

SIMULATOR SCENARIO #1

Facility: Millstone Unit 2

Scenario No.: 1

Op-Test No.: ES16LI1

Examiners: _____ Operators: _____ SRO
 _____ ATC
 _____ BOP

Initial Conditions: 100% Power IC-139, No Equipment OOS, Ch-Y PZR Level in service.

Turnover: 100% Power, steady state, no equipment OOS. 24E is aligned to 24C.

Critical Tasks:

1. SPTA-5; Manually shutdown the reactor
2. Fully implement Once Thru Cooling prior to either SG reaching 32"

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (BOP/S)	Start "B" TBCCW Pump, Secure "A" TBCCW Pmp.
2	03A1A5S2 C04L-B11B	C (ATC/S)	Trip "A" CEDM Cool Fan.
3	RP10A	I (ATC/S)	Ch. "A" PZR Pressure fails low (TS)
4	RX04A	I (ATC/S)	Ch-X PZR Level (LT110X) (non-selected) fails to 0% level. (TS)
5	FW01	C (BOP/S)	Main Condenser Vacuum leak.
6	N/A	R (All)	Downpower due to vacuum leak.
7	RC11A, RP04A-D, RP27B	M (All)	"A" RCP seizes and trips, TCBs fail to open (ATWS), manual Rx trip pushbuttons fail, manually trip by opening MG set breakers.
8	FW33, ES01A, ES01B	C (BOP/S)	Rapid loss of condenser vacuum and failure of AFAS to trigger.
9	FW36A, FW36B	C (BOP/S) TS (S)	AFW pipe rupture at FW-44, inops both headers, results in LOAF.

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual
1. Total malfunctions (5–8)	6
2. Malfunctions after EOP entry (1–2)	2
3. Abnormal events (2–4)	4
4. Major transients (1–2)	1
5. EOPs entered/requiring substantive actions (1–2)	1
6. EOP contingencies requiring substantive actions (0–2)	0
7. Critical tasks (2–3)	3

NRC 2016, Scenario 1 Summary:

The crew will take the shift with the unit at 100% power, steady state, with no equipment out of service (IC-30). TBCCW Pumps: “A” and “C” running, “B” in standby and ready to be started. The crew has been instructed to start the “B” TBCCW pump (Standby Equipment) and secure the “A” TBCCW pump.

Event 1: Upon taking the shift, the crew has been instructed to swap a running TBCCW with the Standby pump. The BOP will be directed to start the “B” TBCCW pump (Standby Equipment) and secure the “A” TBCCW pump, verifying no change in TBCCW flow. Once this is accomplished, Event 2 will be triggered.

Event 2: The “A” CEDM Cooling Fan will trip, triggering the CEDM Cooling Fan Trip annunciator. The crew will respond per ARP 2590C-082 and the ATC will be directed to start the standby (“B”) CEDM cooling fan. Once this is accomplished, Event 3 will be triggered.

Event 3: The “A” Safety Channel of Pressurizer Pressure will fail low as a Tech. Spec. only event. The US should address the applicable Tech. Specs. and ARP, which directs all systems affected by the transmitter failure be “bypassed”. Once the crew has bypassed Ch. “A” on RPS, ESAS and AFAS, Event 4 is triggered.

Event 4: The Non-Selected (Ch. “X”) pressurizer level detector (LT-110X) will fail to 0%, causing all pressurizer heaters to trip. The crew will respond per ARP 2590B-215, de-select the failed channel and reset all pressurizer heaters. Once the crew has restored normal RCS pressure control, Event 5 will be triggered.

Event 5: Main Condenser Vacuum will begin to degrade. The crew should enter AOP 2574 for Loss Of Condenser Vacuum, and take the applicable actions to increase condenser air removal capacity. Once this proves ineffective, the US will enter AOP 2575, Rapid Downpower, and commence a plant shutdown.

Event 6: The crew will commence a plant shutdown using AOP 2575, Rapid Downpower, in an attempt to stabilize condenser vacuum by lower the energy load on the main condenser. The crew will insert CEAs to start the power reduction and then continue the downpower by boric acid injection into the RCS. This will be accomplished by aligning charging pump suction directly to the RWST (instead of the VCT). When the power change evaluation is completed, Event 7 will be triggered.

Event 7: “A” RCP will seize and trip, but the TCBs will fail to open (ATWS). The crew should recognize the ATWS and immediately trip the reactor manually by pressing the four TCB manual trip buttons. These will also fail to open the TCBs, requiring the opening of the MG Set supply breakers. The crew should then verify all CEAs are inserting (reactor trip successful), the main turbine has tripped and commence Standard Post Trip Actions per EOP 2525.

Event 8: During the performance of SPTA, Main Condenser vacuum will degrade rapidly, causing the loss of Main Feedwater Pumps and Condenser Steam Dumps. This will require the use of the Auxiliary Feedwater System to feed the S/Gs. The AFAS will fail to automatically start AFW flow to the S/Gs, requiring manual actuation of AFW flow. Once Aux. Feedwater is manually aligned to feed both S/Gs, Event 9 is triggered.

Event 9: Shortly after the feed flow has been established to the S/Gs using Auxiliary Feedwater, a rupture will occur on both sides of 2-FW-44 (normally open x-tie between AFW headers), resulting in the loss of both Auxiliary Feedwater headers. Once STPA are completed, and the LOAF is diagnosed, the crew will transition to EOP 2537, Loss Of All Feed, and discuss using a Condensate Pump to feed the S/Gs. This will require a plant cooldown using the available SG inventory, to lower SG pressure below the shutoff head of the condensate pumps.

The scenario will end when the crew has recovered SG feed flow using a Condensate Pump, or at the Examiners discretion.

INPUT SUMMARY

Either INPUT or VERIFY the following functions:

ID Num	Description	Delay Time	Ramp Time	Event Time	Sev or Value	Final Value	Rel Order
MALFUNCTIONS							
RP04A-RP04D	Failure of all four Manual Trip Buttons			N/A			0
RP27B	Failure of ALL RPS trip functions			N/A			0
ES01A, ES01B	AFAS Failure, both Facilities			N/A			0
C04L-B11B	F-13A Trip Alarm			E-2		ON	2
RP10A	Ch. “A” PZR Pressure fails low			E-3	100%		3
RX04A	Ch. “X” PZR Level Cont. fails low			E-4	0%		4
FW01	Main Condenser Vacuum Loss			E-5	0.5”		5
FW01	Main Condenser Vacuum Loss			E-6	0.3”		6
RC11A	“A” RCP Seizes and trips			E-7			7
FW33	Rapid loss of Condenser Vacuum			E-30	100%		8
FW36A FW36B	Rupture Aux Feedwater, both headers			E-9	100%		9
REMOTE FUNCTIONS							
TPR02	“A” TBCCW Pump discharge valve			E-10	CLOSED		1
TPR02	“A” TBCCW Pump discharge valve			E-11	OPEN		1

OVERRIDES

03A1A5 S2	Trip the "A" CEDM Cooling Fan, F-13A						2

Op-Test No.: <u>ES16LI1</u> Scenario No.: <u>1</u> Event No.: <u>1</u>		
Event Description: Start the "B" TBCCW Pump, Secure the "A" TBCCW Pump		
Time	Position	Applicant's Actions or Behavior
Examiner Note: The crew has been instructed to brief the starting of the Standby ("B") TBCCW Pump and secure the "A" TBCCW pump prior to taking the watch. The following steps are from OP 2330B. OP procedure is marked up with "N/A" and Unit Supervisor signatures for applicable steps.		
	BOP/PEO	4.1.1 ESTABLISH communications between Operators at TBCCW pumps and Control Room.
<u>Simulator Operator:</u> Establish communications with the control room as the PEO on station at the TBCCW pumps. If asked, local conditions appear ready for starting the "B" TBCCW pump.		
	BOP/PEO	4.1.2 To start standby TBCCW Pump, PERFORM the following: a. PLACE selected "TBCCW PUMP" switch to "START" (C-06). b. CHECK the following for running pump: <ul style="list-style-type: none"> • No abnormal noise or vibration (local) • Normal motor amperage (C-06) • Maintains normal system pressure (C-06) • Normal system flow as indicated on FI-6272 (TBCCW HX area)
<u>Simulator Operator:</u> Report as the PEO on station, "B" TBCCW pump is running no abnormal noise.		
	BOP	4.1.3 IF desired to stop 'A' TBCCW Pump, PERFORM the following: a. CLOSE 2-TB-3A, "TBCCW PUMP 'A' DISCHARGE STOP" (TBCCW HX area). b. PLACE P-7A, 'A' "TBCCW PUMP" switch to "STOP" OR "PULL-TO-LOCK"(C-06). c. OPEN 2-TB-3A, "TBCCW PUMP 'A' DISCHARGE STOP" (TBCCW HX area).
<u>Simulator Operator:</u> As the PEO on station, operate TB-3A as directed. Event-10 [TPR02 CLOSED], Event-11 [TPR02 OPEN]		
	BOP	4.1.4 IF desired to stop 'B' TBCCW Pump, PERFORM the following: a. CLOSE 2-TB-3B, "TBCCW PUMP 'B' DISCHARGE STOP" (TBCCW HX area). b. PLACE P-7B, 'B' "TBCCW PUMP" switch to "STOP" OR "PULL-TO-LOCK"(C-06). c. OPEN 2-TB-3B, "TBCCW PUMP 'B' DISCHARGE STOP" (TBCCW HX area). Examiner Note: This step is N/A
	BOP	4.1.5 IF desired to stop 'C' TBCCW Pump, PERFORM the following: a. CLOSE 2-TB-3C, "TBCCW PUMP 'C' DISCHARGE STOP" (TBCCW HX area). b. PLACE P-7C, 'C' "TBCCW PUMP" switch to "STOP" OR "PULL-TO-LOCK"(C-06). c. OPEN 2-TB-3C, "TBCCW PUMP 'C' DISCHARGE STOP" (TBCCW HX area). Examiner Note: This step is N/A
Examiner Note: When "B" TBCCW Pump has been started and the "A" TBCCW Pump has been secured, or at the lead examiner's direction, proceed to Event #2, Trip of "A" CEDM Cooling Fan.		

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 2

Event Description: "A" CEDM Cooler Fan Trip

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event #2, "A" CEDM Cooling Fan trip.

Indications Available:

- CEDM COOLER FAN TRIP (C-04, BB-11).

Examiner Note: The following steps are from ARP 2590C-082.

	ATC	<ol style="list-style-type: none">1. Start idle CEDM cooling fan (C-04).2. MONITOR the following:<ul style="list-style-type: none">• "A" CEDM fan air discharge temperature on computer point, "T8102"• "B" CEDM fan air discharge temperature on computer point, "T8106"• "C" CEDM fan air discharge temperature on computer point, "T8101"• If all three CEDM cooling units fail, Go To OP 2204, "Load Changes", and PERFORM applicable actions to initiate a plant and reactor shutdown.3. SUBMIT CR to Electrical Maintenance Department to investigate cause of fan trip.
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CUE: If asked to investigate and determine the status of "A" CEDM Fan breaker, report back that breaker has tripped on over current.

Examiner Note: When the CEDM fan trip has been mitigated or at lead examiner's direction, go to Event 3 Ch. "A" RCS Pressure failure.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 3

Event Description: Failure of Safety Ch. "A" PZR Pressure (low)

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 3, Failure of Ch. "A" RCS Pressure (PT-102A).

Indications Available:

- PPC alarm Ch. "A" RCS Pressure.
- PZR PRES LO BLOCK A (C01, A-18)
- TM-LP TRIP CH A (C-04, CA-3)
- RPS PRE TRIP (C-04, AA-7)
- PZR PRESS LO LO A (C-01, A-20)
- ESAS COMPONENT UNDER TEST FAILURE (C0-1, B-41) [When ESAS channel is bypassed]

Examiner Note: The following steps are from ARP 2590C-021, "TM-LP TRIP CH A".

	ATC	<p><u>AUTOMATIC FUNCTIONS</u></p> <ol style="list-style-type: none"> 1. If 2 RPS channels actuate, reactor trips. <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">NOTE</p> <ol style="list-style-type: none"> 1. TM-LP Trip may be manually bypassed when power is less than $1 \times 10^{-4}\%$. However, if power increases above $1 \times 10^{-4}\%$, bypass is automatically removed. 2. Pressurizer pressure is an input to ATWS logic circuitry. </div>
	ATC	<p><u>CORRECTIVE ACTIONS</u></p> <ol style="list-style-type: none"> 1. <u>IF</u> reactor trips, Go To EOP 2525, "Standard Post Trip Actions" and PERFORM necessary corrective actions. 2. OBSERVE channel "A" pressurizer pressure indication and TM-LP setpoint and COMPARE to other safety channel indications (C-03, PPC, ESAS). 3. OBSERVE channel "A" TH and TC instruments indicating properly for present conditions (C-03, PPC, RPS). 4. <u>IF</u> pressurizer pressure or RCS temperature is abnormal AND no automatic reactor trip has occurred, manually TRIP reactor and Go To EOP 2525, "Standard Post Trip Actions." <p>Examiner Note: Applicant observes that Ch. "A" PZR Pressure failed low by comparing the four Pressure Safety Channels on C-02/3 PZR mimic.</p>

Simulator Operator: If dispatched as a PEO to check indication on C-21, report PI-102A is failed low.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 3

Event Description: Failure of Safety Ch. "A" PZR Pressure (low)

Time	Position	Applicant's Actions or Behavior
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	ATC/BOP	<p>5. <u>IF</u> alarm is due to any instrument malfunction, PERFORM the following:</p> <p>5.1. <u>IF</u> <i>pressure</i> instrument malfunctioned, OBTAIN necessary keys and PERFORM applicable actions to bypass the following channel "A" pressurizer pressure outputs:</p> <ul style="list-style-type: none"> • TMLP Trip (RPS) • High Pressurizer Pressure Trip (RPS) • ESAS pressurizer pressure bistable • ATWS (C-100) <p>Examiner Note: The US may chose to have either the ATC or the BOP carry out the above step to bypass the affected safety channels.</p>
	ATC/SRO	<p>5.2. <u>IF</u> temperature instrument malfunctioned, OBTAIN necessary keys and PERFORM applicable actions to bypass the following channel "A" temperature outputs:</p> <ul style="list-style-type: none"> • TMLP Trip (RPS) • High Power Trip (RPS) • Local Power Density Trip (RPS) <p>5.3. Refer To the following Technical Specifications LCOs and DETERMINE applicability:</p> <ul style="list-style-type: none"> • 3.3.1.1, Table 3.3-1 • 3.3.2.1, Table 3.3-3 • 3.3.3.5, Table 3.3-9 (PI-102A only) • 3.3.3.8, Table 3.3-11 (PI-102B only) <p>5.4. Refer To the following TRM LCOs and DETERMINE applicability:</p> <ul style="list-style-type: none"> • 3.3.1.1.1 <p>5.5. SUBMIT Trouble Report to I&C Department.</p>
	RO or BOP	At ESAS Sensor cabinet "A", PRESS SIAS/CIAS keyswitch is turned from OPER to INHIBIT

