitter PT-535 Channel II fails low

IMF RP03H f:0 k:3

;Event 4 1-01 Centrifugal Charging Pump Sheared Shaft

IMF CV31A f:1 k:4

;Swap CCP Aux Lube Oil Pump Operation

IRF CVR05 f:0 k:12

IRF CVR06 f:1 k:12

;Event 5 RCS CL Loop 1 LBLOCA Double Ended

;with Loss of 6.9kV Bus 1EA1 (86-1)

IMF RC09A2 f:1 k:5

IMF ED05H f:1 d:5 k:5

;Event 6 1-02 Containment Spray Heat Exchanger

;Outlet Valve Fails to Automatically Open 1-HV-4777

IMF CS07B f:1

;Event 7 1-02 RHR Pump SI Sequencer Fail to Start

IMF RH01D f:1

;Event 8 1-HV-4709 Thermal Barrier Cooler CCW Return

;Isolation Valve Fails to Close on Phase B with RCP Thermal

;Barrier Leak

IOR DICCHS4709 f:2

IMF CC05 f:5 k:5

;Locally Close 1-HV-4709 Thermal Barrier Cooler CCW Return

;Isolation Valve

IRF CCR43 f:0 k:13

IRF CCR33 f:0 k:13

UNIT SUPERVISOR RELIEF CHECKLIST

UNIT: 1
OFF-GOING US: Joe Unit Supervisor SHIFT: Nights DATE: Today
ON-COMING US: _____ SHIFT: _____

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: Complete equipment rotation to Train B Control Room ventilation per OWI-409, Equipment Rotation Program and SOP-802, Section 5.3.10 Alternating Trains of Control Room Ventilation.

2.0 PLANT AND EQUIPMENT STATUS:

2.1 Technical Specification Related Equipment Summary: None

2.2 Non-Technical Specification Equipment Summary: None

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Facility:	CPNPP 1 & 2	Scenario No.:	3
Examiners:	_____	Operators:	_____
	_____		_____
	_____		_____

Initial Conditions: 100% power EOL.

Turnover: Maintain steady-state power conditions.

- Critical Tasks:
- Place EHC Pumps in PULL OUT or Manually Close MSIVs Upon Failure of Main Turbine Trip Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection.
 - Manually close Main Steam Isolation Valves Upon Failure of Automatic Closure Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection.
 - Identify and Isolate 1-03 Steam Generator Prior to Exiting EOP-2.0, Faulted Steam Generator Isolation.

Event No.	Malf. No.	Event Type*	Event Description
1	FW16 FW17A IOR DIFWHS2958	(R) RO, SRO (C, MC) BOP, SRO	Condenser Vacuum Leak 1-01 CEV Pump Trip 1-03 CEV Pump Fails to Auto Start
2	RX05A	(I, MC) RO, SRO (TS) SRO	Pressurizer LT-459 Fails Low
3	NI06E	(I, MC) RO, SRO (C) BOP (TS) SRO	PR Channel NI-44 Fails High
4	FW14B TC09I	(C, MC) BOP (R) RO (TS) SRO	1-02 Heater Drain Pump Trips Auto Turbine Runback Failure
5	MS01C	(M) RO, BOP, SRO	1-03 SG Fault IRC
6	TC07C	(C, MC) BOP, SRO	Main Turbine Fails to Auto Trip and Fails to Manually Trip from Pushbutton, Requires Stopping EHC Pumps
7	IOR DIFWFK2454A_1	(C) BOP	1-FK-2454A MD AFWP 2 SG 3 FLO CTRL Fails in AUTO (will not close)
8	SS02A1 SS02A2	(C, MC) RO	SSPS Train A Master Relay K504 Failure (MSIV fails to auto close) SSPS Train B Master Relay K504 Failure (MSIV fails to auto close)

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

Table 3.4-1

Actual	Initial Target Attributes
3	Events after EOP entry (1-2)
4	Abnormal events (2-4)
1	Major transients (1-2)
2	EOPs entered/requiring substantive actions (1-2)
0	Entry into a contingency EOP with substantial actions – 1 per scenario set
3	Preidentified CTs (2 or more)

Table 3.4-2

Event/Evolution Type	Applicant Position			
	RO	BOP	SRO-I	SRO-U
Reactivity Manipulation	2	2	2	2
Normal Evolution	0	0	0	0
Instrument/Component (I/C) Failure	4	5	7	7
Major Transient	1	1	1	1
Manual Control of Automatic Function	3	3	na	na
TS Evaluation	na	na	3	3

Scenario Objectives:

Demonstrate control of condenser vacuum leak

Demonstrate control of PZR LT-459 failure (low)

Demonstrate control PR NI-44 failure (high)

Demonstrate control of 1-02 HTR DRN Pump trip and auto runback failure on main turbine

Demonstrate control of major (SG Fault IRC)

Demonstrate control of CT 1, 2, and 3 (see CT tables)

Demonstrate control of post-major malfunctions by stopping EHC pumps, isolating AFW flow for faulted AFW flow control valve, and manually closing MSIVs when SSPS relays fail to auto close them

NRC EXAM
SCENARIO SUMMARY

OBJECTIVE: Demonstrate crew competency in responding to abnormal and emergency events which are potential contributors to challenging fission product barriers necessary for the protection of the health and safety of the public.

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

The first event is trip of one of the operating Condenser Exhaust Vacuum (CEV) pumps and a failure of the standby CEV to automatically start. A condenser vacuum leak will cause lowering megawatts and lowering condenser vacuum. The crew will enter ABN-304, Main Condenser and Circulating Water System Malfunction Section 3.0 and manually start the standby CEV pump. The crew will reduce turbine load to ensure Reactor Power is maintained less than 100% power.

The second event is a failure low of Pressurizer Level channel. Crew actions are per ABN-706, Pressurizer Level Instrumentation Malfunction and include manual control of pressurizer level, bypassing the failed channel, and restoring pressurizer level control to automatic. The crew will be required to restore normal letdown to service due to letdown isolation. The SRO will refer to Technical Specifications.

The third event is a failure high of Power Range Nuclear Instrument NI-44. The Reactor Operator will verify no transient in progress and place Rod Control in manual to stop unnecessary rod motion. The crew will take the actions of ABN-703, Power Range Instrumentation Malfunction. The SRO will refer to Technical Specifications.

The fourth event is a trip of Heater Drain Pump 1-02 with an automatic turbine runback failure. Crew actions are per ABN-302, Feedwater, Condensate, Heater Drain System Malfunction Section 4.0 and will include placing control rods in automatic, manually initiating a turbine runback, and initiation of a boration. The SROs will refer to Technical Specifications when control rods insert below the Rod Insertion Limit.

The major event is a SG fault inside Containment. Response is complicated by failure of automatic and manual main turbine trip, failure of MSIVs to automatically close (SSPS relay failure, manually closed), and failure of 1-03 SG MD AFW flow control valve (won't control in manual and requires shutting AFW isolation valve for SG 1-03). The crew will enter EOP-0.0A, Reactor Trip or Safety Injection, determine SG 1-03 is faulted, and transition to EOP-2.0A, Faulted Steam Generator Isolation. Once the SG is isolated, the crew will transition to EOS-1.1A, Safety Injection Termination.

Scenario will be terminated when EOS-1.1A, Safety Injection Termination Attachment 1.J is complete or at the discretion of the Lead Examiner.

NRC EXAM
Critical Task Determination

Critical Task	Safety Significance	Initiating Cue	Measurable Performance Standard	Performance Feedback
Place EHC Pumps in PULL OUT or Manually Close MSIVs Upon Failure of Main Turbine 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.	Procedurally driven from EOP-0.0A. Tripping the main turbine following a reactor trip prevents an uncontrolled cooldown of the RCS.	The operator will place all EHC pump handswitches on CB-10 in PULL OUT and verify turbine HP stop valves close. If HP stop valves fail to close, the operator will close all MSIVs.	Indication of pump stop including light indication and EHC fluid pressure, HP stop valve light indication or MSIV light indication.
Manually close Main Steam Isolation Valves Upon Failure of Automatic Closure 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.	Procedurally driven from EOP-0.0A. MSIVs are closed to minimize mass and energy release associated with a high energy secondary line break inside Containment.	The operator will close the MSIVs from CB-08 using the MSL isolation manual actuation handswitches or the individual MSIV handswitches.	Indication of MSIV position including light indication, Steam Generator steam flow, and Steam Generator pressure trend.
Identify and Isolate 1-03 Steam Generator Prior to Exiting EOP-2.0, Faulted Steam Generator Isolation.	Take one or more actions that would prevent a challenge to plant safety.	Procedurally driven from EOP-2.0A to isolate the faulted SG to prevent further RCS cooldown and mass and energy release. AFW flow indicated to SG 1-03 which is faulted.	The operator will close the AFW motor operated isolation valve to SG 1-03 OR stop 1-02 MDAFW pump and close 1-FCV-2461A, TD AFWP SG 3 FLO CTRL VLV.	Valve position will change and AFW flow to SG 1-03 will reduce to zero.
<p>NOTE: 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>				

NRC EXAM

SIMULATOR OPERATOR INSTRUCTIONS for SIMULATOR SETUP

Initialize to IC 20 and 2023 NRC Simulator Scenario 3 Scenario File.

