

Recommendation for 2023-301 CR/SIM 3 (Emergency Depress the Reactor Using Main Steam Line Drains)

Change step 3 of JPM CR/SIM 3 from a CRITICAL step to a NON-CRITICAL step and update remainder of JPM to reflect this change. After doing so, there will be three CRITICAL steps remaining in the JPM. Updated JPM is included in this package.

Reasoning:

Step 3 of the JPM corresponds to step 3.7.2 of 31EO-EOP-108-2, ALTERNATE RPV DEPRESSURIZATION.

3.7.2 IF vacuum of at least 10 in. Hg vacuum CANNOT be drawn on Main Condenser, **Monitor** → **LP Hoods**, 2N32-K4001A OR 2N32-K4001B) OR SPDS, THEN ensure open Main Condenser Vacuum Breaker Valves, AND start all available Turbine Building HVAC per 34SO-U41-001-2, Turbine Building Ventilation System.

This step provides equipment protection to the Main Condenser by breaking condenser vacuum and does not impact the operator's ability to lower reactor pressure with the Main Steam Line Drains. In addition, this step is redundant to the two rupture diaphragms on the turbine exhaust. See excerpt from the Hatch FSAR:

Should the control, bypass, or turbine stop valves fail to close on loss of condenser vacuum, two rupture diaphragms on each turbine exhaust to the condenser to protect the condenser and turbine exhaust hoods against overpressure. HNP-2-FSAR-10 10.4.1.2 Main Condenser System Description

The operator can still perform an Alternate RPV Depressurization using the Main Steam Line Drains without breaking condenser vacuum; therefore, this step should be categorized as NON-CRITICAL.

Actions:

CR# 11030719 was written on 12/11/23 to create two separate steps out of 3.7.2. First to ENSURE Turbine Building HVAC in service and second to ENSURE Main Condenser Vacuum Breaker Valves are OPEN.

In the initial conditions the applicants were told that Turbine Building HVAC was service. The applicants might have assumed that since Turbine Building HVAC was already in service that the Main Condenser Vacuum Breaker Valves had already been opened since these actions are contained in the same step.

Southern Nuclear Company

Operations Training Job Performance Measure (JPM)

FINAL CR/SIM 3 (ALL)

Title: EMERGENCY DEPRESS THE REACTOR USING MAIN STEAM LINE DRAINS		Version: 0.1
Author: Anthony Ball	Media Number: 2023-301 CR-SIM 3	Time: 10.0 Minutes
Line Technical Review By (N/A for minor revisions) N/A		Date: N/A
Reviewed by Instructional Technologist or designee (N/A for minor revisions) N/A		Date: N/A
Approved By (Training Program Manager or Lead Instructor) Charlie Edmund		Date: 10/30/2023



UNIT 1 () UNIT 2 (X)

TASK TITLE: **EMERGENCY DEPRESS THE REACTOR USING
MAIN STEAM LINE DRAINS**

JPM NUMBER: **2023-301 CR-SIM 3**

TASK STANDARD: The task shall be completed when the Main Steam Line Drains
have been manually lined up to emergency depress the Reactor
per 31EO-EOP-108-2 with an increase in the rate of RPV
pressure reduction.

TASK NUMBER: 014.016

OBJECTIVE NUMBER: 014.016.A

K/A CATALOG NUMBER: 295025EA1.01

K/A CATALOG JTA IMPORTANCE RATING:

3.1

OPERATOR APPLICABILITY: Nuclear Plant Operator (NPO)

GENERAL REFERENCES:	Unit 2
	31EO-EOP-108-2 (Ver 5.15)

REQUIRED MATERIALS:	Unit 2
	31EO-EOP-108-2 (Ver 5.15)