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 3

Event Description: Failure of Safety Ch. "A" PZR Pressure (low)

Time	Position	Applicant's Actions or Behavior
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	SRO	<p><u>Review Tech. Specs. and TRM:</u></p> <p>LCO 3.3.1.1 (RPS): As a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE.</p> <p><u>APPLICABILITY:</u> As shown in Table 3.3-1.</p> <p><u>ACTION:</u> As shown in Table 3.3-1.</p> <p>Per TS Table 3.3-1: FUNCTIONAL UNIT #4 Pressurizer Pressure - High; Total Number of Channels = 4, Minimum Channels Operable = 3, App. Modes = 1&2, Action = 2</p> <p><u>Action 2</u> - With the number of OPERABLE channels one less than the Total Number of Channels, operation may continue provided the following conditions are satisfied:</p> <ol style="list-style-type: none"> The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. The inoperable channel shall either be restored to OPERABLE status, or placed in the tripped condition, within 48 hours. Within 1 hour, all functional units receiving an input from the inoperable channel are also declared inoperable, and the appropriate actions are taken for the affected functional units. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be removed from service for up to 48 hours, provided one of the inoperable channels is placed in the tripped condition. <p>Examiner Note: SRO should note TSAS 3.3.1, Action 2 applies and is presently being met by the actions taken per the ARP to bypass the affected channels.</p> <p>LCO 3.3.2.1 (ESAS): The engineered safety feature actuation system instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.</p> <p><u>APPLICABILITY:</u> As shown in Table 3.3-3.</p> <p><u>ACTION:</u></p> <ol style="list-style-type: none"> With an engineered safety feature actuation system instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, either adjust the trip setpoint to be consistent with the value specified in the Trip Setpoint column of Table 3.3-4 within 2 hours or declare the channel inoperable and take the ACTION shown in Table 3.3-3. With an engineered safety feature actuation system instrumentation channel inoperable, take the ACTION shown in Table 3.3-3. <p>Per TS Table 3.3-3: FUNCTIONAL UNIT #1c, Pressurizer Pressure - Low; Total Number of Channels = 4, Minimum Channels Operable = 3, App. Modes = 1,2,3a, Action = 2</p>
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Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 3

Event Description: Failure of Safety Ch. "A" PZR Pressure (low)

Time	Position	Applicant's Actions or Behavior
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	SRO	<p>Action 2 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may continue provided the following conditions are satisfied:</p> <ol style="list-style-type: none">The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. The inoperable channel shall either be restored to OPERABLE status, or placed in the tripped condition, within 48 hours.Within 1 hour, all functional units receiving an input from the inoperable channel are also declared inoperable, and the appropriate actions are taken for the affected functional units.The Minimum Channels OPERABLE requirement is met; however, one additional channel may be removed from service for up to 48 hours, provided one of the inoperable channels is placed in the tripped condition. <p>Examiner Note: SRO should note TSAS 3.3.2.1b, Action 2 applies and is presently being met by the actions taken to bypass the affected channels.</p> <p>TS 3.3.3.5 (PI-102A - High Range): The remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room.</p> <p><u>APPLICABILITY:</u> MODES 1, 2 and 3.</p> <p><u>ACTION:</u></p> <p>With the number of OPERABLE remote shutdown monitoring instrumentation channels less than required by Table 3.3-9, either:</p> <ol style="list-style-type: none">Restore the inoperable channel to OPERABLE status within 7 days, orBe in HOT SHUTDOWN within the next 24 hours. <p>Examiner Note: SRO should note that one of the two channels of PZR Pressure on C-21 is <i>not</i> OPERABLE. However, Table 3.3-9 only requires <u>one</u> channel be OPERABLE, which there still is (PI-102B). Therefore, the TS is still met</p> <p>TS 3.3.3.8 (Acc. Monitoring): SRO should note that this TS is Not Applicable.</p> <p>TRM 3.3.1.1.1: All pressurizer high pressure reactor protection channels shall be FUNCTIONAL.</p> <p><u>APPLICABILITY:</u></p> <p>In accordance with Technical Specification LCO 3.3.1.1 Applicability.</p> <p><u>ACTION:</u></p> <p>Restore any nonfunctional pressurizer high pressure reactor protection channel to FUNCTIONAL status within 30 days of placing the channel in the tripped condition, or be in MODE 3 within the next 6 hours with the failed channel in the bypassed condition.</p> <p>Examiner Note: SRO should note that the Action Requirements of this TRM applies while the instrument channel is not OPERABLE per TS 3.3.1.1.</p>
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Examiner Note: When the instrument failure has been evaluated and mitigated, or at the lead examiner's direction, proceed to Event 4, Ch. "X" PZR Level failure.

Op-Test No.: <u>ES16LI1</u> Scenario No.: <u>1</u> Event No.: <u>4</u>		
Event Description: : Failure of Control Ch. "X" PZR Level (low)		
Time	Position	Applicant's Actions or Behavior

Simulator Operator: When directed, initiate Event 4, Failure of the Non-Selected Channel ("X") of PZR Level to 0%.		
Indications: <ul style="list-style-type: none"> • PRESSURIZER CH X LEVEL LO LO (C-02/3, C-38) • PRESSURIZER CH X LEVEL HI/LO (C-02/3, A-38) 		
Examiner Note: The following steps are from ARP 2590B-215, PRESSURIZER CH X LEVEL LO LO. If the steps from PRESSURIZER CH X LEVEL HI/LO (ARP 2590B-213) are used, skip to the next page.		
	ATC	<u>AUTOMATIC FUNCTIONS</u> 1. <u>IF</u> "SEL SW" is in "X+Y" position, <i>all</i> heaters de-energize.
	ATC	<u>CORRECTIVE ACTIONS</u> 1. OBSERVE actual level on pressurizer level recorder, LR---110, pressurizer level controllers (C---03) and PPC. 2. <u>IF</u> annunciator is <i>not</i> valid, SHIFT pressurizer level control to channel "Y." 2.1. SHIFT pressurizer heater control "SEL SW" to channel Y. 2.2. As necessary, RESET the following Pressurizer heater breakers: <ul style="list-style-type: none"> • "PROP HTR GROUP 1" • "PROP HTR GROUP 2" • "BACKUP HTRS GROUP 1" • "BACKUP HTRS GROUP 2" • "BACKUP HTRS GROUP 3" • "BACKUP HTRS GROUP 4" Examiner Note: Because this is an <i>instrument</i> failure of the Non-Controlling channel, and does not reflect an actual change in PZR level, the only Effect is the PZR Heater Breakers tripping open. Therefore, steps 3 – 8 of this ARP are not applicable. 9. <u>IF</u> alarm was caused by channel X malfunctioning, SUBMIT Trouble Report to I&C Department. 10. Refer To Technical Specifications LCOs 3.3.3.5 and 3.3.3.8 to determine ACTION Statement requirements.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 4

Event Description: : Failure of Control Ch. "X" PZR Level (low)

Time	Position	Applicant's Actions or Behavior
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Examiner Note: The following steps are from ARP 2590B-213, PRESSURIZER CH X LEVEL HI/LO.

	ATC	<p><u>AUTOMATIC FUNCTIONS</u></p> <p>1. <u>If</u> level is high:</p> <ul style="list-style-type: none">• All backup heater energize• All proportional heaters go to maximum output.• Backup charging pumps stop.• <u>If</u> level is low, backup signal is generated to start <i>both</i> backup charging pumps.
	ATC	<p><u>CORRECTIVE ACTIONS</u></p> <div><p>CAUTION</p><p>While restoring Pressurizer level, Pressurizer pressure must be closely monitored to prevent exceeding DNB limits, or effects on reactivity due to pressure changes.</p></div> <div><p>NOTE</p><p>Actual Pressurizer level response should track with pressure response.</p></div> <p>1. OBSERVE Pressurizer levels on all channels (C-03). 2. OBSERVE Pressurizer pressure on all channels (C-03).</p> <div><p>NOTE</p><p>Failure of the non-controlling Channel X low, will de-energize pressure heaters if heater "SEL SW" is in "X+Y" position.</p></div>

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 4

Event Description: : Failure of Control Ch. "X" PZR Level (low)

Time	Position	Applicant's Actions or Behavior
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	ATC	<p>3. <u>IF</u> L110X is the non---controlling channel, and a controller or transmitter failure is indicated in the low direction, PERFORM the following:</p> <p>3.1. SHIFT pressurizer heater control "SEL SW" to "Y"</p> <p>3.2. As necessary, RESET the following Pressurizer heater breakers:</p> <ul style="list-style-type: none"> • "PROP HTR GROUP 1" • "PROP HTR GROUP 2" • "BACKUP HTRS GROUP 1" • "BACKUP HTRS GROUP 2" • "BACKUP HTRS GROUP 3" • "BACKUP HTRS GROUP 4" <p>3.3. <u>IF</u> desired, COMMENCE forcing Pressurizer sprays.</p> <p>3.4. Go To Step [13] {Note: a typographical error exists in the procedure at this step, in that the words "NO TAG" appear in place of "13".}</p>
	ATC	<p>13. IF alarm was caused by a controller or transmitter malfunction, DETERMINE appropriate channel, and SUBMIT Trouble Report to Instrumentation & Control Department.</p> <p>14. To determine ACTION Statement requirements, Refer To the following LCOs:</p> <ul style="list-style-type: none"> • TS 3.2.6 (for DNB) • TS 3.3.3.5 (for HSD or C-21) • TS 3.3.3.8 (for Acc Monitoring) • TS 3.4.4 (LT110X Only) • TRM 7.1.4 (LT110X Only)

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 4

Event Description: : Failure of Control Ch. "X" PZR Level (low)

Time	Position	Applicant's Actions or Behavior
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	SRO	<p>Review Technical Specifications:</p> <p>LCO 3.2.6 (DNB): The DNB margin shall be preserved by maintaining the cold leg temperature, pressurizer pressure, reactor coolant flow rate, and AXIAL SHAPE INDEX within the limits specified in the CORE OPERATING LIMITS REPORT.</p> <p><u>ACTION:</u></p> <p>With any of the above parameters exceeding its specified limits, restore the parameter to within its above specified limits within 2 hours or reduce THERMAL POWER to $\leq 5\%$ of RATED THERMAL POWER within the next 4 hours.</p> <p>Examiner Note: Impacted only if RCS pressure dropped below 2225 psia.</p> <p>TS 3.3.3.5 (HSD): The remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room.</p> <p><u>APPLICABILITY:</u> MODES 1, 2 and 3.</p> <p><u>ACTION:</u></p> <p>With the number of OPERABLE remote shutdown monitoring instrumentation channels less than required by Table 3.3-9, either:</p> <ol style="list-style-type: none">Restore the inoperable channel to OPERABLE status within 7 days, orBe in HOT SHUTDOWN within the next 24 hours. <p>Examiner Note: The SRO should note that one of the two channels of PZR Level on C-21 is <i>not</i> OPERABLE. However, Table 3.3-9 only requires <u>one</u> channel be OPERABLE, which there still is (L110Y). Therefore, the TS is still met.</p> <p>TS 3.3.3.8 (Acc. Monitoring): SRO should note that this TS is Not Applicable.</p> <p>TS 3.4.4 (PZR): The pressurizer shall be OPERABLE with:</p> <ol style="list-style-type: none">Pressurizer water level $\leq 70\%$, andAt least two groups of pressurizer heaters each having a capacity of at least 130 kW. <p><u>APPLICABILITY:</u> MODES 1, 2 and 3.</p> <p><u>ACTION:</u></p> <ol style="list-style-type: none">With only one group of pressurizer heaters OPERABLE, restore at least two groups to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 12 hours.With the pressurizer otherwise inoperable, be in at least HOT STANDBY with the reactor trip breakers open within 6 hours and in HOT SHUTDOWN within the following 6 hours. <p>Examiner Note: The SRO should note the need to log into TSAS "a" at the approximate time the Proportional Heater breakers tripped, and log out at the approximate time they were reclosed.</p>
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Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 4

Event Description: : Failure of Control Ch. "X" PZR Level (low)

Time	Position	Applicant's Actions or Behavior
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	SRO	<p>TRM 7.1.4 (App R Safe Shutdown): The Appendix R Safe Shutdown Related (ARSR) equipment listed in the TRM Table 7.1.4-1 shall be FUNCTIONAL.</p> <p><u>APPLICABILITY:</u> MODES 1, 2, 3, and 4.</p> <p>Examiner Note: SRO should note the need to reference the TRM when time allows, as the requirements for these actions are not applicable unless the component is not functional for 14 days.</p> <p><u>ACTION:</u></p> <p>With an ARSR component listed in the above referenced component table nonfunctional (unable to meet its intended Appendix R shutdown function), take the ACTION as specified in the above table under Compensatory Measures.</p> <p>Examiner Note: Only applicable part of the Table 7.1.4-1 is included.</p> <table><tr><th>TR Item</th><th>Comp ID</th><th>FUNCTIONALITY Description</th><th>Compensatory Measures if Component Not Restored in 14 days</th></tr><tr><td>E</td><td>LT-110X</td><td>Loop LT-110X must be FUNCTIONAL from Control Room.</td><td>With loop LT-110X nonfunctional from Control Room, perform ACTIONS b.1, b.2 for fire area R-2, R-10, and R-15.</td></tr></table> <p>Examiner Note: The above Compensatory Measures, contained on TRM page 7.1-1, can be discussed at the Examiners discretion, or following the completion of the scenario.</p>	TR Item	Comp ID	FUNCTIONALITY Description	Compensatory Measures if Component Not Restored in 14 days	E	LT-110X	Loop LT-110X must be FUNCTIONAL from Control Room.	With loop LT-110X nonfunctional from Control Room, perform ACTIONS b.1, b.2 for fire area R-2, R-10, and R-15.
TR Item	Comp ID	FUNCTIONALITY Description	Compensatory Measures if Component Not Restored in 14 days							
E	LT-110X	Loop LT-110X must be FUNCTIONAL from Control Room.	With loop LT-110X nonfunctional from Control Room, perform ACTIONS b.1, b.2 for fire area R-2, R-10, and R-15.							
<p>Examiner Note: When all Pressurizer heater breakers have been reclosed and the SRO has finished evaluating Technical Specifications and the TRM, or at lead examiner’s direction, proceed to Event 5, Main Condenser Vacuum Leak.</p>										

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 5, 6

Event Description: Main Condenser Vacuum Leak

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 5, Main Condenser Vacuum Leak.