EVENT	TYPE	MALF #	DESCRIPTION	DEMAND VALUE	INITIATING PARAMETER
SETUP					
1	IOR	DIFWHS2958	1-03 CEV Pump Fails to Auto Start	f:0	K0 Note 1 and 2
1	COND		Allow Manual Start of 1-03 CEV Pump {DIFWHS2958.Value=2} MOR DIFWHS2958 f:2		K0
1	COND		Reduce Condenser Vacuum Leak When 1-03 CEV Pump is Started {DIFWHS2958.Value=2} MMF FW16 f:8		K0 Note 2
1	COND		Remove Condenser Vacuum Leak {Key[11]!=0} DMF FW16		K11
4	IMF	TC09I	Auto Turbine Runback Failure	f:1	K0
5	IRF	EDR73	Reset 1-01 IAC	f:2	K12
5	IRF	EDR74	Reset 1-02 IAC	f:2	K13
5	IRF	IAR07	Reset X-01 IAC	f:2	K14
6	IMF	TC07C	Main Turbine Automatic and Manual Trip Fails (Pushbutton will not trip)	f:1	K0
7	COND		1-FK-2454A MD AFWP 2 SG 3 FLO CTRL Fails in AUTO (will not close) {LOFWFK2454A_1.Value=1} IOR DIFWFK2454A_1 f:1		K0
8	IMF	SS02A1	SSPS Train A Master Relay K504 Failure (MSIVs fail to auto close)	f:1	K0
8	IMF	SS02A2	SSPS Train A Master Relay K504 Failure (MSIVs fail to auto close)	f:1	K0
1	IMF	FW16	Main Condenser Vacuum Leak	f:16	K1 Note 2
1	IMF	FW17A	1-01 CEV Pump Trip	f:1	K1
2	IMF	RX05A	Pressurizer LT-459 Fails Low	f:0	K2
3	IMF	NI06E	PR N44 Channel Fails High	f:200	K3

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4	IMF	FW14B	1-02 Heater Drain Pump Trip	f:1	K4
5	IMF	MS01C	1-03 SG Fault IRC	f:0.4	K5

Note 1: {DIFWHS2958.Value=2} MOR DIFWHS2958 f:2 – Allow 1-03 CEV Pump to be manually started with the handswitch

Note 2: {DIFWHS2958.Value=2} MMF FW16 f:8 – Reduce condenser vacuum leak when 1-03 CEV Pump is manually started to allow CEVs to maintain vacuum

Simulator Operator: Initialize to IC 20 and LOAD 2023 NRC Simulator Scenario 3 Scenario File.

ENSURE procedures in progress are on SRO desk:

- COPY of IPO-003A, Power Operations, Section 5.5 Operating at Constant Turbine Load.

ENSURE EOL Reactivity Briefing Sheet available for crew

Control Room Annunciators in Alarm:

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

Lead Evaluator Record Start Time: _____

Simulator Operator: When directed, EXECUTE KEY 1 .		
Event 1		
- FW16A, Main Condenser Air Inleakage		
- FW17A, Main Condenser Vacuum Pump 1 Trip		
- IOR DIFWHS2958, Main Condenser Vacuum Pump 3 Fails to Auto Start		
Indications Available:		
1-ALB-9A, Window 1.12, CNDSR ANY VAC PMP TRIP		
1-PI-2042-1, CNDSR A PRESS lowering		
1-PI-2042-2, CNDSR B PRESS lowering		
Plant Computer Alarms:		
<ul style="list-style-type: none"> • P6600A – CNDSR A PRESS (VA) • P6601A – CNDSR B PRESS (VA) 		
	BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	RECOGNIZE Main Condenser vacuum lowering.
	US	DIRECT performance of ABN-304, Main Condenser and Circulating Water System Malfunction, Section 3.0.
Examiner Note: The following steps are from ABN-304.		
Simulator Operator: When dispatched to check 1-01 CEV pump, wait 2 minutes and REPORT, 1-01 Condenser Vacuum Pump motor is hot to touch with an acrid odor, but no indication of fire and the breaker appears to have tripped on overload.		
	BOP	START all available Condenser Vacuum Pumps [Step 3.3.1].
Simulator Operator: When dispatched to verify CEV seal water tank levels and AFTER the crew has started CEV Pump 3 AND performed at least one 50 MW load reduction: EXECUTE KEY 11 to DELETE malfunction FW16 AND REPORT 1-01 CEV Pump seal tank was empty and has been refilled.		
	BOP	DISPATCH an operator to VERIFY CEV seal water tank - LEVEL INDICATED [Step 3.3.2].
	BOP	VERIFY Main Condenser vacuum ≥ 21 " Hg [Step 3.3.3].

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	BOP	DETERMINE Main Condenser vacuum less than 26.5" Hg [Step 3.3.4].
		<ul style="list-style-type: none"> On the Back Pressure Limit Display ensure turbine NOT operating for more than 5 minutes in the NOT PERMISSIBLE region [Step 3.3.4 RNO].
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>NOTE: Step 5 is a continuous action step.</p> </div>		
<p>Examiner Note: The crew may perform at least one 50 MWe load reduction if Rated Thermal power exceeds 100%.</p>		
	BOP	Verify Main Condenser Vacuum Being Maintained - GREATER THAN <u>24.5" HG AND STABLE</u> [Step 3.3.5].
		<u>AND</u> Reactor Power - LESS THAN 100%
	BOP	Locally verify In-leakage paths - NORMAL [Step 3.3.6]
	BOP	ENSURE SEAL STM HEAD PRS is approximately 4" H2O (8"H2O) [Step 3.3.6.a].
<p>Simulator Operator: When contacted to perform field actions of ABN-304, Section 3.0, steps 6.b through 6.h, acknowledge the request.</p>		
	US	DIRECT performance of ALM-0091A, 1.12 CNDSR ANY VAC PMP TRIP
<p>Examiner Note: The following steps are from ALM-0091A, 1-ALB-9A, Window 1.12 – CNDSR ANY VAC PMP TRIP</p>		
<p>Examiner Note: Control rods may step in for RCS temperature control during performance of these procedures.</p>		

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NOTE: If trip is due to overcurrent trip switch, the handswitch white light will be illuminated for affected vacuum pump. The OTS (white light) can be reset locally at breaker or by placing handswitch in OFF.

NOTE: The standby condenser vacuum pump will automatically start when condenser vacuum is ≤ 24 inches Hg vacuum. The pressure switches used to start and operate vacuum pump and suction valve are located in seal pump control cabinet next to vacuum pump.

	BOP	PLACE affected vacuum pump handswitch in OFF [Step 1].
		<ul style="list-style-type: none"> • 1-HS-2956, CNDSR VAC PMP 1
	BOP	VERIFY condenser vacuum is maintained above 24.5 inches Hg vacuum [Step 2].
		A. IF vacuum can NOT be maintained, THEN GO to ABN-304 for Main or Auxiliary Condenser Vacuum Decreasing.
<p><u>Simulator Operator:</u> When dispatched to check 1-01 CEV pump, wait 2 minutes and REPORT, 1-01 Condenser Vacuum Pump motor is hot to touch with an acrid odor, but no indication of fire and the breaker appears to have tripped on overload.</p>		
	BOP	DISPATCH an operator to TB 778' CEV AREA to check pump for signs of damage (i.e., smoke, acrid odor, overheating) [Step 3].
	BOP	CORRECT the condition or ENTER into Issue Reporting Program IAW STA-421 [Step 4].
<p><i>When turbine load has been reduced at least one time or at Lead Examiner's discretion, proceed to Event 2.</i></p>		

NRC EXAM

Simulator Operator: When directed, execute **KEY 2**.

Event 2 - RX05A, Pressurizer Level Transmitter (LT-459) fails low.

Indications Available:

- 5B-1.4 – PRZR HTR GRP C CTRL TRBL
- 5B-3.6 – PRZR LVL LO
- 5C-1.2 – PRZR LVL DEV LO
- 6A-3.8 – CVCS HELB PT-5358A
- 6A-4.8 – CVCS HELB PT-5358
- 1-LI-459A, PRZR LVL CHAN I indication failed low

	RO	RESPOND to Annunciator Alarm Procedures.
	RO	RECOGNIZE PRZR level rising and Pressurizer Level Channel I (LT-459) failed low.
	US	DIRECT performance of ABN-706, Pressurizer Level Instrumentation Malfunction, Section 2.0.

Examiner Note: The following steps are from ABN-706.

CAUTION: To avoid thermal shock of the reactor coolant piping, the letdown flow should not be stopped without also stopping the charging flow when the reactor coolant temperature is greater than 350°F.

- NOTE:**
- Channels 459 and 460 are normally the controlling channels.
 - Refer to Attachment 7 for program versus Tave information.