APPROXIMATE COMPLETION TIME: 10.0 Minutes

SIMULATOR SETUP: REFER TO SIMULATOR SETUP SHEET ON THE FOLLOWING
PAGE

SIMULATOR A SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to one of the following:
 - **IC #113 (100%)**, and then go to step 2
 - **SNAP 613** and then go to step 4 and leave in **FREEZE**.
2. **INSERT** the following or **RUN SCENARIO FILE 2023 CR-SIM 1** (if available)
3. **RESET** the Simulator to **IC #113 (100%)** or **SNAP 613** and leave in **FREEZE**.
4. **TAKE** the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
 - A. Perform RC-1, RC-2, and TC-1 and restore RWL to the normal band.
 - B. Place the HPCI Aux Oil Pump in Pull-to-Lock.
 - C. Close the MSIVs.
 - D. Lower Torus Water level to approximately 115 inches using svoT48140, then **MODIFY** to **SIMULATOR VALUE OVERRIDES (SVO)** value.
 - E. Trip BOTH Circ Water Pumps.
 - F. **BREAK** Condenser Vacuum by opening 2N22-F002A & 2B until Condenser Vacuum is <10 in. Hg. then **RECLOSE** 2N22-F002A & 2B.
 - G. RESET Group 1 Isolations on P601 & P602 Panels.
 - H. Ensure Turbine Building Ventilation is in service.
 - I. Acknowledge annunciators.
5. **RUN SCENARIO FILE** and **EVENT TRIGGER 2023-CR-SIM 3** or perform the following steps 4-7.
6. **INSERT** the following **MALFUNCTIONS**:

MALF #	TITLE	FINAL VALUE	RAMP RATE	DELAY
mfB21_129A	Main Steam Relief Valve A Fails Stuck	1		00000
mfB21_129B	Main Steam Relief Valve B Fails Stuck	1		00000
mfB21_129C	Main Steam Relief Valve C Fails Stuck	1		00000
mfB21_129D	Main Steam Relief Valve D Fails Stuck	1		00000
mfB21_129E	Main Steam Relief Valve E Fails Stuck	1		00000
mfB21_129F	Main Steam Relief Valve F Fails Stuck	1		00000
mfB21_129G	Main Steam Relief Valve G Fails Stuck	1		00000
mfB21_129H	Main Steam Relief Valve H Fails Stuck	1		00000

mfB21_129K	Main Steam Relief Valve K Fails Stuck	1		00000
mfB21_129M	Main Steam Relief Valve M Fails Stuck	1		00000

7. **INSERT** the following **SIMULATOR VALUE OVERRIDES (SVO)**:

Activator	SVO #	DESCRIPTION	FINAL VALUE	RAMP RATE	DELAY
ST-0	svoT48140	Water Level in Torus	75	1	0000

8. **INSERT** the following **REMOTE FUNCTIONS**:

Activator	REM #	DESCRIPTION	STATUS
ST-0	rfN61_134	Condenser Vacuum Bypass	BYPASS
ST-0	rfC71279	Group 1 Isolation Oride Jumpers	ORIDE

9. **INSERT** the following **ORS OVERRIDES**:

Activator	TAG #	S/M/L	DESCRIPTION	FINAL VALUE	RAMP RATE	DELAY
ST-0	diB21-F022A	S	Main Steam Line Isol Vlv A	CLOSE (0)		0000
ST-0	diB21-F022B	S	Main Steam Line Isol Vlv B	CLOSE (0)		0000
ST-0	diB21-F022C	S	Main Steam Line Isol Vlv C	CLOSE (0)		0000
ST-0	diB21-F022D	S	Main Steam Line Isol Vlv D	CLOSE (0)		0000
ST-0	diB21-F028A	S	Main Steam Line Isol Vlv A	CLOSE (0)		0000
ST-0	diB21-F028B	S	Main Steam Line Isol Vlv B	CLOSE (0)		0000
ST-0	diB21-F028C	S	Main Steam Line Isol Vlv C	CLOSE (0)		0000
ST-0	diB21-F028D	S	Main Steam Line Isol Vlv D	CLOSE (0)		0000

10. **PLACE** the Simulator in **FREEZE** until the INITIATING CUE is given.

11. **ESTIMATED Simulator A SETUP TIME: 5 Minutes**

SIMULATOR B SETUP

Simulator Initial Conditions:

1. **RESET** the Simulator to **IC #113 (100%)** or **SNAP 310** and leave in **FREEZE**.
2. **TAKE** the Simulator **OUT OF FREEZE** and **PERFORM** the following **MANIPULATIONS**:
 - A. Perform RC-1, RC-2, and TC-1 and restore RWL to the normal band.
 - B. Place the HPCI Aux Oil Pump in Pull-to-Lock.
 - C. Close the MSIVs.
 - D. **LOWER** Torus Water level to approximately 115 inches using svt48140, then **MODIFY** to **SIMULATOR VALUE OVERRIDES (SVO)** value.
 - E. Trip BOTH Circ Water Pumps.
 - F. **BREAK** Condenser Vacuum by opening 2N22-F002A & 2B until Condenser Vacuum is <10 in. Hg. then **RECLOSE** 2N22-F002A & 2B.
 - G. Place Main Condenser Low Vacuum Trip Bypass switches on panel 2H11-P609 & P611 in BYPASS.
 - H. RESET Group 1 Isolations on P601 & P602 Panels.
 - I. Ensure Turbine Building Ventilation is in service.
 - J. Acknowledge annunciators.
3. **RUN SCENARIO FILE** and **EVENT TRIGGER CR_SIM 3 Init Conditions** or perform the following steps 4-7.
4. **INSERT** the following **MALFUNCTIONS**:

MALF #	TITLE	FINAL VALUE	H/M/S
mfB21_129A	Main Steam Relief Valve A Fails Stuck	1	0/0/0
mfB21_129B	Main Steam Relief Valve B Fails Stuck	1	0/0/0
mfB21_129C	Main Steam Relief Valve C Fails Stuck	1	0/0/0
mfB21_129D	Main Steam Relief Valve D Fails Stuck	1	0/0/0
mfB21_129E	Main Steam Relief Valve E Fails Stuck	1	0/0/0
mfB21_129F	Main Steam Relief Valve F Fails Stuck	1	0/0/0
mfB21_129G	Main Steam Relief Valve G Fails Stuck	1	0/0/0
mfB21_129H	Main Steam Relief Valve H Fails Stuck	1	0/0/0
mfB21_129K	Main Steam Relief Valve K Fails Stuck	1	0/0/0
mfB21_129M	Main Steam Relief Valve M Fails Stuck	1	0/0/0

5. **INSERT** the following **SIMULATOR VALUE OVERRIDES (SVO)**:

Activator	SVO #	DESCRIPTION	FINAL VALUE	H/M/S
ST-0	svoT48140	Water Level in Torus	75	0/40/0
ST-0	svoB21_223	Main Steam Relief Valve L Position	.31	0/0/0

6. **INSERT** the following **REMOTE FUNCTIONS**:

REM #	DESCRIPTION	FINAL VALUE	H/M/S
rfC71279	Group 1 Isolation Oride Jumpers	ORIDE	0/0/0

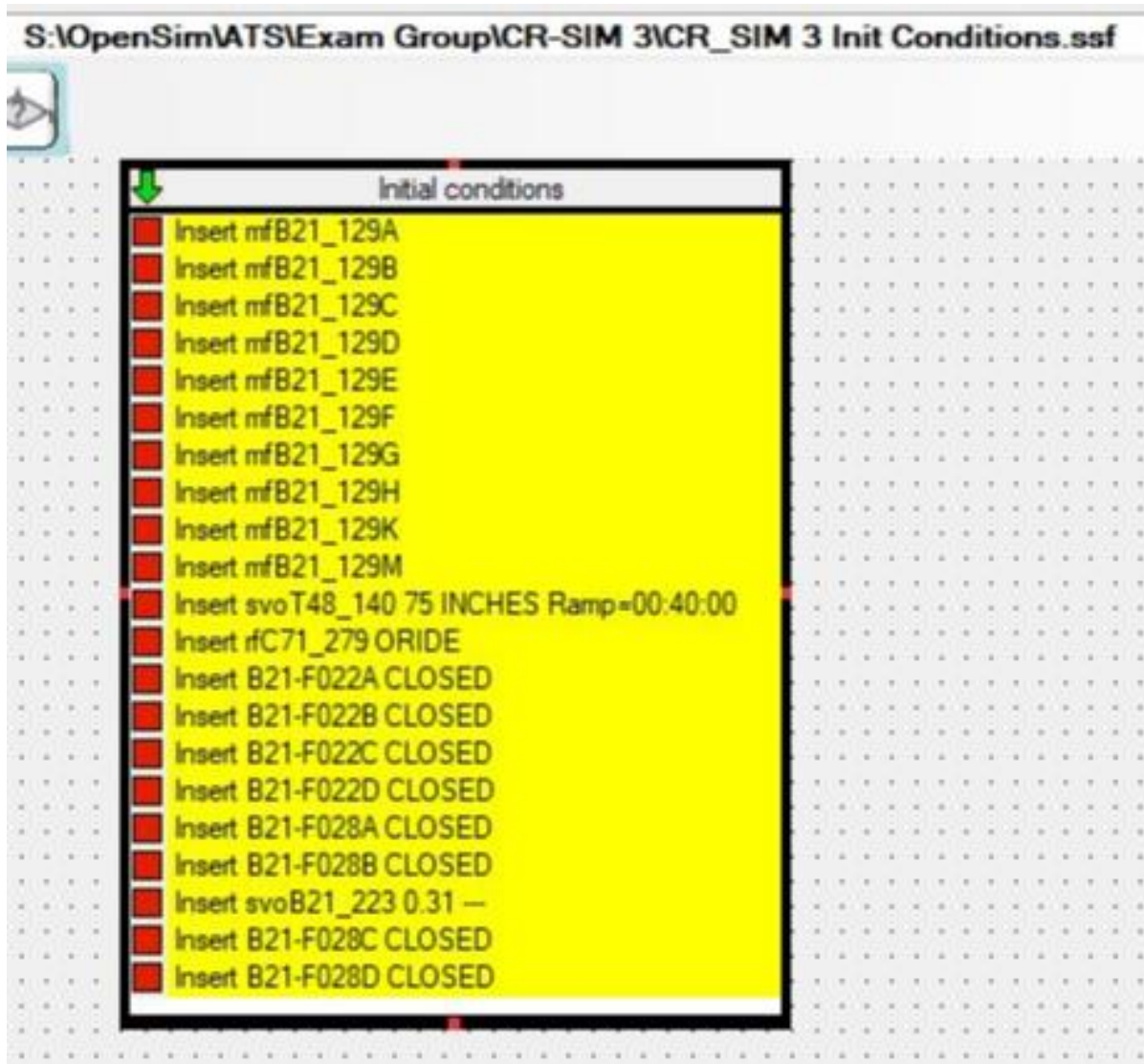
7. **INSERT** the following **ORS OVERRIDES**:

Activator	TAG #	S/M/L	DESCRIPTION	FINAL VALUE	H/M/S
ST-0	diB21-F022A	S	Main Steam Line Isol Vlv A	CLOSE	0/0/0
ST-0	diB21-F022B	S	Main Steam Line Isol Vlv B	CLOSE	0/0/0
ST-0	diB21-F022C	S	Main Steam Line Isol Vlv C	CLOSE	0/0/0
ST-0	diB21-F022D	S	Main Steam Line Isol Vlv D	CLOSE	0/0/0
ST-0	diB21-F028A	S	Main Steam Line Isol Vlv A	CLOSE	0/0/0
ST-0	diB21-F028B	S	Main Steam Line Isol Vlv B	CLOSE	0/0/0
ST-0	diB21-F028C	S	Main Steam Line Isol Vlv C	CLOSE	0/0/0
ST-0	diB21-F028D	S	Main Steam Line Isol Vlv D	CLOSE	0/0/0

8. **PLACE** the Simulator in **FREEZE** until the INITIATING CUE is given.

9. **ESTIMATED Simulator B SETUP TIME: 5 Minutes**

Simulator B Scenario File:



EVALUATOR COPY

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

1. An unisolable leak developed in the Torus.
2. Attempts to raise Torus water level have been unsuccessful.
3. 31EO-EOP-012-2, PC flowchart, is in progress.
4. The Reactor has been shutdown.
5. The Shift Supervisor has determined that the plant cannot be maintained in the SAFE Region of the Heat Capacity Temperature Limit and decided to Emergency Depress the Reactor.
6. 31EO-EOP-015-2, CP-1 flowchart, is in progress.
7. An attempt was made to Emergency Depress with the SRVs, but they have failed to open.
8. The Main Condenser is NOT available.
9. The Main Steam Line Drain isolation signals are BYPASSED.
10. Turbine Building Ventilation is in service.

INITIATING CUES:

Emergency depress the Reactor with the Main Steam Line Drains IAW 31EO-EOP-108-2, Alternate RPV Depressurization.

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
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For **INITIAL** Operator Programs:
For OJT/OJE; ALL PROCEDURE STEPS must be completed for Satisfactory Performance.
For License Examinations; ALL CRITICAL STEPS must be completed for Satisfactory Performance.

	IF	THEN
PASS	<input type="checkbox"/> Human performance tools, safety, PPE met (1), AND <input type="checkbox"/> For initial trg all steps completed correctly OR <input type="checkbox"/> For continuing trg, critical steps (if used) completed correctly	<input type="checkbox"/> Mark the JPM as a PASS
FAIL	<input type="checkbox"/> Above standards not met	<input type="checkbox"/> Mark the JPM as a FAIL

(1) The standard for human performance tools, safety, PPE, and other pertinent expectations is considered met provided any deviations are minor and have little or no actual or potential consequence. Errors may be self-corrected provided the action would not have resulted in significant actual or potential consequences.

START TIME: _____

NOTE: Provide the operator with a copy of 31EO-EOP-108-2.

PROMPT: **IF** addressed, **INFORM** the operator: “The Main Condenser is NOT available”.

1.	Operator has DETERMINED the correct procedure section to use.	Operator has DETERMINED the correct procedure section to use is Section 3.7 of 31EO-EOP-108-2 starting at step 3.7.1.	
2.	Align the Main Condenser for operation. (Step 3.7.1)	Operator determines the Main Condenser is NOT available.	