Indications:

- “COND VACUUM LO” {PPC, C-06/7, A-37}
- Condensate pressure indicator and recorder show an unexplained rise in condenser pressure. {PPC, C-05}
- Unexplained drop in electric megawatts.

Examiner Note: The following steps are from ARP 2590E-185, “COND VACUUM LO”, C-06/7, A-37 annunciator.

	SRO/BOP	<p><u>AUTOMATIC FUNTIONS</u></p> <p>1. None</p> <p><u>CORRECTIVE ACTIONS</u></p> <p>1. IF condenser pressure rise is due to slow fouling of the condenser due to seasonal changes, Refer To OP 2204, “Load Changes,” and REDUCE Reactor power and turbine load to clear “COND VACUUM LO” annunciator.</p> <p>2. IF degraded condenser vacuum is being directed during performance of a power ramp, PERFORM the following:</p> <p>2.1. NOTIFY personnel controlling condenser pressure of the alarm, the value, and trend of condenser pressure.</p> <p>2.2. DIRECT personnel controlling condenser pressure to recover vacuum to the applicable control band.</p> <p>3. IF steps 1. or 2. recover condenser vacuum, EXIT this ARP.</p> <p>4. Go To AOP 2574, “Loss of Condenser Vacuum.”</p>
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Examiner Note: Operators should enter AOP 2574, Loss of Condenser Vacuum, prior to beginning a plant downpower, as there was no reason given to suspect condenser fouling.

Examiner Note: The following steps are from AOP 2574, Loss of Condenser Vacuum.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 5, 6

Event Description: Main Condenser Vacuum Leak

Time	Position	Applicant's Actions or Behavior
	SRO	<p>3.1 IF ANY of the following conditions exist:</p> <ul style="list-style-type: none"> Reactor power and turbine load is lowered to 30% power <u>AND</u> condenser pressure is still greater than 5 inches of mercury absolute Condenser pressure is approaching trip setpoint (7.5 inches of mercury absolute) <u>AND</u> reactor power is greater than or equal to 15% <p>PERFORM the following:</p> <ol style="list-style-type: none"> Manually TRIP the reactor and turbine. Go To EOP 2525, "Standard Post Trip Actions."
		<p style="text-align: center;">NOTE</p> <p>When power is less than 15% AND level "1" bistable light clears (not lit), on at least 3 RPS channels, the turbine trip is inhibited and turbine trip will not result in an automatic reactor trip.</p>
		<p>3.2 IF condenser pressure is approaching trip setpoint (7.5 inches of mercury absolute) AND reactor power is less than 15%, with turbine trip bypassed, manually TRIP the turbine.</p>
		<p>3.3 IF condenser pressure is rising to 10 inches of mercury absolute, PERFORM the following:</p> <ol style="list-style-type: none"> ENSURE reactor power less than 3%. Refer To OP 2322, "Auxiliary Feedwater System," and INITIATE AFW flow to SGs. TRIP running SGFPs.
		<p>3.4 IF, at any time, efforts to restore vacuum are not successful, Refer To AOP 2575, "Rapid Downpower," and LOWER reactor power and turbine load at the maximum attainable rate until pressure stabilizes.</p>
		<p>3.5 NOTIFY ISO New England of the loss or imminent loss of unit.</p>
	BOP	<p>4.1 VERIFY performance of condenser air removal as follows:</p> <ol style="list-style-type: none"> VERIFY F55A or F55B operating VERIFY condenser air removal fan discharge path is aligned per ONE of the following: <ul style="list-style-type: none"> EB-55 AND EB-56, condenser air removal to Millstone stack, are open EB-57, condenser air removal to Unit #2 stack, is open VERIFY the operating SJAЕ steam supply pressure is 200- 220 psig. Refer To OP 2329, "Condenser Air Removal," and VERIFY both sets of SJAЕ's in service.

Op-Test No.: <u>ES16LI1</u> Scenario No.: <u>1</u> Event No.: <u>5, 6</u>		
Event Description: Main Condenser Vacuum Leak		
Time	Position	Applicant's Actions or Behavior

		<p style="text-align: center;">NOTE</p> <p>Use of the mechanical vacuum pumps may cause a rise in backpressure and mask the original leak and may cause the East condenser pit sump to overflow.</p>
		<p>4.2 IF condenser backpressure is greater than 4 inches Hg absolute, PERFORM the following:</p> <ol style="list-style-type: none"> START mechanical vacuum pumps "A" and "B." VERIFY local vacuum gage is 27 inches Hg or greater. OPEN 2- AR- 11, "MECHANICAL VACUUM PUMP COMBINED SUCTION". OPEN 2- AR- 12A, "PUMP 'A' SUCTION STOP". OPEN 2- AR- 12B, "PUMP 'B' SUCTION STOP". IF condenser air removal fan, F55A, is available, THEN PERFORM the following: <ol style="list-style-type: none"> START condenser air removal fan, F55A. STOP condenser air removal fan, F55B. ENSURE EB- 171, MAKE- UP DMPR", is closed.
<p>Simulator operator: When asked, SJAE supply pressure is ~210 psig and both sets of SJAE's are in service (do NOT put the second set in service). If BOP directs a PEO to align the mechanical vacuum pumps, wait a couple minutes and then say the pumps have been aligned per Step 4.2 (do NOT actually perform the alignment). <i>*** Activate Event-6 to lower FW01 to 0.3" ***</i></p>		
<p>Examiner Note: At some point the Unit Supervisor should determine that efforts to restore vacuum are not being successful, enter AOP 2575, "Rapid Downpower", and direct a reactor and turbine shutdown in an attempt to lower the main condenser heat loading.</p>		
<p>Examiner Note: The following steps are from AOP 2575, Rapid Downpower, Section 3.0 Rapid Downpower.</p>		
	SRO	Enters AOP 2575, Rapid Downpower

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 5, 6

Event Description: Main Condenser Vacuum Leak

Time	Position	Applicant's Actions or Behavior
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	SRO	<p>3.1 PERFORM focus brief on the following:</p> <p>REACTOR TRIP CRITERIA</p> <ul style="list-style-type: none"> Parameters associated with automatic reactor or turbine trips are challenged RCS T cold <i>not</i> within 10°F of temperature program and efforts to regain control are unsuccessful <p>RCS TEMPERATURE CONTROL</p> <ul style="list-style-type: none"> RCS T cold to be maintained within 10°F of Attachment 5, "Temperature vs. Power program" using Attachment 10, "Main Turbine Load Set Control." To avoid uncontrolled cooldowns or power transients, sudden changes in RCS temperature or boron concentration should be avoided. <p>3.2 REQUEST SM/STA to Refer To Attachment 8, "Required Notifications," and PERFORM notifications.</p>
	ATC	3.3 INITIATE forcing pressurizer sprays.
		<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>CAUTION</p> <p>In the case of a dropped CEA, rod motion is <i>not</i> used to initiate downpower.</p> </div>
	ATC	3.4 IF <i>not</i> downpowering due to a dropped rod, INSERT Group 7 CEAs 10 ± 2 steps to initiate downpower.
	BOP	3.5 Using the "Load Speed Control" switch, REDUCE turbine load to maintain Tc on program (+/-2 deg).
	SRO	3.6 Refer To PPC or Reactor Engineering Curve and Data Book and OBTAIN reactivity plan for the initial reactor power condition and desired load reduction.
Examiner Note: The crew should refer to Reactivity Plan for downpower parameters.		

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 5, 6

Event Description: Main Condenser Vacuum Leak

Time	Position	Applicant's Actions or Behavior
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		<div>NOTE</div> <p>Attachment 10 "Approximate Load Demand vs. Reactor Power," can be used to correlate the desired power level to a turbine load demand setpoint.</p>
	BOP	3.7 Refer To Attachment 9, "Main Turbine Load Set Control," REDUCE turbine load and MAINTAIN Tc on program (+/-2 deg).
Examiner Note: The following steps are from AOP 2575 Rapid Downpower Attachment 9 Main Turbine Load Set Control:		
	BOP	<div>CAUTION</div> <p>Operation of the "Load/Speed CONTROL" switch will change turbine</p> <div>NOTE</div> <p>Steps provided in this attachment are dependent on plant conditions</p>
	BOP	<ol style="list-style-type: none">1. <u>IF</u> desired to commence or modify a turbine load ramp, PERFORM the following (HMI "Load" screen):<ol style="list-style-type: none">a. <u>IF</u> previous ramp has stopped, SELECT "Load Hold."b. SELECT "Load Setpt" and ENTER desired value.c. SELECT "Rate setpt" and ENTER desired value.d. <u>WHEN</u> ready to commence load reduction, SELECT "Load Resume."

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 5, 6

Event Description: Main Condenser Vacuum Leak

Time	Position	Applicant's Actions or Behavior
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	BOP	<p>2. <u>IF</u> desired to adjust the "Load Ramp Rate," PERFORM <i>any</i> of the following:</p> <ul style="list-style-type: none"> • SELECT "Rate setpt" and ENTER new value. • SELECT "5% / hour," <u>OR</u> "10% / hour," <u>OR</u> "20% / hour." • SELECT "Raise" or "Lower" (0.25% / hour change). <p>a. <u>IF</u> Tavg and Tc are <u>high</u> off program, PERFORM the following:</p> <ol style="list-style-type: none"> SELECT "Load Hold" to stop ramp. <u>WHEN</u> Tavg and Tc are trending back to program, SELECT "Load Resume." <p>b. <u>IF</u> Tavg and Tc are <u>low</u> off program, PERFORM the following:</p> <ol style="list-style-type: none"> JOG the "Load/Speed CONTROL" switch to "Lower." <u>WHEN</u> Tavg and Tc are back on program, SELECT Load Setpt" and ENTER desired value. <u>IF</u> desired, Go To Step 1 and RESUME turbine load ramp. <p>c. <u>IF</u> desired load has been reached SELECT "Load Hold."</p> <p>Examiner Note: operator should select x load setpoint, x load rate. Program band for Tavg and Tc is x (+/- 2 deg for Tc).</p>
Examiner Note: The following steps are from AOP 2575 Rapid Downpower Section 3.0 Rapid Downpower.		
	ATC	<p>3.8 Based on required rate of downpower, START additional charging pumps as necessary and balance charging and letdown.</p>

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 5, 6

Event Description: Main Condenser Vacuum Leak

Time	Position	Applicant's Actions or Behavior
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	ATC	<p>3.9 IF desired to borate from the RWST (preferred method) PERFORM the following:</p> <ol style="list-style-type: none"> ENSURE at least one charging pump operating. ENSURE CH-196, VCT makeup bypass, closed. ENSURE CH-504, RWST to charging suction, open. OPEN CH-192, RWST isolation. CLOSE CH-501, VCT outlet isolation. CHECK charging flow at desired rate. Go To step 3.11 <p>Examiner Note: Crew should borate from the RWST.</p>
	SRO/ATC/ BOP	<p>3.11 During the downpower, Refer To Attachment 1, "Rapid Downpower Parameters," and MAINTAIN parameters as specified throughout downpower:</p> <p>Examiner note: Attachment 1 Rapid Downpower Parameters:</p> <ul style="list-style-type: none"> Condensate and heater drain flows and pressures: sufficient to maintain adequate SGFP suction pressure FRV D/P: greater than 40 psid Turbine load: responding to changes in load demand, with control valves operating together Steam generator levels 55 to 70%. MSR parameters tracking together Turbine Generator MVARs: as specified by CONVEX Reactor power: being monitored using delta T power indication ASI: In accordance with reactivity plan or within 0.01 of ESI or per COLR. CEA position: greater than PDIL Tc: less than or equal to 549 deg Pressurizer level: between 35 and 70% <p>Pressurizer pressure: between 2,225 and 2,300 psia (DNB margin)</p>

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 5, 6

Event Description: Main Condenser Vacuum Leak

Time	Position	Applicant's Actions or Behavior
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	SRO/ATC	<div><p style="text-align: center;">NOTE</p><ol style="list-style-type: none">1. Xenon rate of change should be considered when terminating boration.2. During rapid downpower, the PPC calorimetric may be inaccurate due to SG level transients. The most accurate available indication of reactor power is RPS delta T power.</div>
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Examiner Note: Once power has dropped at least 5%, or at the lead examiner's direction, proceed to Event 7, RCP trip and ATWS

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 7, 8

Event Description: RCP trip, ATWS and total loss of condenser vacuum.

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 7 & 8, "A" RCP seize and trip, ATWS, Loss of MFW.

Indications:

- "RCP A MOTOR TRIP" {C-02/3, AA-17}
- "RCP LO SPEED TRIP CH A" {C-04, AA-4}
- "RC LO FLOW TRIP CH *" {* = All four Channels, A – D; C-04: CA-2, CB-2, DA-2, DB-2}

Examiner Note: An operator should attempt to trip the reactor using the manual pushbuttons. The reactor will not trip because the pushbuttons fail. An operator will open the CEDMS output breakers to trip the reactor manually.

CRITICAL TASK: Manually Shutdown the reactor. The reactor must be manually tripped using the CEDM output breakers immediately (within approximately 1 minute) when an automatic reactor trip fails and/or the manual push buttons do NOT work. (CT-1/SPTA-5)

Time that manual pushbuttons attempted: _____

Time of MG Set Breakers opened (reactor trip): _____

	ATC	<ul style="list-style-type: none">• Reports alarms on "A" RCP, RCP tripped• Reactor failure to auto trip, tripping the reactor manually by push buttons• Failure of TCBs to manually open, opening MG Set supply breakers (CT)• Reactor trip successful, CEAs inserting.
	SRO	Acknowledge need to trip, directs (or acknowledges) reactor trip

Examiner Note: The following steps are from EOP 2525, Standard Post Trip Actions, modified slightly to improve clarity.

	ATC	Determine Status of Reactivity Control – Reactor Trip 1. DETERMINE that Reactivity Control acceptance criteria are met for the reactor by performing ALL of the following steps: <ul style="list-style-type: none">• CHECK that all CEAs are fully inserted.• CHECK that reactor power is dropping.• CHECK that SUR is negative.
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Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 7, 8

Event Description: RCP trip, ATWS and total loss of condenser vacuum.