	RO	PLACE PZR Level Control <u>or</u> Charging Flow in MANUAL to maintain level on program using one of the following controllers: [Step 2.3.1]
		<ul style="list-style-type: none"> • 1-LK-459, PRZR LVL CTRL • 1-FK-121, CCP CHRG FLO CTRL
	RO/BOP	TRANSFER 1/1-LS-459D, PZR Level Control Channel Select to an OPERABLE alternate controlling channel. [Step 2.3.2]
	RO/BOP	ENSURE 1/1-LS-459E, 1-LR-459 PZR LEVEL SELECT is selected to a valid channel. [Step 2.3.3]

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	RO	DETERMINE Normal Letdown not aligned. [Step 2.3.4]
<p>Examiner Note: Letdown flow is re-established using ABN-706, Attachment 6 or the Letdown Restoration Job Aid.</p> <p style="text-align: center;">IF SRO directs placing 75 gpm letdown in service, direct the Unit supervisor as the Shift Manager to place 120 gpm letdown in service.</p>		
	RO	When Pressurizer level is greater than 17%, RESTORE Letdown per Attachment 6. [Step 2.3.4 RNO]
		<ul style="list-style-type: none"> • OPEN or VERIFY OPEN Letdown Isolation Valves 1/1-LCV-460 & 1/1-LCV 459. [Step 1]
		<ul style="list-style-type: none"> • PLACE 1-PK-131, LTDN HX OUT PRESS CTRL in MANUAL and 30% (75 GPM) or 50% (120 GPM) DEMAND. [Step 2]
		<ul style="list-style-type: none"> • PLACE 1-TK-130, LTDN HX OUT TEMP CTRL in MANUAL and 50% DEMAND. [Step 3]
		<ul style="list-style-type: none"> • ADJUST Charging to desired flow and MAINTAIN Seal Injection flow between 6 and 13 GPM. [Step 4]
		<ul style="list-style-type: none"> • OPEN selected Orifice Isolation Valve(s). [Step 5]
		<ul style="list-style-type: none"> • 1/1-8149A, LTDWN ORIFICE ISOL VLV (45 GPM) • 1/1-8149B, LTDWN ORIFICE ISOL VLV (75 GPM) • 1/1-8149C, LTDWN ORIFICE ISOL VLV (75 GPM)
		<ul style="list-style-type: none"> • ADJUST 1-PK-131, LTDN HX OUT PRESS CTRL to approximately 310 psig on 1-PI-131, LTDN HX OUT PRESS, then PLACE in AUTO. [Step 6]
		<ul style="list-style-type: none"> • ADJUST 1-TK-130, LTDN HX OUT TEMP CTRL to obtain approximately 95°F on 1-TI-130, LTDN HX OUT TEMP, then PLACE in AUTO. [Step 7]
	RO	IF necessary, RECLOSE 1/1-PCPR, PRZR CTRL HTR GROUP C by placing the control switch in the ON position. [Step 2.3.5]
	RO	RESTORE PZR Level Control <u>or</u> Charging Flow Control to AUTO as desired. [Step 2.3.6]
	US/RO	VERIFY other instruments on common instrument line - NORMAL. [Step 2.3.7]
		<ul style="list-style-type: none"> • VERIFY Loop 1 Instrument PT-455 responding normally per Attachment 1.

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Examiner Note: ABN-706 Steps 8 and 9 to trip bistables and verify trip status will not be performed during simulator scenario.

	US	EVALUATE Technical Specifications. [Step 2.3.10]
		<ul style="list-style-type: none">• LCO 3.3.1.M, Reactor Trip System Instrumentation (Function 9).
		<ul style="list-style-type: none">• CONDITION M – One channel inoperable.• ACTION M.1 – Place channel in trip within 72 hours, <u>OR</u>• ACTION M.2 – Reduce THERMAL POWER to < P-7 within 78 hours.
	US	INITIATE a Condition Report per STA-421. [Step 2.3.11]
<i>When Technical Specifications are addressed or at Lead Examiner discretion, proceed to Event 3.</i>		

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 3**.

Event 3 - PR N44 Channel Failure.

Indications Available:

- 6D-1.3 – 1 OF 4 HI SETPT PR FLUX HI
- 6D-3.3 – 1 OF 4 PR FLUX RATE HI
- 6D-3.4 – PR CHAN DEV HI
- 6D-2.14 – OP HI FLUX ROD STOP C-2
- 1-NI-44B, PR POWER CHAN IV indication fails high

	RO	RESPOND to Annunciator Procedure Alarms.
	RO	RECOGNIZE Power Range Nuclear Instrument N-44 detector failure.
	US	DIRECT implementation of ABN-703, Power Range Instrumentation Malfunction, Section 2.0.

Examiner Note: The following steps are from ABN-703.

	RO	VERIFY rapid Control Rod insertion – NOT REQUIRED [Step 2.3.1].
		<ul style="list-style-type: none"> • VERIFY Reactor and Turbine Power – MATCHED [Step 2.3.1.a]. • VERIFY T_{AVE} less than 3°F above T_{REF} [Step 2.3.1.a]. • PLACE Rod Control in MANUAL [Step 2.3.1.b].
	RO	VERIFY Reactor Power < 75% rated thermal power [Step 2.3.2].
	US	<ul style="list-style-type: none"> • INITIATE actions to comply with Technical Specification SR 3.2.4.2 [Step 2 RNO].

Examiner Note: The following steps are performed at the NIS Cabinets.

	BOP	<ul style="list-style-type: none"> • At Detector Current Comparator Drawer, SELECT Rod Stop Bypass Switch to N-44 [Step 2.3.3.a].
	BOP	<ul style="list-style-type: none"> • At Comparator and Rate Drawer, SELECT Comparator Channel Defeat Switch to N-44 [Step 2.3.3.b].

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	BOP	<ul style="list-style-type: none"> At Detector Current Comparator Drawer, SELECT Upper Section Switch to N-44 [Step 2.3.3.c].
	BOP	<ul style="list-style-type: none"> At Detector Current Comparator Drawer, SELECT Lower Section Switch to N-44 [Step 2.3.3.d].
	BOP	<ul style="list-style-type: none"> At Detector Current Comparator Drawer, SELECT Power Mismatch Bypass Switch to N-44 [Step 2.3.3.e].
	RO/BOP	<ul style="list-style-type: none"> At the Power Range A Drawer, SELECT Rate Mode Switch momentarily to RESET for N-44 [Step 2.3.3.f].
	RO/BOP	<ul style="list-style-type: none"> PLACE 1/1-JS-411E, N16 PWR CHAN DEFEAT Switch to LOOP 4 [Step 2.3.3.g].
	RO/BOP	<ul style="list-style-type: none"> PLACE 1/1-TS-412T, T_{AVE} CHAN DEFEAT Switch to LOOP 4 [Step 2.3.3.g].
	RO/BOP	PLACE 1/1-TS-411E, 1-TR-411 Channel Select to an OPERABLE channel [Step 2.3.4].
<p>Examiner Note: Control rods will be placed in manual as a result of the NIS failure and should remain in manual unless needed for a rapidly moving transient such as a runback, then returned to manual after the plant has been stabilized.</p>		
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p>NOTE: 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.</p> </div>		
<p>Examiner Note: The crew should conduct a reactivity brief to restore control rods to the position prior to the failure. Rods should not be withdrawn in excess of 5 steps in a single withdrawal.</p>		
	RO	RESTORE T _{AVE} to within 1°F of T _{REF} [Step 2.3.5].

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NOTE: P-10 permissive is interlocked with Source Range instruments. During a unit shutdown if P-10 permissive is in incorrect state, SR detectors cannot be re-energized. This affects SR RX Trip and SR Flux DBLG protection.

	US/RO	VERIFY within 1 hour of instrument malfunction, interlocks in – REQUIRED STATE: [Step 2.3.6]
		<ul style="list-style-type: none"> RX & TURB ≤ 10% PWR P-7 (PCIP – 3.5) – DARK [Step 2.3.6.a]
		<ul style="list-style-type: none"> RX ≤ 48% PWR 3-LOOP FLO PERM P-8 (PCIP – 4.5) – DARK. [Step 2.3.6.a]
		<ul style="list-style-type: none"> RX ≤ 50% PWR TURB TRIP PERM P-9 (PCIP – 1.7) – DARK. [Step 2.3.6.a]
		<ul style="list-style-type: none"> RX ≥ 10% PWR P-10 (PCIP – 1.6) – LIT. [Step 2.3.6.a]

	US/RO	<ul style="list-style-type: none"> RECORD verification in Unit Log. [Step 2.3.6.b]
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CAUTION: QUADRANT POWER TILT alarms (μ-ALB-6D, 4.10) should be considered inoperable when any Power range channel is inoperable.

	US/RO	CHECK Quadrant Power Tilt Ratio within limits [Step 2.3.7]:
		<ul style="list-style-type: none"> CHECK Power Range Channels – ONE OR MORE INOPERABLE [Step 2.3.7.a]
		<ul style="list-style-type: none"> CHECK Reactor Power – GREATER THAN 50% [Step 2.3.7.b].

Examiner Note: ABN-703 Steps 8 and 9 to trip bistables and verify trip status will not be performed during simulator scenario.