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
3.	IF vacuum of at least 10 in. Hg vacuum can NOT be drawn on the Main Condenser: THEN ensure OPEN the Main Condenser Vacuum Breakers AND START all available Turbine Building Ventilation. (Step 3.7.2)	At panel 2H11-P650, the operator OPENS 2N22-F002A & 2B, Main Condenser Vacuum Breakers, red lights ILLUMINATED, green lights EXTINGUISHED AND The operator determines Turbine Building ventilation is in service.	
4.	Bypass the Main Steam Line Drain Valve isolation signals. (Step 3.7.3)	The operator determines from the Initial Conditions that the Main Steam Line Drain Valve isolation signals are BYPASSED.	
5.	Ensure the following valves are CLOSED: 2B21-F038 MSL Drain ***** 2B21-F021 Drain (Step 3.7.4)	At panels 2H11-P601 & P602, the operator ensures CLOSED, green lights ILLUMINATED, red lights EXTINGUISHED: 2B21-F038 MSL Drain ***** 2B21-F021 Drain	
6.	Ensure the following valves are CLOSED: ***** 2B21-F020 Drain ***** (Step 3.7.4)	At panels 2H11-P602, the operator CLOSES, green light ILLUMINATED, red light EXTINGUISHED: ***** 2B21-F020 Drain *****	
7.	Ensure the following valves are OPEN: 2B21-F016 MSL Drain *** (Step 3.7.5)	At panel 2H11-P602, the operator OPENS: 2B21-F016, MSL Drain, red light ILLUMINATED, green light EXTINGUISHED.	

(** Indicates critical step)

STEP #	PERFORMANCE STEP	STANDARD	SAT/UNSAT (COMMENTS)
8.	Ensure the following valves are OPEN: *** 2B21-F019 MSL Drain (Step 3.7.5)	At panel 2H11-P601, the operator OPENS: 2B21-F019, MSL Drain, red light ILLUMINATED, green light EXTINGUISHED.	
**9.	OPEN 2B21-F021 to reduce RPV Pressure. (Step 3.7.6)	At panel 2H11-P602, the operator OPENS: 2B21-F021, Drain Valve, red light ILLUMINATED, green light EXTINGUISHED	

PROMPT: **IF** addressed, **INFORM** the operator: “When appropriate, another operator will perform the System Restoration.”

END
TIME: _____

NOTE: The terminating cue shall be given to the operator when:

- When the operator completes step 9.
- With NO reasonable progress, the operator exceeds double the allotted time.
- Operator states the task is complete.

TERMINATING CUE: We will stop here.

EVALUATOR – **PICK UP** the Initiating Cue sheet.

(** Indicates critical step)

Summary of JPM Attributes

JPM 2023-301 CR-SIM 3:

SUMMARY OF JPM QUANTITATIVE ATTRIBUTES

<u>CATEGORY</u>	<u>Minimum NRC Attributes</u>	<u>JPM CONTENT</u>
<u>Total Critical Steps</u>	At least 2	3
Step 7 Open 2B21-F016	Aligns the inboard side flow path around the MSIVs to reduce RPV pressure.	
Step 8 Open 2B21-F019	Aligns the outboard side flow path around the MSIVs to reduce RPV pressure.	
Step 9 Open 2B21-F021	Aligns a flow path to the Main Condenser to reduce RPV pressure	
<u>Number of JPM Steps</u>	<30	9
<u>Time to Perform JPM</u>	<45 min	10 min
<u>Normal / Faulted / Alternate Path</u>		
Normal Path		
<u>Setting (administered)</u>		
Simulator		
<u>Is LOD "1" or "5"</u>	NO	NO

UNIT 2

READ TO THE OPERATOR

INITIAL CONDITIONS:

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2. Attempts to raise Torus water level have been unsuccessful.
3. 31EO-EOP-012-2, PC flowchart, is in progress.
4. The Reactor has been shutdown.
5. The Shift Supervisor has determined that the plant cannot be maintained in the SAFE Region of the Heat Capacity Temperature Limit and decided to Emergency Depress the Reactor.
6. 31EO-EOP-015-2, CP-1 flowchart, is in progress.
7. An attempt was made to Emergency Depress with the SRVs, but they have failed to open.
8. The Main Condenser is NOT available.
9. The Main Steam Line Drain isolation signals are BYPASSED.
10. Turbine Building Ventilation is in service.

INITIATING CUES:

Emergency depress the Reactor with the Main Steam Line Drains IAW 31EO-EOP-108-2, Alternate RPV Depressurization.