Time	Position	Applicant's Actions or Behavior
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	BOP	Determine Status of Reactivity Control – Turbine Trip 2. DETERMINE that Reactivity Control acceptance criteria are met for the turbine by performing ALL of the following steps : a. CHECK that the main turbine is tripped by BOTH of the following: <ul style="list-style-type: none">• ALL main stop valves are closed.• Generator megawatts indicate zero.• Turbine speed is lowering. b. <u>IF</u> 15G-2XI-4, motor operated disconnect, is closed, CHECK that the main Generator output breakers 8T and 9T are open.
	BOP	Determine Status of Maintenance of Vital Auxiliaries 3. DETERMINE that Maintenance of Vital Auxiliaries acceptance criteria are met by performing ALL of the following steps: a. CHECK that ALL Facility 1 and 2 electrical buses are energized: <ul style="list-style-type: none">• 6.9kV Electrical Buses 25A, 25B• 4.16kV Non-Vital Electrical Buses 24A, 24B• 4.16vV Vital Electrical Buses 24C, 24D• Vital DC Buses 201A, 201B, DV-10, DV-20• Vital AC Instrument Buses VA-10, VA-20 b. CHECK that BOTH facilities of service water are operating. c. CHECK that BOTH facilities of RBCCW are operating with service water cooling.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 7, 8

Event Description: RCP trip, ATWS and total loss of condenser vacuum.

Time	Position	Applicant's Actions or Behavior
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	ATC	<p>Determine Status of RCS Inventory Control</p> <p>4. DETERMINE that RCS Inventory Control acceptance criteria are met by performing ALL of the following:</p> <p>a. CHECK that BOTH of the following conditions exist:</p> <ul style="list-style-type: none">• Pressurizer level is 20 to 80%• Pressurizer level is trending to 35 to 70% <p>a.1 IF the Pressurizer Level Control System is not operating properly in automatic, RESTORE and MAINTAIN pressurizer level 35 to 70% by performing ANY of the following:</p> <p>1) OPERATE the Pressurizer Level Control System.</p> <p>2) Manually OPERATE charging and letdown.</p> <p>b. CHECK that RCS subcooling is greater than or equal to 30°F</p>
	ATC	<p>Determine Status of RCS Pressure Control</p> <p>5. DETERMINE RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none">• CHECK that pressurizer pressure is 1900 to 2350 psia.• CHECK that pressurizer pressure is trending to 2225 to 2300 psia.
	ATC	<p>Determine Status of Core Heat Removal</p> <p>6. DETERMINE that Core Heat Removal acceptance criteria are met by performing ALL of the following:</p> <p>a. CHECK that at least one RCP is operating and that loop delta T is less than 10°F</p> <p>b. CHECK that Th subcooling is greater than or equal to 30°F.</p>

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 7, 8

Event Description: RCP trip, ATWS and total loss of condenser vacuum.

Time	Position	Applicant's Actions or Behavior
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	BOP	<p>Determine Status of RCS Heat Removal</p> <p>7. DETERMINE that RCS Heat Removal acceptance criteria are met by ALL of the following conditions:</p> <ul style="list-style-type: none">a. CHECK that at least one steam generator has BOTH of the following conditions met:<ul style="list-style-type: none">• Level is 10 to 80%.• Main feedwater or TWO auxiliary feedwater pumps are operating to restore level 40 to 70%.b. CHECK that RCS Tc is being maintained between 530 °F to 535°F.c. CHECK that BOTH steam generators pressure are 880 to 920 psia.
Examiner Note: Once the BOP has established AFW flow to each SG, or at the lead examiner's direction, proceed to Event 9, Loss Of All Feedwater		

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 9, Rupture of both AFW Headers, LOAF.

Indications:

- Aux Feed flow indication to both SGs will be < 300 gpm (minimum required).
- "EAST COND PIT SUMP LVL HI" {C-06/7, CA-22}

	BOP	7. a. RNO a.1 RESTORE level to 40 to 70% in at least one steam generator using ANY of the following: <ul style="list-style-type: none">• Motor- driven auxiliary feedwater pump.• TDAFW Pump. Refer To Appendix 6, "TDAFW Pump Normal Startup."
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Examiner Note: The BOP should report the loss of all feed to the SGs, due to loss of Aux. Feedwater flow, prior to the transition to an event specific EOP.

Examiner Note: The AFW rupture is simulated as a severe break in the body of FW-44, the cross-connect valve for the two AFW headers and closing the valve will have no effect on the loss of the two headers. The Simulator Operator will report this as a PEO sent to investigate the problem.

Simulator Operator: When a PEO is sent to investigate the problem, inform the crew that the body of FW-44 has a large crack and is leaking badly. Also, due to the nature of the break, you doubt that closing FW-44 will have any effect on the leak.

After Aux. Feed flow is established, if the rupture is not recognized by the crew and an operator is not dispatched, report as the Turbine Building Watch the above conditions.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
	ATC	<p>Determine Status of Containment Isolation</p> <p>8. DETERMINE that Containment Isolation acceptance criteria are met by ALL of the following:</p> <ul style="list-style-type: none"> a. CHECK that containment pressure is less than 1.0 psig. b. CHECK that NONE of the following primary plant radiation monitors have an unexplained alarm or indicate an unexplained rise in activity: <p>Radiation Monitors Inside Containment</p> <p>RM-7890, Personnel Access Area RM-7891, Ctmt Refuel Floor Area RM-8240, High Range RM-8241, High Range RM-8123 A and B, Ctmt Atmosphere RM-8262 A and B, Ctmt Atmosphere</p> c. CHECK that NONE of the following steam plant radiation monitors have an unexplained alarm or indicate an unexplained rise in activity: <p>Steam Plant Radiation Monitors</p> <p>RM-5099, Steam Jet Air Ejector RM-4262, SG Blowdown RM-4299A and B, Main Steam Line 1 RM-4299C, Main Steam Line 2</p>
	ATC	<p>Determine Status of Containment Temperature and Pressure Control</p> <p>9. DETERMINE that Containment Temperature and Pressure Control acceptance criteria are met by BOTH of the following steps:</p> <ul style="list-style-type: none"> a. CHECK that containment temperature is less than 120 °F. (PPC or avg. of Points 5 and 6) b. CHECK that containment pressure is less than 1.0psig.
	SRO	<p>10. PERFORM the following:</p> <ul style="list-style-type: none"> a. DIAGNOSE the event. Refer To Appendix 1, "Diagnostic Flowchart." b. INITIATE Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions." c. Go To the appropriate EOP

Op-Test No.: <u>ES16LI1</u> Scenario No.: <u>1</u> Event No.: <u>9</u>		
Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow		
Time	Position	Applicant's Actions or Behavior

	ATC/BOP	{Step 10.b above} Perform Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions". Examiner Note: EOP Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions." are attached to guide.
Examiner Note: The Unit Supervisor refers to EOP 2541 Appendix 1, Diagnostic Flowchart to diagnose the event.		
	SRO	Enters EOP 2537, Loss Of All Feed.
Examiner Note: The following steps are from EOP 2537 Loss Of All Feedwater. Asterisked steps, within the ORP or selected FRPs being implemented, may be brought forward to restore or preserve a Safety Function. Asterisked steps are "Continuously Applicable," and may be performed out of order after they have been accomplished once.		
	SRO	*1. CONFIRM diagnosis of a Loss of All Feedwater by performing the following. Examiner Note: SRO checks EOP 2537-001 LOAF Safety Function Status Checks and confirms that all Safety Criteria are satisfied.
	SRO	*2. CLASSIFY the event. Refer To MP-26-EPI-FAP06, "Classification and PARs" IF classification requires RCS sampling, Refer To Appendix 46, "Sampling for EAL Determination" and DIRECT Chemistry as required.
	SRO	*3. PERFORM ALL of the following: <ul style="list-style-type: none"> • OPEN the placekeeper and ENTER the EOP entry time. • ENSURE the master alarm silence switch is in "NORMAL".
	ATC	*4. PERFORM the following: <ul style="list-style-type: none"> a. STOP ALL RCPs. b. PLACE HIC- 4165, steam dump TAVG controller, in manual AND closed. c. PLACE the following pressurizer spray valve controllers in manual and CLOSE the valves: <ul style="list-style-type: none"> • HIC- 100E • HIC- 100F

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
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	BOP	<p>*5. PERFORM ALL of the following to conserve steam generator inventory:</p> <ol style="list-style-type: none"> ENSURE MS- 220A, blowdown isolation valve is closed. ENSURE MS- 2206, blowdown isolation valve is closed. CLOSE BOTH steam generator sample isolation valves: <ul style="list-style-type: none"> MS- 191A MS- 1918
	BOP	<div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p style="text-align: center;">NOTE</p> <p>OTC should be initiated prior to ONE steam generator wide range level reaching 70 inches, AND ONE steam generator wide range level reaching 165 inches if ANY of the following exist:</p> <ol style="list-style-type: none"> Main or auxiliary feedwater is <i>not</i> expected to be restored. Less than TWO trains of HPSI, PORVs and ADVs are available. Less than THREE charging pumps are available. </div> <p>*6. CHECK for adequate RCS heat removal via the steam generators by BOTH of the following:</p> <ul style="list-style-type: none"> BOTH steam generator wide range levels are greater than 70 inches RCS Tc stable or controlled within 5°F or less <p>6.1 Contingency Actions:</p> <p>IF steam generator level is not restoring AND ANY of the following conditions exists:</p> <ul style="list-style-type: none"> ONE steam generator wide range level less than or equal to 70 inches AND the REMAINING steam generator wide range level is less than or equal to 165 inches RCS TC rises uncontrollably by 5°F or more <p>ESTABLISH heat removal via once- through- cooling by performing ALL of the following:</p> <ol style="list-style-type: none"> ENSURE ALL proportional heaters are tripped ENSURE ALL backup heaters in "PULL- TO- LOCK". IF main condenser is available, THEN OPEN ALL steam dump valves. OPEN BOTH ADVs. ENSURE SIAS actuated. ENSURE BOTH HPSI pumps have started. ENSURE that ALL HPSI loop injection valves are open. ENSURE that ALL available charging pumps are running. ENSURE that BOTH PORV block valves are open. WHEN at least ONE HPSI pump has started, THEN OPEN BOTH PORVs. (Key # 187) Go To EOP 2540, "Functional Recovery."

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
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CRITICAL TASK: Once-Through-Cooling (OTC) shall be fully implemented (both ADVs open, both PORVs open, and two trains of HPSI in operation) prior to either SG level lowering to less than 32 inches wide range level. (CT-2/ OP 2260, "EOP User's Guide", Attachment 7, Operator Actions #2]

Steam Generator Level when feed flow was restored or OTC was fully implemented:

Steam Generator 1 Level: _____

Steam Generator 2 Level: _____

Examiner Note: The US may decide to use the Once-Through-Cooling success path if all three condensate pumps were secured in error or he feels conditions warrant. In that instance, RNO 6.1 is used for that path. Once complete, the crew will transition to EOP 2540 and the scenario is complete.

	ATC	RNO (CONTINGENCY ACTIONS) 6.1 IF steam generator level is not restoring AND ANY of the following conditions exists: <ul style="list-style-type: none">• ONE steam generator wide range level less than or equal to 70 inches AND the REMAINING steam generator wide range level is less than or equal to 165 inches• RCS TC rises uncontrollably by 5 °F or more ESTABLISH heat removal via once- through- cooling by performing ALL of the following: 6.1 ENSURE ALL proportional heaters are tripped.<ul style="list-style-type: none">a. ENSURE ALL backup heaters in "PULL- TO- LOCK".b. IF main condenser is available, THEN OPEN ALL steam dump valves.c. OPEN BOTH ADVs.d. ENSURE SIAS actuated.e. ENSURE BOTH HPSI pumps have started.
	ATC	RNO (CONTINGENCY ACTIONS) 6.1 (continued) <ul style="list-style-type: none">f. ENSURE that ALL HPSI loop injection valves are open.g. ENSURE that ALL available charging pumps are running.h. ENSURE that BOTH PORV block valves are open.i. WHEN at least ONE HPSI pump has started, THEN OPEN BOTH PORVs. (Key # 187)j. Go To EOP 2540, "Functional Recovery."

Examiner Note: If the crew uses the Once-Through-Cooling success path, once it is implemented and the US transitions to EOP 2540, the remainder of EOP 2537 is N/A. Go to Page 36 for EOP 2540 steps.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
	BOP	<p>*7. WHEN feedwater source becomes available, THEN RESTORE feedwater to the affected steam generators as follows:</p> <ol style="list-style-type: none"> CHECK steam generator level is less than 33%. <ol style="list-style-type: none"> FEED affected steam generators at any desired flow rate to restore and maintain level within 40% to 70%. FEED each affected steam generator by raising feedwater flow rate in increments of 50 gpm within BOTH of the following limits: <ul style="list-style-type: none"> Flow limited to within the capacity of the available feedwater source Maximum flow rate of less than, or equal to 650 gpm, (325 klbm/hr). WHEN ANY of the following conditions are met: <ul style="list-style-type: none"> Steam generator shows a rising trend Feedwater flow rate has been established within the capacity of the available feedwater source, with a maximum flow rate of less than, or equal to 650 gpm, (325 klbm/hr). Steam generator level is greater than 33% <p><u>THEN</u> FEED affected steam generators at any desired flow rate, within the capacity of the available feedwater source, to restore and maintain level within 40% to 70%.</p>
	BOP	<p>*8. <u>IF</u> a main feedwater line break is indicated, ISOLATE the affected portion of the main feedwater system by performing the following:</p> <ol style="list-style-type: none"> PLACE applicable main feed isolation air assisted check valve, to "CLOSE": <ul style="list-style-type: none"> FW- 5A FW- 5B ENSURE applicable main feedwater block valve, is closed: <ul style="list-style-type: none"> FW- 42A FW- 42B CLOSE applicable main feedwater regulating bypass valve: <ul style="list-style-type: none"> LIC- 5215 LIC- 5216 <u>IF</u> leak is in common section of feedwater piping, SECURE BOTH main feedwater pumps. ESTABLISH feedwater to the unaffected header. SECURE steaming the steam generator with feedwater isolated.
	BOP	<p>*9. <u>IF</u> a auxiliary feedwater line break is indicated, ISOLATE the affected portion of the auxiliary feedwater system by performing the following:</p> <ol style="list-style-type: none"> CLOSE FW - 44, auxiliary feedwater cross- connect valve. STOP ANY auxiliary feedwater pumps on the side with the affected header. ESTABLISH feedwater to the unaffected header. SECURE steaming the steam generator with feedwater isolated.