	US	EVALUATE Technical Specifications. [Step 2.3.10]
		<ul style="list-style-type: none"> LCO 3.3.1.D, Reactor Trip System Instrumentation (Function 2.a, Power Range Neutron Flux High)
		<ul style="list-style-type: none"> CONDITION D - One Power Range Neutron Flux-High channel inoperable. ACTION D.1.1 - Perform SR 3.2.4.2 within 12 hours from discovery of THERMAL POWER > 75% RTP, <u>AND</u> ACTION D.1.2 - Place channel in trip within 72 hours, <u>OR</u> ACTION D.2 - Be in MODE 3 within 78 hours.

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		<ul style="list-style-type: none"> LCO 3.3.1.E, Reactor Trip System Instrumentation (Function 3, Power Range Neutron Flux Rate High Positive Rate) (Function 6 and 7, OT/OP N16)
		<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.
		<ul style="list-style-type: none"> LCO 3.3.1.T, Reactor Trip System Instrumentation (Function 18.e, Power Range Neutron Flux, P-10)
		<ul style="list-style-type: none"> CONDITION T - One or more required channel(s) inoperable. ACTION T.1 - Verify interlock is in the required state for existing unit conditions within 1 hour, <u>OR</u> ACTION T.2 - Be in MODE 3 within 7 hours.
		<ul style="list-style-type: none"> LCO 3.3.1.U, Reactor Trip System Instrumentation. (Function 18.b, c, & d, Power Range Neutron Flux, P-7, P-8, & P-9)
		<ul style="list-style-type: none"> CONDITION U - One or more required channel(s) inoperable. ACTION U.1 - Verify interlock is in the required state for existing unit conditions within 1 hour. ACTION U.2 - Be in MODE 2 within 7 hours.
	US	INITIATE a Condition Report per STA-421, as applicable. [Step 2.3.11]
<p><i>After Technical Specifications have been addressed or at the Lead Examiners discretion, proceed to Event 4.</i></p>		

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 4**.

Event 4

- FW14B, Heater Drain Pump 1-02 trip
- TC09I, Automatic Main Turbine Runback failure

Indications Available:

- 6D-1.9 – ANY TURB RUNBACK EFFECTIVE (upon Runback)
- 6D-1.10 – AVE TAVE-TREF DEV (upon Runback)
- 7B-1.5 – CNDS POL SYS TRBL
- 8B-2.8 – CNDS LP HTR BYP TRBL
- 8B-3.8 – CNDS LP HTR BYP VLV OPEN PV-2286
- 8B-4.8 – TURB GLND STM CNDSR CNDS FLO HI
- 9A-1.2 – HDP 1/2 OVRLOAD / TRIP
- 1-HS-2603, HDP 2 TRIP light LIT

	RO/BOP	RESPOND to Annunciator Alarm Procedures.
	BOP	IDENTIFY trip of HDP 1-02 with no Automatic Turbine Runback.
	US	DIRECT implementation of ABN-302, Feedwater, Condensate, Heater Drain System Malfunction, Section 4.0, Heater Drain Pump Trip.

Examiner Note: The following steps are from ABN-302.

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

CAUTION: Using Load Target to reduce load without rods in AUTO can result in excessive TAVE-TREF mismatch before C-7 activates. This mismatch may cause an SI when steam dumps trip open.

- NOTE:**
- Diamond step 1 denotes Initial Operator Actions.
 - Automatic runback to 70% is approximately 812 MW.

	◊ RO/BOP ◊	VERIFY automatic plant response [Step 4.3.1].
	◊ RO ◊	<ul style="list-style-type: none"> • DETERMINES Control Rods NOT in – AUTO.
	◊ BOP ◊	<ul style="list-style-type: none"> • DETERMINES Turbine Runback – NOT IN PROGRESS.

NRC EXAM

	◇ RO/BOP ◇	If Turbine Power is > approximately 800 MWe, PERFORM the following [Step 4.3.1 RNO]:
	◇ RO ◇	<ul style="list-style-type: none"> PLACE 1/1-RBSS, CONTROL ROD BANK SELECT in AUTO.
	◇ BOP ◇	<ul style="list-style-type: none"> ENSURE Turbine Runback to 700 MWE initiated.
		<ul style="list-style-type: none"> DEPRESS “700 MWe” MANUAL RUNBACK button.
		<ul style="list-style-type: none"> CLICK on “1” button and “Accept”.
		<ul style="list-style-type: none"> CLICK on “Execute” then VERIFY Manual Runback in progress.
<p>Simulator Operator: When contacted about status of HDP 1-02, REPORT instantaneous ground overcurrent 50N relay dropped flag on 1A2 Cub 4 breaker for HDP 1-02. Motor is hot to touch with acrid odor but no indication of fire.</p>		
	BOP	VERIFY Main Feed Flow to Steam Generators [Step 4.3.2].
		<ul style="list-style-type: none"> Main Feed Pump – AT LEAST ONE RUNNING
		<ul style="list-style-type: none"> Main Feedwater pump suction pressure – GREATER THAN 250 PSIG
		<ul style="list-style-type: none"> 1-PI-2295, FWP A SUCT PRESS
		<ul style="list-style-type: none"> 1-PI-2297, FWP B SUCT PRESS
<p>NOTE: Differential pressure between feedwater and steamline may decrease following a Turbine Runback. The following computer points may aid the operator:</p> <ul style="list-style-type: none"> ● U5002A FW-MS HDR DP ● U5003A DELTA PROGRAM-ACTUAL DP ● P5446A FW STM FLOW SETPOINT 		
	BOP	<ul style="list-style-type: none"> Feedwater header pressure – MAINTAINED GREATER THAN MAIN STEAM HEADER PRESSURE.
		<ul style="list-style-type: none"> Main Feedwater – ALIGNED.
	BOP	VERIFY Steam Generator water level – STABLE <u>OR</u> TRENDING TO NORMAL OPERATING RANGE [Step 4.3.3].

NRC EXAM

NOTE: Control Rod insertion should be allowed to continue even if ΔI is outside the band. Continued rod insertion is required to return T_{AVE} to T_{REF} as soon as possible so that steam demand is reduced.

	RO	VERIFY T_{AVE} – TRENDING TO T_{REF} [Step 4.3.4].
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CAUTION: Reactor power must be established at a value within the capability of available feedwater. Auxiliary feedwater pumps can supply approximately 6% reactor power.

	RO/BOP	STABILIZE Reactor power using one or more of the following [Step 4.3.5]:
		<ul style="list-style-type: none"> Control Rods / Steam Dumps / Boration / Turbine Load.

	BOP	VERIFY Steam Generator Feedwater Flow Control Valves – IN AUTO [Step 4.3.6].
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Examiner Note: Events during this scenario will result in exceeding the Rod Insertion Limits (RIL). The RO should inform the SRO when ALB-6D, Window 2.7 – ANY CONTROL ROD BANK AT LO-LO LIMIT is LIT.

	RO	VERIFY the following [Step 4.3.7.a]:
		<ul style="list-style-type: none"> IDENTIFY Control Rods – NOT ABOVE ROD INSERTION LIMIT Initiate boration per shift brief to restore SDM within 1 hour and restore rods above insertion limits with 2 hours per TS 3.1.6 [Step 4.3.7.a RNO].

NOTE: • The PPC plot for AFD Limits utilizes NIS power. Other power indications may differ significantly following large transient conditions. For the step below consider using the best indication of actual reactor power to evaluate operating limits.

	RO	<ul style="list-style-type: none"> VERIFY Δ Flux – (AFD) WITHIN LIMITS [Step 4.3.7.b].
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	RO/BOP	When steam dumps have closed, RESET C-7, Steam Dump Arming Signal Interlock [Step 4.3.8].
		<ul style="list-style-type: none"> PLACE 43/1-SD, Steam Dump Mode Select switch to RESET.

NRC EXAM

Simulator Operator: When contacted to perform actions of ABN-302, section 7.0 to close 1-HS-2286, report that you will brief field operators and will be ready to commence in approximately 20 minutes.

	BOP	IDENTIFY 1-HS-2286, LP FW HTR BYP VLV is OPEN [Step 4.3.9]
	US	DIRECT an operator to perform Section 7.0 of ABN-302 while continuing with this section [Step 4.3.9 RNO].
	US	NOTIFY QSE Generation Controller and UPDATE GAPS [Step 4.3.10].
	US	CORRECT the condition of ENTER into Issue Reporting Program IAW STA-421 [Step 4.3.11].
	US	CHECK Chemistry Sampling Requirement [Step 4.3.12]:
		<ul style="list-style-type: none"> • VERIFY SG ARVS - REMAINED CLOSED AND • TDAFW Pump - REMAINED STOPPED [Step 4.3.12a]
		<ul style="list-style-type: none"> • IDENTIFY Reactor Power change – GREATER THAN 15% RTP WITHIN ONE HOUR [Step 4.3.12b]
		<ul style="list-style-type: none"> • NOTIFY Chemistry to perform RCS isotopic analysis for iodine between 2 and 6 hours after power change [Step 4.3.12b RNO]
<u>Examiner Note:</u> The following step may be performed using ABN-401, Main Turbine Malfunction.		
	BOP	PERFORM the following to RESET Turbine Runback [Step 4.3.13]:
		DEPRESS “700 MW” Manual Runback button.
		CLICK on “O” button and “Accept”.
		CLICK on “Execute.”
	BOP	VERIFY feedwater temperature – GREATER THAN 390°F [Step 4.3.14].

NRC EXAM

	US	EVALUATE Technical Specifications.
		<ul style="list-style-type: none"> • LCO 3.1.6, Control Bank Insertion Limits.
		<ul style="list-style-type: none"> • CONDITION A - Control bank insertion limits not met. • ACTION A.1.1 - Verify SDM to be within the limits provided in the COLR within one hour, OR • ACTION A.1.2 - Initiate boration to restore SDM to within limit within one hour, AND • ACTION A.2 - Restore control bank(s) to within limits within 2 hours.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>NOTE: IF Reactor power decreased to less than 5%, THEN do not increase power until all MODE 1 AND 2 requirements are completed.</p> </div>		
	US	Return to procedure in effect and adjust power as desired [Step 4.3.15]
<p><i>After Technical Specifications have been addressed or at the Lead Examiners discretion, proceed to Event 5.</i></p>		

NRC EXAM

Simulator Operator: When directed, EXECUTE **KEY 5**.

Event 5, 6, 7, and 8

- MS01C, SG 1-03 Fault IRC
- TC07C, Main Turbine Automatic and Manual Trip Fails (Pushbutton will not trip)
- IOR DIFWFK2454A_1, 1-FK-2454A MD AFWP 2 SG 3 FLO CTRL Fails in AUTO
- IOR SS02A1, SSPS Train A Master Relay K504 Failure (MSIVs fail to auto close)
- IOR SS02A2, SSPS Train B Master Relay K504 Failure (MSIVs fail to auto close)

Indications Available:

- 8A-3.7 – MSL 3 1 OF 3 PRESS LO
- 8A-3.8 – SG 3 STM & FW FLO MISMATCH
- 8A-3.16 – SG 3 1 OF 3 PRESS RATE HI

Examiner Note: The following steps are from 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]
		<ul style="list-style-type: none"> • VERIFY Neutron flux – DECREASING. [Step 1.a]
		<ul style="list-style-type: none"> • VERIFY all Control Rod Position Rod Bottom Lights – ON. [Step 1.b]

Examiner Note: Turbine will not trip which will require the operator to stop EHC pumps or close the Main steam isolation valves. Either action satisfies the Critical Task.

CRITICAL TASK	Place EHC Pumps in PULL OUT or Manually Close MSIVs Upon Failure of Main Turbine Trip Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection.	
	BOP	VERIFY Turbine Trip:
		<ul style="list-style-type: none"> • IDENTIFY all HP Turbine Stop Valves – OPEN.
		Manually trip turbine. [Step 2 RNO]
		<p><u>IF</u> the turbine will <u>NOT</u> trip, <u>THEN</u> pull-out all EHC fluid pumps. [Step 2 RNO]</p> <p><u>IF</u> the turbine still <u>NOT</u> tripped, <u>THEN</u> close or verify closed main steamline isolation valves.</p>
CRITICAL TASK		PULL-OUT or STOP the following Pumps: <ul style="list-style-type: none"> • 1-HS-6550, EHC FLUID PMP A • 1-HS-6551, EHC FLUID PMP B • 1-HS-6552, EHC FLUID PMP C

NRC EXAM

	BOP	VERIFY Power to AC Safeguards Buses: [Step 3]
		VERIFY AC Safeguards Buses – AT LEAST ONE ENERGIZED. [Step 3.a]
		VERIFY both AC Safeguards Buses – ENERGIZED. [Step 3.b]
	RO	CHECK SI status: [Step 4]
		<ul style="list-style-type: none"> • CHECK if SI is actuated. [Step 4.a] • VERIFY Both Trains SI Actuated: [Step 4.b] • SI Actuated blue status light – ON <u>NOT</u> FLASHING.
<p>Examiner Note: EOP-0.0A, Attachment 2 steps performed by BOP are identified later in the scenario.</p>		
<div style="border: 2px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p><u>CAUTION:</u> 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; margin: 10px auto; width: 80%;"> <p><u>NOTE:</u> Attachment 2 is required to be completed before FRGs are implemented unless directed by this procedure.</p> </div>		
	US/BOP	INITIATE Proper Safeguards Equipment Operation Per Attachment 2 [Step 5].

NRC EXAM

Examiner Note: 1-FK-2454A MD AFWP 2 SG 3 FLO CTRL is unable to be maintained in Manual. EOP-0.0A, Reactor Trip or Safety Injection permits AFW flow to be isolated to a faulted SG and directs stopping the TDAFWP when both MD AFW Pumps are running. The examinee may isolate the faulted SG during the following step or when directed by EOP-2.0, Faulted Steam Generator Isolation.

The critical task may also be satisfied by stopping 1-02 MD AFW Pump and closing the TD AFW Pump flow control supply to 1-03 Steam Generator.

CRITICAL TASK	Identify and Isolate 1-03 Steam Generator Prior to Exiting EOP-2.0, Faulted Steam Generator Isolation.	
	RO/BOP	VERIFY AFW Alignment [Step 6]:
		<ul style="list-style-type: none"> • VERIFY MDAFW Pumps – BOTH RUNNING.
		<ul style="list-style-type: none"> • STOP TDAFW Pump per Foldout Page.
		<ul style="list-style-type: none"> • VERIFY AFW total flow – GREATER THAN 460 GPM.
		<ul style="list-style-type: none"> • STOP AFW flow to SG 1-03 per Foldout Page.
CRITICAL TASK		<ul style="list-style-type: none"> • CLOSE 1-HS-2493, AFWIV 3 OR • STOP 1-02 MDAFW Pump and • CLOSE 1-FCV-2461A, TD AFWP SG 3 FLO CTRL VLV
		<ul style="list-style-type: none"> • VERIFY AFW valve alignment - PROPER ALIGNMENT.

Examiner Note: The following step is a continuous action step and should be implemented if Containment Spray is required prior to exiting EOP-0.0A, Reactor Trip or Safety Injection.

	RO	VERIFY Containment Spray NOT Required [Step 7]:
		<ul style="list-style-type: none"> • VERIFY 1-ALB-2B, Window 1-8, CS ACT – ILLUMINATED [Step 7a].
		<ul style="list-style-type: none"> • VERIFY 1-ALB-2B, Window 4-11, CNTMT ISOL PHASE B ACT – ILLUMINATED [Step 7a].
		<ul style="list-style-type: none"> • VERIFY Containment pressure – GREATER THAN 18.0 PSIG [Step 7a].
		<ul style="list-style-type: none"> • VERIFY Containment Spray and Phase B Actuation initiated [Step 7a(1) RNO].
		<ul style="list-style-type: none"> • VERIFY MLB CNTMT SPRAY Blue Windows and PHASE B Orange Windows – LIT [Step 7a(2) RNO]
		<ul style="list-style-type: none"> • VERIFY Containment Spray Flow [Step 7a(3) RNO]
		<ul style="list-style-type: none"> • VERIFY CHEM ADD TK DISCH VLVs – OPEN [Step 7a(4) RNO]
		<ul style="list-style-type: none"> • STOP ALL RCPs [Step 7a(5) RNO]
		<ul style="list-style-type: none"> • Go to Step 8 [Step 7a(6) RNO]

NRC EXAM

	RO	CHECK if Main Steam lines should be ISOLATED [Step 8]:
		<ul style="list-style-type: none"> IDENTIFY Containment pressure – GREATER THAN 6.0 PSIG [Step 8a] IDENTIFY Steam Line pressure – LESS THAN 610 PSIG [Step 8a]
CRITICAL TASK		Manually close Main Steam Isolation Valves Upon Failure of Automatic Closure Prior to Exiting EOP-0.0A, Reactor Trip or Safety Injection.
	RO	VERIFY Main Steam Line Isolation Complete [Step 8b]:
		<ul style="list-style-type: none"> DETERMINE Main Steam Isolation – NOT COMPLETE.
CRITICAL TASK		<ul style="list-style-type: none"> Manually INITIATE a Main Steam Line Isolation [Step 8b RNO]. <ul style="list-style-type: none"> PLACE 1-HS-2337A, MSL ISOL MAN ACT / RESET in CLOSE position <u>OR</u> PLACE 1-HS-2337B, MSL ISOL MAN ACT / RESET in CLOSE position <u>OR</u> PLACE each MSIV Handswitch in CLOSE: <ul style="list-style-type: none"> 1-HS-2333A, MSIV 1 1-HS-2334A, MSIV 2 1-HS-2335A, MSIV 3 1-HS-2336A, MSIV 4
		<ul style="list-style-type: none"> VERIFY Main Steam Isolation Valves and Before MSIV Drippot Isolation Valves - CLOSED.
Examiner Note: T _{COLD} is used to determine RCS temperature trend as this indication will be accurate independent of the condition of the RCPs. If Main Steam Lines are isolated, ARV setpoints may be adjusted to 1092 PSIG.		
	RO	CHECK RCS Temperature [Step 9]:
		<ul style="list-style-type: none"> VERIFY RCS Average Temperature – STABLE AT OR TRENDING TO 557°F.
		<ul style="list-style-type: none"> If temperature less than 557°F, PERFORM the following: <ul style="list-style-type: none"> STOP dumping steam. If cooldown continues, MINIMIZE AFW flow as required.