Op-Test No.: <u>ES16LI1</u> Scenario No.: <u>1</u> Event No.: <u>9</u>		
Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow		
Time	Position	Applicant's Actions or Behavior

Examiner Note: The simulated AFW rupture cannot be isolated; therefore, all AFW pumps must be secured.		
	SRO	<p>*10. <u>IF</u> offsite power has been lost, OR the condenser is <i>not</i> available, PERFORM the following:</p> <ol style="list-style-type: none"> CLOSE BOTH MSIVs: <ul style="list-style-type: none"> MS - 64A MS- 648 ENSURE BOTH MSIV bypass valves are closed: <ul style="list-style-type: none"> MS - 65A MS – 658 OPEN AR- 17, condenser vacuum breaker.
	SRO	<p>*11. RESTORE feedwater flow to at least ONE steam generator using the motor-driven AFW pumps as follows: Examiner Note: Step 11 is N/A due to the actions taken in Step 9 to isolate the AFW rupture.</p>
	SRO	<p>*12. <u>IF</u> auxiliary feedwater flow is restored, Go To step 23. Examiner Note: Step 12 is N/A</p>
	SRO	<p>*13. RESTORE feedwater flow to at least one steam generator using the TDAFW pump as follows Examiner Note: Step 13 is N/A</p>
	SRO	<p>*14. <u>IF</u> auxiliary feedwater flow is restored, Go To step 23. Examiner Note: Step 14 is N/A</p>
	SRO	<p>*15. START ONE SG feedwater pump by performing the following for the pump to be started: Examiner Note: Step 15 is N/A due to the loss of condenser vacuum.</p>
	SRO	<p>*16. <u>IF</u> SG feedwater flow is restored, Go To step 23. Examiner Note: Step 16 is N/A</p>
Examiner Note: The SRO may quickly proceed to Step 17 once the nature of the feedwater loss is understood.		
	BOP	<p>*17. ENSURE at least ONE condensate pump is running.</p>

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
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	BOP	<p>*18. ESTABLISH a flowpath from the hotwell to at least ONE steam generator as follows:</p> <ol style="list-style-type: none"> ENSURE BOTH SGFP discharge valves are open: <ul style="list-style-type: none"> FW- 38A FW- 38B CLOSE BOTH SGFP "MIN FLOW RECIRC": <ul style="list-style-type: none"> FIC- 5237 FIC- 5240 OPEN CNM-2, CPF bypass valve. OPEN BOTH main feed reg bypass valves: <ul style="list-style-type: none"> LIC-5215 LIC-5216 ENSURE BOTH main feed isolation air assisted check valves are open: <ul style="list-style-type: none"> FW-5A FW-5B
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	BOP	<p>*19. <u>IF</u> SIAS is <i>not</i> present <u>AND</u> SIAS Block is permitted, <u>THEN</u> BLOCK the automatic initiation as the cooldown and depressurization proceeds.</p>
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Examiner Note: The crew should block SIAS as the event does not warrant its actuation.

	BOP	<p>*20. <u>IF</u> MSI is <i>not</i> present AND MSI Block is permitted, THEN BLOCK the automatic initiation as the cool down and depressurization proceeds.</p>
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Examiner Note: The crew should block MSI as its actuation will delay feed flow restoration.

	BOP	<p>*21. <u>IF</u> a flowpath from the hotwell to a steam generator is established, THEN DEPRESSURIZE at least ONE steam generator at the maximum controllable rate, until adequate feed flow is obtained from the condensate pump to restore steam generator level.</p>
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	ATC	<p>*22. COMMENCE emergency boration. Refer To Appendix 3, "Emergency Boration."</p>
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	BOP	<p>*23. <u>IF</u> feed flow is restored, RESTORE and MAINTAIN 40 to 70% level in at least one steam generator.</p>
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Scenario Termination: When crew has restored feedwater flow to one SG, or at the lead examiner's direction, the scenario is complete.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
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Examiner Note: If OTC is initiated in EOP 2537, Loss Of All Feedwater, once initiated, the US will transition to EOP 2540, Functional Recovery.

The following steps are from EOP 2540, Functional Recovery.

Indications:

- #2 S/G Pressure
- RCS Cold Leg Temperature
- Sub Cool Margin

	SRO	1. CLASSIFY the event. Refer To MP-26-EPI-FAP06, "Classification and PARs" <ul style="list-style-type: none">• <u>IF</u> classification requires RCS sampling, Refer To Appendix 46, "Sampling for EAL Determination" and DIRECT Chemistry as required.
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Examiner Note: Classified as an Alert/C-1; Equipment Failure, EA1, ATWS w/ Successful Manual Trip. Also, Alert/C-1; RCS Barrier, RCB2 Loss (RCS Subcooling < 30 °F)

	SRO	2. PERFORM ALL of the following: <ul style="list-style-type: none">• OPEN the Safety Function Tracking Page and ENTER the EOP entry time.• ENSURE the master alarm silence switch is in "NORMAL".
	ATC	3. <u>IF</u> pressurizer pressure is less than 1714 psia <u>AND</u> SIAS has initiated, PERFORM the following: <ul style="list-style-type: none">a. ENSURE ONE RCP in each loop is stopped.b. PLACE associated pressurizer spray valve controller RC-100E or RC-100F in manual and CLOSE the valve.c. <u>IF</u> pressurizer pressure lowers to less than the minimum RCP NPSH limit, PERFORM the following:<ul style="list-style-type: none">1) STOP ALL RCPs.2) PLACE TIC-4165, steam dump TAVG controller, in manual and closed.3) PLACE pressurizer spray valve controllers RC-100E and RC-100F in manual and CLOSE the valves.

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
	BOP	<p>4. SAMPLE steam generators that are available for RCS heat removal as follows:</p> <ol style="list-style-type: none"> CHECK "B" train RBCCW in service. ENSURE 2-RB-210 "Degasifier Effluent Cooler Return Outlet" is open. OPEN appropriate steam generator sample valves: <ul style="list-style-type: none"> MS-191A MS-191B DIRECT Chemistry to perform ALL of the following: <ul style="list-style-type: none"> Sample ANY steam generator that is available for RCS Heat Removal Frisk the samples Report frisk results Analyze samples for boron and activity WHEN Chemistry reports that samples have been taken, PERFORM the following: <ul style="list-style-type: none"> CLOSE the steam generator sample valves <u>IF</u> SIAS has actuated, <u>AND</u> no other sampling is in progress, CLOSE 2-RB-210, "Degasifier Effluent Cooler Return Outlet"
CUE: When directed to sample Steam Generators, respond 20 minutes later that samples have been taken. Report that frisk results show all background levels.		
	BOP	5. PLACE the hydrogen analyzers in service. Refer To Appendix 19, "Hydrogen Analyzer Operation."
	SRO	<p>NOTE</p> <p>If the Safety Function Status Checklist is <i>not</i> satisfied for the selected success path, the US may commence the operator actions for safety functions which are <i>not</i> met based on Safety Function hierarchy. The remaining Safety Functions should be prioritized as time permits.</p>
	SRO	<p>6. IDENTIFY success paths to be used to satisfy each safety function using BOTH of the following:</p> <ul style="list-style-type: none"> Resource Assessment Trees Safety Function Tracking Page

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
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	SRO	<p>7. PRIORITIZE safety functions to be addressed first based on ALL of the following:</p> <ul style="list-style-type: none"> a. Safety functions which do <i>not</i> meet the Safety Function Status Checklist for the selected success path. b. Safety functions for which the equipment to support the success path is <i>not</i> operating. c. Safety functions for which success path three has been selected. d. Safety functions for which success path two has been selected. e. Safety functions for which success path one has been selected.
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NOTE: SRO will direct the Board Operators through the Resource Assessment Trees and query plant status to determine the correct Functional Procedure to use.

	SRO	4.0 SAFETY FUNCTION STATUS CHECKLIST				
		SAFETY FUNCTION TRACKING PAGE			EOP ENTRY TIME _____	
		Safety Function	Success Path		Procedure	SFSC Met
		Reactivity Control	RC-1	CEA Insertion	EOP 2540A	Y
			RC-2	Boration CVCS		
			RC-3	Boration SI		
		Maintenance of Vital DC Power	MVA-DC-1	Battery Chargers/ Station Batteries	EOP 2540B	Y
		Maintenance of Vital AC Power	MVA-AC-1	RSST	EOP 2540B	Y
			MVA-AC-2	EDG		
			MVA-AC-3	BUS 34A/34B		
		RCS Inventory Control	IC-1	CVCS	EOP 2540C1	
			IC-2	Safety Injection		Y
		RCS Pressure Control	PC-1	Subcooled	EOP 2540C2	
			PC-2	Saturated		Y
			PC-3	PORVs		
		RCS Core Heat Removal	HR-1	SI no operating	EOP 2540D	
			HR-2	SI operating		
			HR-3	O-T-C		Y
		Containment Isolation	CI-1	Automatic / Manual	EOP 2540E	Y

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 9

Event Description: Rupture of Auxiliary Feedwater Headers resulting in Loss Of All Feedwater flow

Time	Position	Applicant's Actions or Behavior
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	SRO	Containment Temperature and Pressure Control	CTPC-1	CARs (Normal)	EOP 2540F	Y	8
			CTPC-2	CARs (Emerg)		May be Y if >4.42psi	May be #4 if CTMT >4.42psi
	SRO	8. DIRECT the STA to check that Safety Function Status Checklist Criteria are satisfied for chosen success paths.					
		9. PERFORM operator actions for chosen success paths based on priority assigned.					
Examiner Note: The US should transition to EOP 2540D, <i>Functional Recovery of Heat Removal, Success Path HR-3</i> at which time the scenario is complete.							

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 7

Event Description: **EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions**

Time	Position	Applicant's Actions or Behavior
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Examiner Note: The following steps are from EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions.

	ATC	<p>1. <u>IF</u> charging pumps suction is aligned to the VCT, <u>THEN</u> CHECK VCT level is between 72% to 86%:</p> <p>a. IF VCT level is less than 72%, THEN ALIGN charging pump suction to RWST as follows:</p> <ol style="list-style-type: none"> 1) OPEN CH- 192, RWST isolation. 2) ENSURE CH- 504, RWST to charging suction is open. 3) CLOSE CH- 501, VCT outlet isolation. 4) ENSURE CH- 196, VCT makeup bypass is closed. <p>b. IF VCT level is greater than 88%, THEN PLACE CH- 500, letdown divert handswitch, to the "RWS" position, and divert as required to maintain VCT level 72% to 86%.</p>
	ATC	<p>2. TCOA: <u>IF</u> SIAS actuated, <u>THEN</u> ENSURE ONE complete facility of CRAC operating, in RECIRC mode, as follows: (C25A/B)</p> <p>Facility 1</p> <ul style="list-style-type: none"> • HV- 203A, Fan F- 21A exhaust damper open • Fan F- 21A, supply fan running • HV- 206A, Fan F- 31A exhaust damper open • Fan F- 31A, exhaust fan running • HV- 212A, Fan F- 32A exhaust damper, open • Fan F- 32A, filter fan, running • HV- 202, minimum fresh air damper, closed • HV- 207, cable vault exhaust damper, closed • HV- 208, exhaust air damper, closed <p>Facility 2</p> <ul style="list-style-type: none"> • HV- 203B, Fan F- 21B exhaust damper open • Fan F- 21B, supply fan running • HV- 206B, Fan F- 31B exhaust damper open • Fan F- 31B, exhaust fan running • HV- 212B, Fan F- 32B exhaust damper, open • Fan F- 32B, filter fan, running • HV- 495, fresh air damper, closed • HV- 496, exhaust air damper, closed • HV- 497, cable vault exhaust damper, closed

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 7

Event Description: **EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions**

Time	Position	Applicant's Actions or Behavior
	ATC	<p>3. TCOA: IF SIAS not actuated, <u>THEN</u> CHECK ONE facility of CRAC operating, in NORMAL mode, as follows: (C25A/B)</p> <p>Facility 1</p> <ul style="list-style-type: none"> • HV- 203A, Fan F- 21A exhaust damper is open • Fan F- 21A, supply fan running • HV- 206A, Fan F- 31A exhaust damper open • Fan F- 31A, exhaust fan running <p>Facility 2</p> <ul style="list-style-type: none"> • HV- 203B, Fan F- 21B exhaust damper open • Fan F- 21B, supply fan running • HV- 206B, Fan F- 31B exhaust damper open • Fan F- 31B, exhaust fan running
	ATC	<p>4. <u>IF</u> charging pumps suction aligned to the RWST <u>AND</u> boration not required, <u>THEN</u> RESTORE charging pump suction to VCT as follows:</p> <ol style="list-style-type: none"> CHECK BOTH of the following: <ol style="list-style-type: none"> VCT level between 72% and 86% VCT pressure greater than 15 psig CHECK letdown is in service. OPEN CH- 501, VCT outlet isolation. CLOSE CH- 192, RWST isolation.
	BOP	<p>5. CHECK instrument air pressure greater than 90 psig and stable.</p>
	BOP	<p>6. <u>IF</u> AFAS has actuated, <u>WHEN BOTH</u> steam generators are restored to greater than 33%, <u>THEN</u> PERFORM the following:</p> <ol style="list-style-type: none"> PLACE the following switches in "M" (Manual) and ADJUST to obtain desired flow (C- 05): <ol style="list-style-type: none"> FW- 43A, "AFW- FCV, HIC- 5276A" FW- 43B, "AFW- FCV, HIC- 5279A" PLACE BOTH of the following switches to "RESET" and ALLOW to spring return to neutral (C- 05): <ol style="list-style-type: none"> "OVERRIDE/MAN/START RESET" (Facility 1) "OVERRIDE/MAN/START RESET" (Facility 2) ADJUST the following switches to obtain desired flow (C- 05): <ol style="list-style-type: none"> FW- 43A, "AFW- FCV, HIC- 5276A" FW- 43B, "AFW- FCV, HIC- 5279A" <u>IF</u> main feedwater pump is supplying steam generators, <u>THEN</u> STOP BOTH auxiliary feedwater pumps. <p>Examiner Note: BOP may place both facilities in override (Pull-To-Lock) once the AFW rupture is discovered and the SRO directs AFW be secured.</p>

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 7

Event Description: **EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>7. CHECK Main Condenser is available, as indicated by ALL of the following:</p> <ul style="list-style-type: none"> • At least ONE MSIV open • Condenser vacuum better than 15 inches HG - ABS (0 to 15 inches) • At least ONE condensate pump operating • At least ONE Circ Water pump operating <p>RNO</p> <p>7.1 IF Main Condenser is not available, PERFORM the following:</p> <ul style="list-style-type: none"> • CLOSE BOTH MSIVs. • ENSURE BOTH MSIV bypass valves are closed. • OPEN AR-17, condenser vacuum breaker. <p>Examiner Note: Not available due to the loss of condenser vacuum.</p>
	BOP	8. OPEN HD-106, subcooling valve.
	BOP	9. ENSURE BOTH heater drain pumps stopped.
	BOP	<p>10. <u>IF</u> MFW is supplying feed to the steam generators, <u>THEN</u> PERFORM the following:</p> <ol style="list-style-type: none"> ENSURE that only ONE main feedwater pump is operating. ENSURE that BOTH main feed block valves are closed: <ol style="list-style-type: none"> 1) FW- 42A 2) FW- 42B ADJUST the operating main feedwater pump pressure to 50 to 150 psi greater than SG pressure. ENSURE BOTH main feed reg bypass valves are throttled to control SG level: <ol style="list-style-type: none"> 1) LIC- 5215 2) LIC- 5216 <u>IF</u> Main Feedwater Pump A is secured, <u>THEN</u> CLOSE the following: <ol style="list-style-type: none"> 1) FW- 38A, main feedwater pump discharge valve 2) FIC- 5237, main feedwater pump mini flow recirc valve <u>IF</u> Main Feedwater Pump B is secured, <u>THEN</u> CLOSE the following: <ol style="list-style-type: none"> 1) FW- 38B, main feedwater pump discharge valve 2) FIC- 5240, main feedwater pump mini flow recirc valve <p>Examiner Note: Loss of condenser vacuum secures both MFW pumps.</p>
	BOP	<p>11. <u>IF</u> BOTH MFW pumps are secured, <u>THEN</u> PERFORM the following:</p> <ol style="list-style-type: none"> CLOSE BOTH main feedwater pump mini flow recirc valves. <ul style="list-style-type: none"> • FIC- 5237 • FIC- 5240

Op-Test No.: ES16LI1 Scenario No.: 1 Event No.: 7

Event Description: **EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions**

Time	Position	Applicant's Actions or Behavior
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	BOP	12. <u>IF</u> 25A OR 25B is energized, <u>THEN</u> ALIGN condensate pumps as follows: a. ENSURE ONE pump is running. b. ENSURE ONE pump is in "PULL TO LOCK." c. ENSURE ONE pump is in "AUTO."
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Examiner Note: it is important that at least one condensate pump remain running. If all three are mistakenly secured, the only success path available will be Once-Through-Cooling.