NRC EXAM

	RO	CHECK PRZR Valve Status [Step 10]:
		<ul style="list-style-type: none"> • VERIFY PRZR Safeties – CLOSED.
		<ul style="list-style-type: none"> • VERIFY Normal PRZR Spray Valves – CLOSED.
		<ul style="list-style-type: none"> • VERIFY PORVs – CLOSED.
		<ul style="list-style-type: none"> • VERIFY Power to at least one Block Valve – AVAILABLE.
		<ul style="list-style-type: none"> • VERIFY Block Valves – AT LEAST ONE OPEN.
	RO	CHECK RCPs – STOPPED [Step 11]
	RO	CHECK if Any Steam Generator Is Faulted [Step 12]:
		<ul style="list-style-type: none"> • DETERMINE 1-03 Steam Generator pressure – DECREASING IN AN UNCONTROLLED MANNER [Step 12a]
	US	TRANSITION to EOP-2.0, Faulted Steam Generator Isolation [Step 12b].
Examiner Note: EOP-2.0A, Faulted Steam Generator Isolation steps begin here.		
<div style="border: 2px solid black; padding: 10px; margin: 10px 0;"> <p><u>CAUTION:</u> At least one SG must be maintained available for RCS cooldown.</p> </div> <div style="border: 2px solid black; padding: 10px; margin: 10px 0;"> <p><u>CAUTION:</u> Any faulted SG or secondary break should remain isolated during subsequent recovery actions unless needed for RCS cooldown.</p> </div>		
	US/RO	CHECK Main Steam Line Isolation Valves – CLOSED [Step 1].
	US/RO	CHECK at Least One Steam Generator Pressure – STABLE OR INCREASING [Step 2].
	US/RO	IDENTIFY Faulted Steam Generator 1-03 [Step 3].

NRC EXAM

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.

Examiner Note: The applicant may have isolated AFW to 1-03 SG in EOP-0.0A, Reactor Trip or Safety Injection. 1-FK-2454A MD AFWP 2 SG 3 FLO CTRL is unable to be maintained in Manual. The applicant may also isolate the faulted SG during the following step.

The critical task may also be satisfied by stopping 1-02 MD AFW Pump and closing the TD AFW Pump flow control supply to 1-03 Steam Generator, but this would not be the expected response.

CRITICAL TASK STATEMENT	Identify and Isolate 1-03 Steam Generator Prior to Exiting EOP-2.0, Faulted Steam Generator Isolation.	
	RO/BOP	ISOLATE Faulted Steam Generator 1-03 [Step 4].
		<ul style="list-style-type: none"> • ISOLATE Main Feed Line to Steam Generator 1-03. • ISOLATE AFW flow to Steam Generator 1-03.
CRITICAL TASK		<ul style="list-style-type: none"> • CLOSE 1-HS-2493, AFWIV 3.
		<ul style="list-style-type: none"> • ISOLATE Blowdown and Sample Lines to Steam Generator 1-03. • ENSURE Steam Generator 1-03 Atmospheric Relief Valve – CLOSED. • ENSURE Main Steam Line Drip Pot Isolation Valve – CLOSED.
	RO	CHECK CST Level – GREATER THAN 10% [Step 5].
	US/BOP	IDENTIFY Faulted Steam Generator 1-04 Break – OUTSIDE CONTAINMENT [Step 6].
	US/BOP	CHECK Secondary Radiation [Step 7]:
		<ul style="list-style-type: none"> • REQUEST periodic activity samples of all Steam Generators [Step 7a]. • CHECK available secondary radiation monitors – NORMAL [Step 7b].

NRC EXAM

	US/RO	CHECK if ECCS Flow to Should Be Reduced [Step 8]:
		<ul style="list-style-type: none"> • VERIFY Secondary heat sink [Step 8a]:
		<ul style="list-style-type: none"> • DETERMINE Total AFW Flow to intact SGs > 460 GPM.
		<ul style="list-style-type: none"> • DETERMINE Narrow Range Level in SGs 1-01, 1-02 & 1-03 > 50%.
		<ul style="list-style-type: none"> • DETERMINE RCS subcooling – GREATER THAN 55°F [Step 8b].
		<ul style="list-style-type: none"> • VERIFY RCS pressure – STABLE <u>OR</u> INCREASING [Step 8c].
		<ul style="list-style-type: none"> • VERIFY PRZR level - GREATER THAN 34% [Step 8d].
		<ul style="list-style-type: none"> • GO to EOS-1.1A, Safety Injection Termination, Step 1 [Step 8e].

Examiner Note: EOS-1.1A, Safety Injection Termination steps begin here.

Examiner Note: The following six steps are performed per EOS-1.1A, Attachment 1.D.

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

	BOP	[1.D] PLACE both Diesel EMER START/STOP handswitches in START [Step 1].
	BOP	[1.D] RESET SI [Step 2].
		<ul style="list-style-type: none"> • DEPRESS 1/1-SIRA, TRAIN A SI RESET pushbutton.
		<ul style="list-style-type: none"> • DEPRESS 1/1-SIRB, TRAIN B SI RESET pushbutton.
	BOP	[1.D] RESET SI Sequencers [Step 3].
		<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.
		<ul style="list-style-type: none"> • After ~ 2 seconds, PLACE ON/RESET toggle switch in ON.
		<ul style="list-style-type: none"> • At SI Sequencer Train B Cabinet, DEPRESS SI SEQR RESET green pushbutton then PLACE ON/RESET toggle switch in RESET.
		<ul style="list-style-type: none"> • After ~ 2 seconds, PLACE ON/RESET toggle switch in ON.

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	BOP	[1.D] RESET Containment Isolation Phase A and B [Step 4].
		<ul style="list-style-type: none"> • DEPRESS 1/1-C1PARA, CNTMT ISOL – PHASE A RESET pushbutton.
		<ul style="list-style-type: none"> • DEPRESS 1/1-C1PARB, CNTMT ISOL – PHASE A RESET pushbutton.
		<ul style="list-style-type: none"> • DEPRESS 1/1-C1PBRA, CNTMT ISOL – PHASE B RESET pushbutton.
		<ul style="list-style-type: none"> • DEPRESS 1/1-C1PBRB, CNTMT ISOL – PHASE B RESET pushbutton.
	BOP	[1.D] RESET Containment Spray Signal [Step 5].
		<ul style="list-style-type: none"> • DEPRESS 1/1-CSRA, TRAIN A CS RESET pushbutton.
		<ul style="list-style-type: none"> • DEPRESS 1/1-CSR B, TRAIN B CS RESET pushbutton.
<p>Simulator Operator: If contacted to restore power to Instrument Air Compressors after Safety Injection and SIS have been reset, EXECUTE the appropriate KEY: 1-01 IAC - KEY 12 - IRF EDR73 1-02 IAC - KEY 13 - IRF EDR74 X-01 IAC - KEY 14 - IRF IAR07</p>		
	RO/BOP	[1.D] ESTABLISH Instrument Air and Nitrogen to Containment [Step 6].
		<ul style="list-style-type: none"> • ESTABLISH instrument air. <ul style="list-style-type: none"> • VERIFY air compressor - RUNNING. • OPEN 1-HS-3487, Containment Instrument Air Isolation Valve. • ESTABLISH Nitrogen: <ul style="list-style-type: none"> • VERIFY 1-HC-3943, ACCUM 1●4 VENT CTRL Valve – CLOSED. • OPEN 1/1-8880, SI/PORV ACCUM N₂ ISOL VLV.
	RO	STOP all but one CCP and PLACE in Standby [Step 7].
	US/RO	CHECK RCS Pressure – STABLE OR INCREASING [Step 8].

NRC EXAM

Examiner Note: The following two steps are performed per EOS-1.1A, Attachment 1.J.

	RO	[1.J] ISOLATE CCP Injection Line Flow Path [Step 9]:
		<ul style="list-style-type: none"> • VERIFY CCP – SUCTION ALIGNED TO RWST [Step 9a].
		<ul style="list-style-type: none"> • OPEN 1/1-8110 and 1/1-8111, CCP Miniflow Valves [Step 9b].
		<ul style="list-style-type: none"> • CLOSE 1/1-8801A and 1/1-8801B, CCP Injection Line Isolation Valves [Step 9c].
	RO	[1.J] ESTABLISH Charging Flow Path [Step 10]:
		<ul style="list-style-type: none"> • OPEN 1/1-8105 and 1/1-8106, Charging Line Isolation Valves.
		<ul style="list-style-type: none"> • ADJUST Charging Flow Control Valve to establish Charging flow.
		<ul style="list-style-type: none"> • ADJUST RCP seal flow to maintain between 6 GPM and 13 GPM.
		<ul style="list-style-type: none"> • CLOSE 1/1-8511A and 1/1-8511B, CCP Alternate Miniflow Isolation Valves.
	RO	CONTROL Charging Flow to Maintain Pressurizer Level [Step 11].
	US	CHECK If SI Pumps Should Be Stopped [Step 12]:
	BOP	<ul style="list-style-type: none"> • CHECK RCS Pressure - STABLE OR INCREASING.
		<ul style="list-style-type: none"> • CHECK RCS Pressure – GREATER THAN 1700 PSIG.
		<ul style="list-style-type: none"> • STOP SI Pumps and place in standby.
	US	CHECK If RHR Pumps Should Be Stopped [Step 13]:
	BOP	<ul style="list-style-type: none"> • RHR Pumps – ANY RUNNING WITH SUCTION ALIGNED TO RWST.
		<ul style="list-style-type: none"> • STOP RHR Pumps and place in standby.
		<ul style="list-style-type: none"> • RESET RHR auto switchover.
	US	VERIFY ECCS Flow Not Required [Step 14]:
		<ul style="list-style-type: none"> • RCS Subcooling – GREATER THAN 55°F.
		<ul style="list-style-type: none"> • Pressurizer Level – GREATER THAN 34%.

NRC EXAM

	US	CHECK If Letdown Can Be Established [Step 15]:
		<ul style="list-style-type: none"> • Pressurizer Level – GREATER THAN 50% [Step 15a].
	RO	[1C] ESTABLISH Letdown [Step 15b]:
		<ul style="list-style-type: none"> • Make Plant Announcement.
		<ul style="list-style-type: none"> • Ensure Letdown Orifice Isolation Valves Closed.
		<ul style="list-style-type: none"> • Ensure 1-ALB-3B Window 1.16 SEAL WTR HX CCW RET FLO LO – DARK.
		<ul style="list-style-type: none"> • Open Letdown Containment Isolation valves: <ul style="list-style-type: none"> • 1/1-8152 • 1/1-8160
		<ul style="list-style-type: none"> • Open letdown isolation valves: <ul style="list-style-type: none"> • 1/1-LCV-459 • 1/1-LCV-460
		<ul style="list-style-type: none"> • Place Letdown Pressure Control in Manual and 50% demand.
		<ul style="list-style-type: none"> • Place Letdown Temperature Control in Manual and 50% demand.
		<ul style="list-style-type: none"> • Establish Charging Flow through Regenerative Heat Exchanger and Maintain Seal Flow to RCPs between 6 gpm and 13 gpm.
		<ul style="list-style-type: none"> • Open Desired Orifice Isolation Valves.
		<ul style="list-style-type: none"> • Adjust Letdown Pressure Control to Obtain 310 psig and Place in Auto.
		<ul style="list-style-type: none"> • Adjust Letdown Temperature Control to Obtain 95°F and Place in Auto.
		<ul style="list-style-type: none"> • Ensure 1/1-LCV-112A, VCT LVL CTRL VLV in Auto.

When EOS-1.1A, Safety Injection Termination Attachment 1.J is complete or at Lead Examiner's discretion, terminate the scenario.

Lead Evaluator Record End Time: _____

NRC EXAM

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:
		<ul style="list-style-type: none">• VERIFY SSW Pumps – RUNNING.• VERIFY EDG Cooler SSW return flow.
	BOP	VERIFY Safety Injection Pumps – RUNNING.
	BOP	VERIFY Containment Isolation Phase A – APPROPRIATE MLB LIGHT INDICATION (RED WINDOWS).
	BOP	VERIFY Containment Ventilation Isolation – APPROPRIATE MLB LIGHT INDICATION (GREEN WINDOWS).
	BOP	VERIFY CCW Pumps – RUNNING.
	BOP	VERIFY RHR Pumps – RUNNING.
	BOP	VERIFY Proper CVCS Alignment:
		<ul style="list-style-type: none">• VERIFY CCPs – RUNNING.• VERIFY Letdown Relief Valve Isolation:<ul style="list-style-type: none">• Letdown Orifice Isolation Valves – CLOSED.• Letdown Isolation Valves 1/1-LCV-459 & 1/1-LCV-460 – CLOSED.

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	BOP	VERIFY ECCS flow:		
		<ul style="list-style-type: none"> • CCP SI flow indicator – CHECK FOR FLOW. 		
		<ul style="list-style-type: none"> • RCS pressure – LESS THAN 1700 PSIG. 		
		<ul style="list-style-type: none"> • SIP discharge flow indicator – CHECK FOR FLOW. 		
		<ul style="list-style-type: none"> • RCS pressure – GREATER THAN 325 PSIG. 		
	BOP	VERIFY Feedwater Isolation Complete:		
		<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 both Diesel Generators – RUNNING.		
	BOP	VERIFY Monitor Lights for SI Load Shedding on 1-MLB-9 and 1-MLB10 – LIT.		
<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.		
<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>				
<p>NOTE: When the SI sequencer has timed out, the Reactor Makeup Water Pump with its handswitch in Auto will restart.</p>				
	BOP	VERIFY Components on Table 1 are Properly Aligned.		
		<u>Location</u>	<u>Equipment</u>	<u>Description</u>
		CB-03	X-HS-5534	H2 PRG SPLY FN 4
		CB-03	X-HS-5532	H2 PRG SPLY FN 3
		CB-04	1/1-8716A	RHRP 1 XTIE VLV
		CB-04	1/1-8716B	RHRP 2 XTIE VLV
				<u>Condition</u>
				STOPPED
				STOPPED
				OPEN
				OPEN

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	CB-06	1/1-8153	XS LTDN ISOL VLV	CLOSED/H.S. IN CLOSED
	CB-06	1/1-8154	XS LTDN ISOL VLV	CLOSED/H.S. IN CLOSED
	CB-07	1/1-RTBAL	RX TRIP BKR	OPEN
	CB-07	1/1-RTBBL	RX TRIP BKR	OPEN
	CB-07	1/1-BBAL	RX TRIP BYP BKR	OPEN/DEENERGIZED
	CB-07	1/1-BBBL	RX TRIP BYP BKR	OPEN/DEENERGIZED
	CB-08	1-HS-2397A	SG 1 BLDN HELB ISOL VLV	CLOSED
	CB-08	1-HS-2398A	SG 2 BLDN HELB ISOL VLV	CLOSED
	CB-08	1-HS-2399A	SG 3 BLDN HELB ISOL VLV	CLOSED
	CB-08	1-HS-2400A	SG 4 BLDN HELB ISOL VLV	CLOSED
	CB-08	1-HS-2111C	FWPT A TRIP	TRIPPED
	CB-08	1-HS-2112C	FWPT B TRIP	TRIPPED
	CB-09	1-HS-2490	CNDS XFER PUMP	STOPPED (MCC DEENERGIZED ON SI)
	CV-01	X-HS-6181	PRI PLT SPLY FN 17 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6188	PRI PLT SPLY FN 18 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6195	PRI PLT SPLY FN 19 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6202	PRI PLT SPLY FN 20 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6209	PRI PLT SPLY FN 21 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6216	PRI PLT SPLY FN 22 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6223	PRI PLT SPLY FN 23 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-6230	PRI PLT SPLY FN 24 & INTK DMPR	STOPPED/DEENERGIZED
	CV-01	X-HS-3631	UPS & DISTR RM A/C FN 1 & BSTR FN 42	STARTED
	CV-01	X-HS-3632	UPS & DISTR RM A/C FN 2 & BSTR FN 43	STARTED
	CV-01	1-HS-5600	ELEC AREA EXH FN 1	STOPPED/DEENERGIZED
	CV-01	1-HS-5601	ELEC AREA EXH FN 2	STOPPED/DEENERGIZED
	CV-01	1-HS-5602	MS & FW PIPE AREA EXH FN 3 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5603	MS & FW PIPE AREA EXH FN 4 & EXH DMPR	STOPPED/DEENERGIZED
	CV-01	1-HS-5618	MS & FW PIPE AREA SPLY FN 17	STOPPED/DEENERGIZED

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	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.

	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: <ul style="list-style-type: none"> • Attachment 2 instructions complete, and • Unit 2 notified of Common Equipment Monitoring AND 1-hour limit for CR HVAC realignment with actual SI conditions, • IMPLEMENT FRGs as required. 		
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EOP-0.0A, Attachment 2 steps are now complete.

NRC EXAM

;2023 NRC Simulator Scenario 3

;Revision: 01/18/23

;100%

;MSL Break IRC

;Event 1 CEV A Trip with Air Inleakage, CEV 3 fails to start

;When CEV 3 is started vac leak lowers to 8

IMF FW16 f:16 k:1

IMF FW17A f:1 k:1

IOR DIFWHS2958 f:0

{DIFWHS2958.Value=2} MOR DIFWHS2958 f:2

{DIFWHS2958.Value=2} MMF FW16 f:8

;Remove Air Inleakage

{Key[11]!=0} DMF FW16

;Event 2 PRZR Level Channel 459 Fails Low

IMF RX05A f:0 k:2

;Event 3 PR Channel NI-44 Fails High

IMF NI06E f:200 k:3

;Event 4 Heater Drain Pump 2 Trip, Turbine Auto Runback Failure

IMF FW14B f:1 k:4

IMF TC09I f:1

;Event 5 SG 1-03 Fault IRC, 0.4 sq. ft.