Examiner Note: End of Attachment 4- A

SIMULATOR SCENARIO #2

Facility: Millstone Unit 2

Scenario No.: 2

Op-Test No.: ES16LI2

Examiners: _____	Operators: _____	SRO
_____	_____	ATC
_____	_____	BOP

Initial Conditions: 90% Power IC-140, No Equipment OOS, Ch-Y PZR Level in service, Fac. 2 CRAC in service.

Turnover: 90% Power, Xenon building in, no equipment OOS. 24E is aligned to 24C. Raise Power IAW OP2204 to 100%.

Critical Tasks:

1. SGTR-6; Manually establish the minimum design Safety Injection System flow.
2. SGTR-5: Isolate the affected SG.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R, N (ATC/S) (BOP/S)	Raise Reactor Power to 100%.
2	RP19C	I, TS (ATC/S)	'C' RPS Lower NI Fails low.
3	CW02D	C (BOP/S)	"D" Traveling Screen D/P high, requires securing "D" Circ. Pump.
4	RM01P CH08D	I, TS (ATC/S)	CRAC Radiation Monitor, RM-9799B, fails high and "B" CRAC Filter Fan, F-32B, Trips (TS).
5	SG01A	C, TS (BOP/S)	SGTL in #1 SG (TS).
6	N/A	R (All)	Down power due to SGTL.
7	SG02B	M (All)	SG Tube Rupture. Manual plant trip.
8	ES03J / SI05A	C (ATC/S)	"C" HPSI pump fails to start on SIAS. "A" HPSI pump is degraded (100%)
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual
1. Total malfunctions (5–8)	6
2. Malfunctions after EOP entry (1–2)	1
3. Abnormal events (2–4)	4
4. Major transients (1–2)	1
5. EOPs entered/requiring substantive actions (1–2)	1
6. EOP contingencies requiring substantive actions (0–2)	0
7. Critical tasks (2–3)	3

NRC 2016, Scenario 2 Summary:

The crew will take the shift with the unit at 90% Xenon slowly building in, with no equipment out of service (IC-30). The crew will begin the shift by raising power to 100%.

Event 1: The crew takes the shift and begins the power ascension to 100% power. Xenon concentration will be slowly rising requiring the Crew to initiate a dilution or reduce Turbine load to maintain RCS temperature. The Crew will be referring to OP 2204, OP 2302A, OP 2304C and OP 2208 to dilute, with draw CEAs and raise Turbine load.

Event 2: After the dilutions to raise power and at the discretion of the Examiners “C” RPS Nuclear Instrument fails requiring ARP actions to bypass the affected Reactor Trip Modules on Channel “C” and the U.S. will enter the applicable Tech. Spec.

Event 3: At the discretion of the Examiners the malfunction for the “D” Traveling Screen DP will be initiated causing the Traveling Screen for “D” Water box to ramp in above high setpoint requiring the securing of “D” Circ. Pump. The Crew will enter AOP 2517 for Circulating Water Malfunction and take actions to cross-tie “C” and “D” Water boxes by closing the “D” Water box inlet valve and place the tripped Circ Pump handswitch in PTL and lastly the Crew will verify Condenser vacuum <4.5” Hg.

Event 4: At the discretion of the Examiners, the Control Room Air Conditioning (CRAC) Radiation Monitor will fail high, causing the ventilation system to shift into recirculation mode. Five seconds after starting, the “B” Filter Fan, F32B, will trip due to a broken belt. Per ARP 2590A-159, the crew should verify proper operation of the CRAC system and note the loss of the filter fan. This will require the crew to secure Facility 2 CRAC and ensure Facility 1 CRAC is operating as required per ARP 2590A-159. The US will enter TSAS 3.7.6.1a for an inoperable train of CRAC, TSAS 3.3.3.1 for the failed rad monitor, and call Maintenance/Work Planning for the needed equipment repairs.

Event 5: At the discretion of the Examiners the malfunction for a S/G tube leak is inserted. The Crew will be alerted to a SGTL by C06/07 Alarm for N-16 HIGH and carry out the actions for the ARP and will enter AOP 2569 SGTL. The Crew will verify Reactor Trip Criteria is not exceeded but the Tech. Spec. of 75 gpd will be exceeded requiring a Reactor down power. The Crew will transition to AOP 2575 Rapid Downpower.

Event 6: The crew will enter AOP 2575 Rapid Downpower. The first action for the rapid down power will require the Crew to force PZR sprays then insert Group 7 Rods 10 steps while reducing Turbine load to maintain RCS T_{COLD}. The Crew will then align for boration from the RWST requiring the ATC operator to start an additional Charging pump if not already started and the BOP to setup the Turbine HMI to lower load to maintain RCS T_{COLD}.

Event 7: During the Rapid Downpower at the discretion of the Examiner an S/G tube rupture will be inserted requiring the Crew to verify actual rupture using plant parameters and the Main Steam Line Hi alarm and direct a manually trip the Reactor.

Event 8: After the completion of EOP 2525 SPTA the crew will enter EOP 2534 SGTR and upon SIAS the "C" HPSI pump will fail to start and the "A" HPSI will be fully degraded requiring the ATC to manually start the "C" HPSI pump and or start the "B" HPSI pump to meet SI flow criteria.

INPUT SUMMARY							
Either INPUT or VERIFY the following functions:							
ID Num	Description	Delay Time	Ramp Time	Event Time	Sev or Value	Final Value	Rel Order
MALFUNCTIONS							
RP19C	"C" Channel Power Range RPS fail			E-2	0%	0%	2
CW02D	"D" Traveling Screen D/P		180 sec	E-3	65%	65%	3
RM01P	RM-9799A CNTRL RM Radmon			E-4	100%	100%	4
CH08D	"B" CRAC Filter Fan, F32B, trip	5 sec		E-4	N/A	N/A	4
SG01A	#1 S/G tube leak		120 sec	E-5	50%	50%	5
SG02B	#1 S/G tube rupture		60 sec	E-7	15%	15%	7
ES03J	"C" HPSI start fail on SIAS			E-30	N/A	N/A	8
SI05A	"A" HPSI pump degradation		60 sec	E-30	100%	100%	8
REMOTE FUNCTIONS							
CWR06B	"B" Screen Wash Pump Start			E-10		START	3
CWR07A	"A" Screens to Fast			E-10		FAST	3
CWR07B	"B" Screens to Fast			E-10		FAST	3
CWR07C	"C" Screens to Fast			E-10		FAST	3
CWR07D	"D" Screens to Fast			E-10		FAST	3
CWR07D	"D" Screens to Stop			E-11		STOP	3
OVERRIDES							

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 1

Event Description: Raise Power to 100%

Time	Position	Applicant's Actions or Behavior
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Examiner Note: The crew has been instructed to brief the up power prior to taking the watch. The following steps are from OP 2204 Load Changes. OP 2204 Load Changes procedure is marked up with "N/A" and Unit Supervisor signatures for applicable steps.

		Up power in accordance with OP 2204 and Reactivity Plan. Method: dilution and CEAs Rate: 15%/hour <ul style="list-style-type: none">Crew will dilute to the charging pump suction and raise power to ~100%.Turbine load will be increased to maintain RCS Tavg on program.

Examiner Note: When reactor power is 5% higher than initial power or at the lead examiner's direction, proceed to Event #2, Trip of "C" Channel of NI power instrument.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 2

Event Description: “C” RPS Lower NI Failure (low)

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event #2, “C” RPS Lower NI Fails Low.

Indications Available:

- NIS CHANNEL DEVIATION HI (C-04, BA-12).
- RX POWER Δ T CH DEVIATION (C-04, AA-8).
- TM-LP TRIP CH C (C-04, DA-3)
- LCL PWR DENSE TRIP CH C (C-04, DA-5)
- CEA DROPPED NIS (C-04, CA-18)

Examiner Note: The following steps are from ARP 2590C-089.

Examiner Note: Crew may or may not secure dilution in progress from Event #1.

	ATC	<p><u>AUTOMATIC FUNCTIONS</u></p> <p>1. None</p> <p><u>CORRECTIVE ACTIONS</u></p> <p>1. To determine the cause of alarm, OBSERVE the following:</p> <ul style="list-style-type: none">• ASI (C-04, PPC, RPS)• Linear power channel indications (C-04, PPC, RPS) <div><p style="text-align: center;">NOTE</p><p>This alarm may be indicative of one or more of the following:</p><ul style="list-style-type: none">• One RPS linear power channel (4 total), deviating from the grand average signal generated by comparator average hi or hi-hi deviation setpoint• Axial offset condition• Failure of one <i>power range monitor</i> channel</div> <p>2. <u>IF</u> <i>power range monitor</i> has failed, PERFORM the following:</p> <p>2.1 OBTAIN necessary keys and PERFORM applicable actions to bypass the following power outputs for applicable RPS channel causing alarm:</p> <ul style="list-style-type: none">• TM/LP Trip• High Power Trip• Local Power Density Trip• Turbine Trip (RPS) <p>2.2 LOG entry into applicable ACTION Statement(s) of T/S, 3.3.1.1.</p> <p>2.3 As necessary, Refer To OP 2380, “RPS and NI Safety Channel Operation,” and PERFORM applicable actions to remove affected channels input to comparator averager.</p>
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Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 2

Event Description: **“C” RPS Lower NI Failure** (low)

Time	Position	Applicant's Actions or Behavior
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	ATC	<p><u>CORRECTIVE ACTIONS (cont.)</u></p> <ol style="list-style-type: none"> IF power range <i>control</i> channel has failed, PLACE applicable power ration calculator input switch to “OUT” (rc-05e): <ul style="list-style-type: none"> IF channel “X,” “CH 9” IF channel “Y,” “CH 10” IF any axial offset condition exists for an unknown reason, NOTIFY Reactor Engineering. Refer To T/S LCO 3.2.4 and DETERMINE applicable and additional actions. WHEN alarm conditions clears, to reset “HI DEV” and “HI-HI DEV” alarms, <i>Power range monitor</i>, TOGGLE “LED RESET” momentarily IF ALL of the following alarms are coincident with this annunciator, REQUEST I&C Department to refer to 25203-39069 sh. 23C and check ruses for interposing relay circuit in RC22:
Examiner Note: The following steps are from OP 2380, “RPS and NI Safety Channel Operation”.		
		<p>4.3.2 IF, at any time, it is necessary to remove any power range safety channel input to comparator averager (used in computing average flux power level), PLACE applicable switch to “OFF” (rear of channel “A” RPS):</p> <ul style="list-style-type: none"> IF desired to remove channel “A,” “CHANNEL 5” switch IF desired to remove channel “B,” “CHANNEL 6” switch IF desired to remove “C,” “CHANNEL 7” switch IF desired to remove “D,” “CHANNEL 8” switch <p>Examiner Note: Crew should place the “CHANNEL 7” switch in “OFF”.</p>
Examiner Note: Step 3 - 7 are N/A. SRO Should Review T/S for applicability and required action.		
	SRO	<p><u>Refer to Tech. Spec. 3.3.1.1:</u></p> <p>LCO 3.3.1.1 (RPS): As a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE.</p> <p><u>APPLICABILITY:</u> As shown in Table 3.3-1.</p> <p><u>ACTION:</u> As shown in Table 3.3-1.</p>

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 2

Event Description: "C" RPS Lower NI Failure (low)

Time	Position	Applicant's Actions or Behavior
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	SRO	<p>Per TS Table 3.3-1: FUNCTIONAL UNIT #2 Power Level - High; Total Number of Channels = 4, Minimum Channels Operable = 3, App. Modes = 1, 2, 3(d) Action = 2</p> <p>Action 2 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may continue provided the following conditions are satisfied:</p> <ol style="list-style-type: none">The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. The inoperable channel shall either be restored to OPERABLE status, or placed in the tripped condition, within 48 hours.Within 1 hour, all functional units receiving an input from the inoperable channel are also declared inoperable, and the appropriate actions are taken for the affected functional units.The Minimum Channels OPERABLE requirement is met; however, one additional channel may be removed from service for up to 48 hours, provided one of the inoperable channels is placed in the tripped condition.
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Examiner Note: SRO should note TSAS 3.3.1, Action 2 applies and is presently being met by the actions taken per the ARP to bypass the affected channels.

	SRO	<p>Review LCO 3.2.4 for applicability:</p> <p>LCO 3.2.4 (T_q): The AZIMUTHAL POWER TILT (T_q) shall be ≤ 0.02.</p> <p>APPLICABILITY: MODE 1 with THERMAL POWER $> 50\%$ of RATED THERMAL POWER^{(1)*}.</p> <p>ACTION:</p> <ol style="list-style-type: none">With the indicated $T_q > 0.02$ but ≤ 0.10, either restore T_q to ≤ 0.02 within 2 hours or verify the TOTAL UNRODDED INTEGRATED RADIAL PEAKING FACTOR (F^{Tr}) is within the limit of Specification 3.2.3 within 2 hours; and .
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Examiner Note: SRO should note TSAS 3.2.4 does not apply because power tilt indication is due to an instrument failure and not an actual uneven power distribution.