IMF MS01C f:0.4 k:5

;Reset IAC 1-01

IRF EDR73 f:2 k:12

;Reset 1-02 IAC

IRF EDR74 f:2 k:13

;Reset X-01 IAC

IRF IAR07 f:2 k:14

;Event 6 Main Turbine Automatic and Manual Trip Failure

;Pushbutton will not trip

IMF TC07C f:1

;Event 7 1-FK-2454A MD AFWP 2 SG 3 FLO CTRL Fails in AUTO

{LOFWFK2454A_1.Value=1} IOR DIFWFK2454A_1 f:1

;Event 8 SSPS Train A and Train B Master Relay K 504 Failure

;MSIVs fail to auto close

IMF SS02A1 f:1

IMF SS02A2 f:1

UNIT SUPERVISOR RELIEF CHECKLIST

UNIT: 1
OFF-GOING US: Joe Unit Supervisor SHIFT: Nights DATE: Today
ON-COMING US: _____ SHIFT: _____

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: None

2.0 PLANT AND EQUIPMENT STATUS:

2.1 Technical Specification Related Equipment Summary: None

2.2 Non-Technical Specification Equipment Summary: None

Form 3.4-1 Events and Evolutions Checklist

Facility: CPNPP		Date of Exam: 06/12/2023												Operating Test No.: 1			
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M*		
		1			2			3			4				R O	I	U
		P O S I T I O N			P O S I T I O N			P O S I T I O N			P O S I T I O N						
		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	S R O	A T C	B O P				
I3	RO <input type="checkbox"/>	RX	0			0				1,4				2	1	1	0
	SRO-I <input type="checkbox"/>	NOR	0			0				0				0	1	1	1
	<input checked="" type="checkbox"/>	I/C	All 7			1,2,3,4, 5,7,8,9				2,3,8				18	4	4	2
	SRO-U <input type="checkbox"/>	MAJ	4			6				5				3	2	2	1
	<input type="checkbox"/>	Man. Ctrl	0			0				2,3,8				3	1	1	0
		TS	1,3			3,4				0				4	0	2	2
I4	RO <input type="checkbox"/>	RX	0			0				1				1	1	1	0
	SRO-I <input type="checkbox"/>	NOR	0			0				0				0	1	1	1
	<input checked="" type="checkbox"/>	I/C	All 7			1,2,3,4, 5,7,8,9				1,3 4,6,7				20	4	4	2
	SRO-U <input type="checkbox"/>	MAJ	4			6				5				3	2	2	1
	<input type="checkbox"/>	Man. Ctrl	0			0				1,4,6				3	1	1	0
		TS	1,3			3,4				0				4	0	2	2
U1	RO <input type="checkbox"/>	RX				0				1,4				2	1	1	0
	SRO-I <input type="checkbox"/>	NOR				0				0				0	1	1	1
	<input type="checkbox"/>	I/C				1,2,3,4, 5,7,8,9				1,2,3, 4,6,7,8				15	4	4	2
	SRO-U <input type="checkbox"/>	MAJ				6				5				2	2	2	1
	<input checked="" type="checkbox"/>	Man. Ctrl				0				0				0	1	1	0
		TS				3,4				2,3,4				5	0	2	2
I2	RO <input type="checkbox"/>	RX	0			0				1,4				2	1	1	0
	SRO-I <input type="checkbox"/>	NOR	0			0				0				0	1	1	1
	<input checked="" type="checkbox"/>	I/C	All 7			2,4,7,9				1,2,3, 4,6,7,8				18	4	4	2
	SRO-U <input type="checkbox"/>	MAJ	4			6				5				3	2	2	1
	<input type="checkbox"/>	Man. Ctrl	0			2,9				0				2	1	1	0
		TS	1,3			0				2,3,4				5	0	2	2

Form 3.4-1 Events and Evolutions Checklist

Facility: CPNPP		Date of Exam: 06/12/2023										Operating Test No.: 1					
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M*		
		1			2			3			4				R O	I	U
		P O S I T I O N			P O S I T I O N			P O S I T I O N			P O S I T I O N						
		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	S R O	A T C	B O P				
I1	RO <input type="checkbox"/>	RX	0				0	1,4						2	1	1	0
	SRO-I <input checked="" type="checkbox"/>	NOR	0				2	0						1	1	1	1
	SRO-U <input type="checkbox"/>	I/C	All 8				3,5,8	1,2,3,4,6,7,8						18	4	4	2
		MAJ	4				6	5						3	2	2	1
		Man. Ctrl	0				3,8	2,3,8						5	1	1	0
		TS	1,3				0	2,3,4						5	0	2	2
R2	RO <input checked="" type="checkbox"/>	RX		0		0								0	1	1	0
	SRO-I <input type="checkbox"/>	NOR		0		0								0	1	1	1
	SRO-U <input type="checkbox"/>	I/C		3,4,5,8		2,4,7,9								8	4	4	2
		MAJ		4		6								2	2	2	1
		Man. Ctrl		6		2,9								3	1	1	0
		TS		0		0								0	0	2	2
R1	RO <input checked="" type="checkbox"/>	RX		0					1					1	1	1	0
	SRO-I <input type="checkbox"/>	NOR		0					0					0	1	1	1
	SRO-U <input type="checkbox"/>	I/C		1,2,4,5,7					1,3,4,6,7					10	4	4	2
		MAJ		4					5					2	2	2	1
		Man. Ctrl		1,2,7					1,4,6					6	1	1	0
		TS		0					0					0	0	2	2
R6	RO <input checked="" type="checkbox"/>	RX		0			0							0	1	1	0
	SRO-I <input type="checkbox"/>	NOR		0			2							1	1	1	1
	SRO-U <input type="checkbox"/>	I/C		1,2,4,5,7			3,5,8							8	4	4	2
		MAJ		4			6							2	2	2	1
		Man. Ctrl		1,2,7			3,8							5	1	1	0
		TS		0			0							0	0	2	2
R8	RO <input checked="" type="checkbox"/>	RX		0					1					1	1	1	0
	SRO-I <input type="checkbox"/>	NOR		0					0					0	1	1	1
	SRO-U <input type="checkbox"/>	I/C		1,2,4,5,7					1,3,4,6,7					10	4	4	2
		MAJ		4					5					2	2	2	1
		Man. Ctrl		1,2,7					1,4,6					6	1	1	0
		TS		0					0					0	0	2	2

Form 3.4-1 Events and Evolutions Checklist

Facility: CPNPP		Date of Exam: 06/12/2023										Operating Test No.: 1					
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M*		
		1			2			3			4				R O	I	U
		P O S I T I O N			P O S I T I O N			P O S I T I O N			P O S I T I O N						
		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	S R O	A T C	B O P				
R7	<input checked="" type="checkbox"/> RO	RX		0			0							0	1	1	0
	<input type="checkbox"/> SRO-I	NOR		0			2							1	1	1	1
	<input type="checkbox"/> SRO-U	I/C		1,2,4,5,7			3,5,8							8	4	4	2
	<input type="checkbox"/>	MAJ		4			6							2	2	2	1
	<input type="checkbox"/>	Man. Ctrl		1,2,7			3,8							5	1	1	0
	<input type="checkbox"/>	TS		0			0							0	0	2	2
R3	<input checked="" type="checkbox"/> RO	RX			0				1,4					2	1	1	0
	<input type="checkbox"/> SRO-I	NOR			0				0					1	1	1	1
	<input type="checkbox"/> SRO-U	I/C			3,4,5,6				2,3,8					12	4	4	2
	<input type="checkbox"/>	MAJ			4				5					3	2	2	1
	<input type="checkbox"/>	Man. Ctrl			6				2,3,8					6	1	1	0
	<input type="checkbox"/>	TS			0				0					0	0	2	2
R4	<input checked="" type="checkbox"/> RO	RX			0		0							0	1	1	0
	<input type="checkbox"/> SRO-I	NOR			0		0							0	1	1	1
	<input type="checkbox"/> SRO-U	I/C			3,4,5,6		2,4,7,9							8	4	4	2
	<input type="checkbox"/>	MAJ			4		6							2	2	2	1
	<input type="checkbox"/>	Man. Ctrl			6		2,9							3	1	1	0
	<input type="checkbox"/>	TS			0		0							0	0	2	2
R5	<input checked="" type="checkbox"/> RO	RX			0				1,4					2	1	1	0
	<input type="checkbox"/> SRO-I	NOR			0				0					0	1	1	1
	<input type="checkbox"/> SRO-U	I/C			3,4,5,6				2,3,8					7	4	4	2
	<input type="checkbox"/>	MAJ			4				5					2	2	2	1
	<input type="checkbox"/>	Man. Ctrl			6				2,3,8					4	1	1	0
	<input type="checkbox"/>	TS			0				0					0	0	2	2
	<input checked="" type="checkbox"/> RO	RX												1	1	0	
	<input type="checkbox"/> SRO-I	NOR												1	1	1	
	<input type="checkbox"/> SRO-U	I/C												4	4	2	
	<input type="checkbox"/>	MAJ												2	2	1	
	<input type="checkbox"/>	Man. Ctrl												1	1	0	
	<input type="checkbox"/>	TS												0	2	2	

Note for Adams file:

NRC authored exam therefore there is no review comments for the spare scenario and hence it is not included in the Adams package.