Examiner Note: When the actions of ARP 2590C-089 have been addressed and the applicable Technical Specifications have been evaluated, or at lead examiner's direction, proceed to Event 3 Failure of the "D" Traveling Screen ΔP High.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 3

Event Description: **“D” Traveling Screen ΔP Fails High**

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 3, Failure of the “D” Traveling Screen ΔP High.

Indications Available:

- **TRAVELING SCREEN ΔP HI (C-06/7, D-10)**
- **“D” Screen Differential Pressure indication on C-06/7 rising**

Examiner Note: The following steps are from ARP 2590E-056, “TRAVELING SCREEN ΔP HI” (C-06/7, D-10).

	BOP	<u>AUTOMATIC FUNCTIONS</u> 1. None <u>CORRECTIVE ACTIONS</u> 1. Go To AOP 2517, “Circulating Water Malfunctions.”
	SRO	Enter AOP 2517, “Circulating Water Malfunctions.”

Examiner Note: The following steps are from AOP 2517, “Circulating Water Malfunctions.”

	BOP	<div style="border: 1px solid black; padding: 10px; text-align: center;">NOTE</div> <p>When power is less than 15% <u>AND</u> linear power bistable light clears (<i>not</i> lit), on at least 3 RPS channels, the turbine trip is inhibited and turbine trip will <i>not</i> result in an automatic reactor trip.</p> <p>3.1 <u>IF ANY</u> of the following conditions exist:</p> <ul style="list-style-type: none">• “A” <u>AND</u> “B” circulating water pumps <i>not</i> operating• “C” <u>AND</u> “D” circulating water pumps <i>not</i> operating <p>CHECK status of turbine trip bypass and PERFORM the following:</p>
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Examiner Note: Step 3.1 is N/A

	BOP	<p>3.2 <u>IF ONE</u> circulating water pump has tripped, PERFORM the following:</p> <p>a. ENSURE BOTH of the following exist:</p> <ul style="list-style-type: none">• “A” <u>OR</u> “B” circulating water pump operating• “C” <u>OR</u> “D” circulating water pump operating <p>b. Go To Section 5.0, “Trip of One Circulating Water Pump.”</p>
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Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 3

Event Description: **“D” Traveling Screen ΔP Fails High**

Time	Position	Applicant's Actions or Behavior
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		<p>3.3 IF “CIRC WATER PP LUBE WATER PRES LO” (C-06/7, A-10) annunciator in alarm, Go TO Section 6.0, “Circulating Water Pump Lube Water Pressure Low.”</p> <p>3.4 IF “HI COND D/T” (C-06/7, DA-37) annunciator in alarm, Go TO Section 7.0, “High Condenser Differential Temperature.”</p> <p>3.5 IF “HI COND DIS TEMP” (C-06/7, DB-37) annunciator in alarm, Go TO Section 8.0, “High Condenser Discharge Temperature.”</p> <p>3.6 IF “TRAVELING SCREEN ΔP HI” (C-06/7, D-10) annunciator in alarm, Go TO Section 9.0, “Traveling Screen Differential Pressure High.”</p>
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Examiner Note: SRO should transition to Section 9.0 of AOP 2517 and the following is from Sec. 9.0.

	BOP	<p>9.1 IF “TRAVELING SCREEN ΔP HI” (C-06/7, D-10) annunciator in alarm, PERFORM the following:</p> <p>a. PLACE BOTH screen wash pump switches “START:”</p> <ul style="list-style-type: none"> • “A” SCREENWASH PP, P8A, HS 6493” • “B” SCREENWASH PP, P8B, HS 6498” <p>b. PLACE ALL available traveling screens in “RUN FAST.”</p>
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Simulator Operator: When directed, trigger Event-10 to START the “B” Screen Wash Pump and place all screens in FAST. [E-10; CWR06B (START), CWR07A, B, C & D (FAST)]

When directed to secure the “D” Traveling Screen, trigger Event-11 [E-11; CWR07D (STOP)]

	BOP	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>CAUTION</p> <p>Circulating water pumps may be unstable when operating near 50% speed; therefore circulating water pump operation below 60% speed is limited to pump starting and stopping only.</p> </div> <p>c. LOWER circulating water pump speed while monitoring condenser backpressure to lower traveling screen differential pressure.</p> <p>d. CHECK ALL screens rotating.</p> <p>d.1 IF ANY traveling screen motor is operating <u>AND</u> associated traveling screen is <i>not</i> rotating, PERFORM the following:</p> <ol style="list-style-type: none"> 1) PLACE affected traveling screen control switch in “STOP” (C-47). 2) STOP Circulating Water Pump for the affected traveling screen. 3) Refer To Section 5.0 and PERFORM applicable steps to cross-tie water boxes. 4) Submit TR to Maintenance Department to replace shear pin on affected traveling screen.
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Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 3

Event Description: **“D” Traveling Screen ΔP Fails High**

Time	Position	Applicant's Actions or Behavior
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Examiner Note: Crew may secure “D” Circ. Pump at any time, based on rising screen dP. When pump is secured, AOP 2517, Section 5.0 should be referenced (Section 5.0 follows).

	BOP	<p>5.1 <u>IF</u> any Circulating Water Pumps are in the VFD MODE, PERFORM the following:</p> <ol style="list-style-type: none">RAISE speed of all VFD mode operating circulating water pumps to 100%.<u>IF TRAVELING SCREEN HI</u>, (C06/7, D10) annunciator in alarm, Refer To section 9.0 of this procedure. <p>5.2 STOP any in progress liquid waste discharges.</p> <p>5.3 ENSURE sodium hypochlorite shocking of bays <i>not</i> in progress.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"><p style="text-align: center;">NOTE</p><p>A 15 to 20 second pause is required after receiving the full closed position indication to allow for full closure prior to opening the crosstie valve.</p></div> <p>5.4 CLOSE applicable water box inlet valve for tripped pump:</p> <ul style="list-style-type: none">CW-11H, “A” water box inletCW-11G, “B” water box inletCW-11F, “C” water box inletCW-11E, “D” water box inlet <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"><p style="text-align: center;">CAUTION</p><p>Supplying two condenser waterboxes from one circulating water pump increases traveling screen differential pressure. During periods of actual or predicted severe weather, where fouling is a concern, waterboxes should not be cross- connected. Water boxes may be cross- connected with SM permission.</p></div> <p>Steps 5.5 – 5.10 apply to CW pumps “A”, “B” & “C” and are N/A.</p> <ol style="list-style-type: none">IF “D” circulating water pump tripped, <u>AND</u> cross tying water boxes is required to maintain turbine load, PERFORM the following:<ol style="list-style-type: none">PLACE “P- 6D Breaker” in Pull-To-Lock.ENSURE CW-11D, “D” water box outlet, is open.OPEN CW-12C, condenser 1B inlet cross-tie
	BOP/PEO	<ol style="list-style-type: none">IF “D” circulating water pump tripped, <u>AND</u> isolation of water box is required <u>THEN</u> PERFORM the following: {The remaining steps involve isolating the vacuum priming system and venting of the water box, closing CW-11D (water box outlet), notifying Security and monitoring condenser vacuum. None of these actions have any bearing on the scenario.}

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 3

Event Description: **“D” Traveling Screen ΔP Fails High**

Time	Position	Applicant's Actions or Behavior
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Examiner Note: When the actions of ARP 2590C-089 have been addressed and the applicable Technical Specifications have been evaluated, or at lead examiner's direction, proceed to Event 4, CRAC Rad Monitor Failure high.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 4

Event Description: CRAC Rad Monitor and Filter Fan Failure

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 4, CRAC Rad Monitor, and Filter Fan Failure.

Indications:

- "C.R.A.C.S. IN AUTO RECIRC MODE" (C-01, C-40)
- Fac. 2 CRAC has shifted to recirc. mode.

Examiner Note: The following steps are from ARP 2590A-159 "C.R.A.C.S. IN AUTO RECIRC MODE".

	ATC	<p><u>AUTOMATIC FUNCTIONS</u></p> <p>1. CRACS transfers to recirculation mode.</p> <div><p style="text-align: center;">CAUTION</p><p>To ensure proper cleanup of Control Room atmosphere, one complete <i>facility related train</i> of Control Room ventilation (i.e. supply, exhaust and filter fans) must be in operation</p></div> <p><u>CORRECTIVE ACTIONS</u></p> <p>a. PLACE "NORM/RECIRC MODE, HS-8346" AND "NORM/RECIRC MODE, HS-8359" switches in "RECIRC" (C-25A and C-25B).</p> <p>b. Check damper positions.</p> <p>c. VERIFY "CRACS FLTR FAN, F32A, HS-8006" <u>OR</u> "CRACS FLTR FAN, F32B, HS-8007," or both, operating (C-25A and C-25B).</p>
	ATC	<p>9. MONITOR system operation and VERIFY <i>one</i> complete CRACS train remains in operation.</p> <p>9.1. IF sudden change in Control Room pressure occurs, VERIFY proper supply and exhaust fan operation (local).</p> <p>9.2. IF fan belt failure occurs, STOP affected train AND START other train.</p>
	ATC	<p>Crew may elect to use OP 2315A for specific guidance in starting Fac. 1 CRAC or use step 9.2 above to start it.</p>

Examiner Note: The following are the key steps from OP 2315A for starting of "A" CRACS.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 4

Event Description: CRAC Rad Monitor and Filter Fan Failure

Time	Position	Applicant's Actions or Behavior
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		<p>4.1.3 ENSURE the following:</p> <ol style="list-style-type: none"> "EMERG FRESH AIR INTAKE RECIRC OVERRIDE, HS-8004C" in "NORM." "EMERG FRESH AIR INTAKE RECIRC OVERRIDE, HS-8004D" in "NORM." "FRESH AIR MU DMPR, HV-211," green "CLOSE" position indication light, lit. <p>4.1.4 ENSURE the following:</p> <ol style="list-style-type: none"> "NORM/RECIRC MODE, HS-8346" in "O.A." "MIN FRESH AIR DMPR, HV-202," red "OPEN" position indication light lit. "CABLE VAULT EXH DMPR, HV-207," red "OPEN" position indication light lit. <p>4.1.5 ENSURE the following:</p> <ol style="list-style-type: none"> "NORM/RECIRC MODE, HS-8359" in "O.A." "FRESH AIR DMPR, HV-495," red "OPEN" position indication light lit. "CABLE VAULT EXH DMPR, HV-497," red "OPEN" position indication light lit. <p>4.1.8 PERFORM the following simultaneously (C-25A):</p> <ul style="list-style-type: none"> START "CRACS EXH FAN, F-31A, HS-8001" START "CRACS SPLY FAN, F-21A, HS-8009" <p>4.1.9 ENSURE the following:</p> <ul style="list-style-type: none"> "CRACS EXH FAN, F-31A, HS-8001" red run light lit "F-31A, EXH DMPR, HV-206A," red "OPEN" light lit "CRACS SPLY FAN, F-21A, HS-8009" red run light lit "F-21A, EXH DMPR, HV-203A," red "OPEN" light lit
	SRO	12. IF radiation monitor alarm is a result of a failure (Green "OPERATE" light is out), SUBMIT a CR to I&C Dept. and Refer To Tech Spec LCO 3.3.3.1.

Examiner Note: The following is from TS 3.3.3.1

	SRO	<p>3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.</p> <p><u>APPLICABILITY:</u> As shown in Table 3.3-6.</p> <p><u>ACTION:</u></p> <ol style="list-style-type: none"> With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 2 hours or declare the channel inoperable. With the number of OPERABLE channels less than the number of MINIMUM CHANNELS OPERABLE in Table 3.3-6, take the ACTION shown in Table 3.3-6. The provisions of Specification 3.0.3 are not applicable. <p>TABLE 3.3-6, #1.b. Control Room Isolation: Minimum Channels Operable = 2, Action 16</p> <p>Action 16-1: with the number of OPERABLE channels one less than required, restore within 7 days...</p>
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Examiner Note: SRO logs into TSAS 3.3.3.1b, Action 16-1

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 4

Event Description: CRAC Rad Monitor and Filter Fan Failure

Time	Position	Applicant's Actions or Behavior
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	SRO	Refers to TS 3.7.6.1a for CRACS fan inoperable. Examiner Note: The following is from TS 3.7.6.1
	SRO	Review Technical Specifications: LCO 3.7.6.1: Two independent Control Room Emergency Ventilation Trains shall be OPERABLE.* <u>APPLICABILITY</u> : MODES 1, 2, 3, 4, 5 and 6. <u>ACTION</u> : MODES 1, 2, 3, and 4: a. One Control Room Emergency Ventilation Train Required ACTION: Restore the inoperable ventilation train to OPERABLE status within 7 days or shutdown.
Examiner Note: SRO enters TSAS "3.7.6.1a."		
Examiner Note: When the CRACS malfunction has been mitigated and the SRO has finished evaluating Technical Specifications, or at lead examiner's direction, proceed to Event 5, SGTL #1 SG.		

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 5

Event Description: Steam Generator Tube Leak #1 SG

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 5, Steam Generator Tube Leak #1 SG.

Indications:

- S/G N16 monitor on PPC rising leakage for No. 1 Steam Generator
- N16 Alert Alarm (C-06/7 CB-19)
- N16 High Alarm (C-06/7 CA-19)
- SJAE Discharge RIT-5099 level rising

Examiner Note: The following steps are from ARP 2590E-094, CB-19 N16 Alert.

	SRO/BOP	<p><u>AUTOMATIC FUNTIONS</u></p> <p>1. None</p> <p><u>CORRECTIVE ACTIONS</u></p> <p>1. OBSERVE radiation monitor indication (RC-14A, PPC N16 screen).</p> <p>2. COMPARE with trends from RIT-4262, S/G blowdown gross activity and RI-5099, steam jet air ejector.</p> <p>3. REQUEST Chemistry to perform SP 2833, "Secondary Coolant Analysis for Primary to Secondary Leak Rate and Dose Equivalent Iodine Concentration" to aid in accomplishing the following:</p> <p>3.1. DETERMINE the presence of primary to secondary leakage.</p> <p>3.2. DETERMINE primary to secondary leak rate.</p> <p>3.3. IDENTIFY the leaking Steam Generator.</p> <p>4. IF primary to secondary leak is confirmed by chemistry analysis or independent radiation monitor indications, Refer To AOP 2569 Steam Generator Tube Leak and perform applicable actions.</p>
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CUE: Chemistry acknowledges request to perform secondary samples for a primary to secondary leak. Wait appropriate time and report back that frisk results indicate activity in No. 1 Steam Generator.

	SRO/BOP	Enters AOP 2569, Steam Generator Leak.
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Examiner Note: The following steps are from AOP 2569 Steam Generator Tube Leak. Steps marked with an * are performed continuously or once specified conditions are met.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 5

Event Description: Steam Generator Tube Leak #1 SG

Time	Position	Applicant's Actions or Behavior
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	SRO/BOP	<p>3.1 <u>IF</u> leakage exceeds capability of available charging pumps to maintain pressurizer level, PERFORM the following:</p> <ol style="list-style-type: none"> IF in MODE 1 or 2, PERFORM the following: <ul style="list-style-type: none"> TRIP the reactor. Go To EOP 2525, "Standard Post Trip Actions." IF in MODE 3 or lower, PERFORM the following: <ul style="list-style-type: none"> ENSURE SIAS is actuated. Go To EOP 2541, Appendix 1, "Diagnostic Flowchart" <p>3.2 <u>IF</u> "MAIN STEAM LINE HI RAD / INST. FAIL" (C-01 A-30) is received AND is verified to be valid based on other changing RCS indications, PERFORM the following:</p> <ol style="list-style-type: none"> TRIP the reactor. Go To EOP 2525, "Standard Post Trip Actions."
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Examiner Note: Due to the initial size of the SGTL, steps 3.1 and 3.2 are not applicable at this time.

	SRO/BOP	<p>3.3 <u>IF</u> a SJAE OR SGBD Radiation Monitor alarm is received, ENSURE ALL of the following automatic actions occur:</p> <ul style="list-style-type: none"> MS-220A and MS-220B, blowdown isolation, close. MS-15, blowdown tank discharge isolation, closes. MS-135, blowdown quench tank discharge isolation, closes. HV-4287 and HV-4288, SG blowdown sample discharge to secondary sample sink, close (secondary sample panel). Blowdown values in PPC reset to "0."
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	SRO/BOP	<p>3.4 <u>IF</u> "N-16 HIGH" (C-06/7 CA---19) is received AND is verified to be valid based on other indications, Refer To PPC "N16" screen to determine primary to secondary leak rate and PERFORM the following:</p> <ol style="list-style-type: none"> IF primary to secondary leak rate is greater than or equal to 75 gpd AND is increasing by greater than or equal to 15 gpd / 30 minutes, Refer To AOP 2575, "Rapid Downpower," LOWER reactor power to less than 50% within one hour, and be in Hot Standby within the following two hours. Refer To MP-26-EPI-FAP06, "Classification and PARs," and DETERMINE reportability requirements. Refer To Technical Specification 3.4.6.2, "Reactor Coolant System Operational Leakage" and PERFORM applicable actions.
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Examiner Note: A rapid power reduction is required by this step if primary to secondary leak rate is >75 gpd AND increasing by > 15 gpd/30minutes.

The US should enter AOP 2575, Rapid Downpower at this time.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 6

Event Description: Rapid Downpower due to Excessive Steam Generator Tube Leak

Time	Position	Applicant's Actions or Behavior
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	SRO	Enter AOP 2575, Rapid Downpower.
Examiner Note: The following steps are from AOP 2575, Rapid Downpower, Section 3.0 Rapid Downpower.		
	SRO	<p>3.1 PERFORM focus brief on the following:</p> <p>REACTOR TRIP CRITERIA</p> <ul style="list-style-type: none"> Parameters associated with automatic reactor or turbine trips are challenged RCS T cold <i>not</i> within 10°F of temperature program and efforts to regain control are unsuccessful <p>RCS TEMPERATURE CONTROL</p> <ul style="list-style-type: none"> RCS T cold to be maintained within 10°F of Attachment 5, "Temperature vs. Power program" using Attachment 10, "Main Turbine Load Set Control." To avoid uncontrolled cooldowns or power transients, sudden changes in RCS temperature or boron concentration should be avoided. <p>3.2 REQUEST SM/STA to Refer To Attachment 8, "Required Notifications," and PERFORM notifications.</p>
	ATC	3.3 INITIATE forcing pressurizer sprays.
	SRO	<p>CAUTION: In the case of a dropped CEA, rod motion is <i>not</i> used to initiate downpower.</p> <p>Examiner Note: Caution is N/A</p>
	ATC	3.4 IF <i>not</i> downpowering due to a dropped rod, <u>AND</u> Reactor power is greater than 99% (2673 MWth) INSERT Group 7 CEAs 10 + 2 steps to initiate downpower.
	BOP	3.5 Using the "Load Speed Control" switch, REDUCE turbine load to maintain Tc on program (+/-2 deg).
	SRO	3.6 Refer To PPC or Reactor Engineering Curve and Data Book and OBTAIN reactivity plan for the initial reactor power condition and desired load reduction.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 6

Event Description: Rapid Downpower due to Excessive Steam Generator Tube Leak

Time	Position	Applicant's Actions or Behavior
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Examiner Note: The crew should refer to Reactivity Plan RE-G-14.

	BOP	<div>NOTE</div> <p>Attachment 10 "Approximate Load Demand vs. Reactor Power," can be used to correlate the desired power level to a turbine load demand setpoint.</p>
	BOP	3.7 Refer To Attachment 9, "Main Turbine Load Set Control," REDUCE turbine load and MAINTAIN Tc on program (+/-2 deg).

Examiner Note: The following steps are from AOP 2575 Rapid Downpower Attachment 9 Main Turbine Load Set Control:

	BOP	<div>CAUTION</div> <p>Operation of the "Load/Speed CONTROL" switch will change turbine load at 600%/hour. and cancel any previous load setpoint.</p> <div>NOTE</div> <p>Steps provided in this attachment are dependent on plant conditions and may be performed in any sequence. and repeated as necessary.</p>
	BOP	<ol style="list-style-type: none">1. <u>IF</u> desired to commence or modify a turbine load ramp, PERFORM the following (HMI "Load" screen):<ol style="list-style-type: none">a. <u>IF</u> previous ramp has stopped, SELECT "Load Hold."b. SELECT "Load Setpt" and ENTER desired value.c. SELECT "Rate setpt" and ENTER desired value.d. <u>WHEN</u> ready to commence load reduction, SELECT "Load Resume."

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 6

Event Description: Rapid Downpower due to Excessive Steam Generator Tube Leak

Time	Position	Applicant's Actions or Behavior
	BOP	<p>2. <u>IF</u> desired to adjust the "Load Ramp Rate," PERFORM <i>any</i> of the following:</p> <ul style="list-style-type: none"> • SELECT "Rate setpt" and ENTER new value. • SELECT "5% / hour," <u>OR</u> "10% / hour," <u>OR</u> "20% / hour." • SELECT "Raise" or "Lower" (0.25% / hour change). <p>3. <u>IF</u> Tav_g and T_c are <u>high</u> off program, PERFORM the following:</p> <ol style="list-style-type: none"> SELECT "Load Hold" to stop ramp. <u>WHEN</u> Tav_g and T_c are trending back to program, SELECT "Load Resume."
	BOP	<p>4. <u>IF</u> Tav_g and T_c are <u>low</u> off program, PERFORM the following:</p> <ol style="list-style-type: none"> JOG the "Load/Speed CONTROL" switch to "Lower." <u>WHEN</u> Tav_g and T_c are back on program, SELECT Load Setpt" and ENTER desired value. <u>IF</u> desired, Go To Step 1 and RESUME turbine load ramp. <p>5. <u>IF</u> desired load has been reached SELECT "Load Hold."</p>
Examiner Note: The following steps are from AOP 2575 Rapid Downpower Section 3.0 Rapid Downpower.		
	ATC	<p>3.8 Based on required rate of downpower, START additional charging pumps as necessary and balance charging and letdown.</p>

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 6

Event Description: Rapid Downpower due to Excessive Steam Generator Tube Leak

Time	Position	Applicant's Actions or Behavior
	ATC	<p>3.9 IF desired to borate from the RWST (preferred method)</p> <p>PERFORM the following:</p> <ul style="list-style-type: none"> a. ENSURE at least one charging pump operating. b. ENSURE CH-196, VCT makeup bypass, closed. c. ENSURE CH-504, RWST to charging suction, open. d. OPEN CH-192, RWST isolation. e. CLOSE CH-501, VCT outlet isolation. f. CHECK charging flow at desired rate. g. Go To step 3.11 <p>Examiner Note: Crew should borate from the RWST.</p>
	SRO/ATC/ BOP	<p>3.11 During the downpower, Refer To Attachment 1, "Rapid Downpower Parameters," and MAINTAIN parameters as specified throughout downpower:</p> <p>Examiner note: Attachment 1 Rapid Downpower Parameters:</p> <ul style="list-style-type: none"> • Condensate and heater drain flows and pressures: sufficient to maintain adequate SGFP suction pressure • FRV D/P: greater than 40 psid • Turbine load: responding to changes in load demand, with control valves operating together • Steam generator levels 55 to 70%. • MSR parameters tracking together • Turbine Generator MVARs: as specified by CONVEX • Reactor power: being monitored using delta T power indication • ASI: In accordance with reactivity plan or within 0.01 of ESI or per COLR. • CEA position: greater than PDIL • Tc: less than or equal to 549 deg • Pressurizer level: between 35 and 70% <p>Pressurizer pressure: between 2,225 and 2,300 psia (DNB margin)</p>

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 6

Event Description: Rapid Downpower due to Excessive Steam Generator Tube Leak

Time	Position	Applicant's Actions or Behavior
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	SRO/ATC	<div><p>NOTE</p><ol style="list-style-type: none">1. Xenon rate of change should be considered when terminating boration.2. During rapid downpower, the PPC calorimetric may be inaccurate due to SG level transients. The most accurate available indication of reactor power is RPS delta T power.</div>
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Examiner Note: Once power has dropped at least 5%, or at the lead examiner's direction, proceed to Event 7, Steam Generator Tube Rupture, Manual Plant Trip.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 7, Steam Generator Tube Rupture in #1 SG.

Examiner Note: A reactor trip will be required by CAS of AOP 2569.

Indications:

- Steam Line Radiation Monitor Alarm (C-01, A30)
- PROCESS RAD MON HI/HI FAIL (C-06, DA-24)
- Letdown lowers
- Pressurizer Level Lowering

Examiner Note: The following steps are from EOP 2525, Standard Post Trip Actions.

	ATC	Determine Status of Reactivity Control – Reactor Trip 1. DETERMINE that Reactivity Control acceptance criteria are met for the reactor by performing ALL of the following steps: <ul style="list-style-type: none"> • CHECK that all CEAs are fully inserted. • CHECK that reactor power is dropping. • CHECK that SUR is negative.
	BOP	Determine Status of Reactivity Control – Turbine Trip 2. DETERMINE that Reactivity Control acceptance criteria are met for the turbine by performing ALL of the following steps : <ul style="list-style-type: none"> a. CHECK that the main turbine is tripped by BOTH of the following: <ul style="list-style-type: none"> • ALL main stop valves are closed. • Generator megawatts indicate zero. • Turbine speed is lowering. b. <u>IF</u> 15G-2XI-4, motor operated disconnect, is closed, CHECK that the main Generator output breakers 8T and 9T are open.
	BOP	Determine Status of Maintenance of Vital Auxiliaries 3. DETERMINE that Maintenance of Vital Auxiliaries acceptance criteria are met by performing ALL of the following steps: <ul style="list-style-type: none"> 3.1. CHECK that ALL Facility 1 and 2 electrical buses are energized: <ul style="list-style-type: none"> • 6.9kV Electrical Buses 25A, 25B • 4.16kV Non-Vital Electrical Buses 24A, 24B • 4.16vV Vital Electrical Buses 24C, 24D • Vital DC Buses 201A, 201B, DV-10, DV-20 • Vital AC Instrument Buses VA-10, VA-20 3.2. CHECK that BOTH facilities of service water are operating. 3.3. CHECK that BOTH facilities of RBCCW are operating with service water cooling.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
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	ATC	<p>Determine Status of RCS Inventory Control</p> <p>4. DETERMINE that RCS Inventory Control acceptance criteria are met by performing ALL of the following:</p> <p>4.1. CHECK that BOTH of the following conditions exist:</p> <ul style="list-style-type: none">• Pressurizer level is 20 to 80%• Pressurizer level is trending to 35 to 70% <p>a.1 IF the Pressurizer Level Control System is not operating properly in automatic, RESTORE and MAINTAIN pressurizer level 35 to 70% by performing ANY of the following:</p> <ol style="list-style-type: none">1) OPERATE the Pressurizer Level Control System.2) Manually OPERATE charging and letdown. <p>4.2. CHECK that RCS subcooling is greater than or equal to 30°F</p>
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Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
	ATC	<p>Determine Status of RCS Pressure Control</p> <p>5. DETERMINE RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none"> • CHECK that pressurizer pressure is 1900 to 2350 psia. • CHECK that pressurizer pressure is trending to 2225 to 2300 psia. <p>5.1. <u>IF</u> the Pressurizer Pressure Control System is <i>not</i> operating properly in automatic, <u>THEN</u> RESTORE and MAINTAIN pressurizer pressure between 2225 to 2300 psia by performing ANY of the following:</p> <ul style="list-style-type: none"> • OPERATE the Pressurizer Pressure Control System. • Manually OPERATE pressurizer heaters and spray valves. <p>5.2. <u>IF ANY</u> pressurizer spray valve will <i>not</i> close, <u>THEN</u> STOP RCPs as necessary.</p> <p>5.3. <u>IF</u> any PORV is open <u>AND</u> pressurizer pressure is less than 2250 psia, <u>THEN</u> CLOSE the associated PORV block valve.</p> <p>5.4. <u>IF</u> pressurizer pressure is less than 1714 psia, <u>THEN</u> ENSURE ALL of the following:</p> <ul style="list-style-type: none"> • SIAS actuated. (C01) • CIAS actuated. (C01) • EBFAS actuated. (C01) <p>5.5. <u>IF</u> pressurizer pressure is less than 1714 psia <u>AND</u> SIAS actuated, <u>THEN</u> ENSURE ONE RCP in each loop is stopped.</p> <p>5.6. <u>TCOA: IF</u> Pressurizer pressure lowers to less than the minimum of Fig. 2 "RCP NPSH Curve" <u>THEN</u> STOP ALL RCPs</p>
	ATC	<p>Determine Status of Core Heat Removal</p> <p>6. DETERMINE that Core Heat Removal acceptance criteria are met by performing ALL of the following:</p> <p>a. CHECK that at least one RCP is operating and that loop delta T is less than 10°F</p> <p>a.1 <u>IF</u> RCPs are <i>not</i> operating, OR loop <u>T</u> is greater than 10°F, <u>THEN</u> PERFORM the following:</p> <ol style="list-style-type: none"> 1) PLACE TIC- 4165, steam dump TAVG controller, in manual and closed. 2) PLACE BOTH pressurizer spray valve controllers in manual and CLOSE the valves. <ul style="list-style-type: none"> • HIC- 100E • HIC- 100F <p>b. CHECK that Th subcooling is greater than or equal to 30°F.</p>

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
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	BOP	<p>Determine Status of RCS Heat Removal</p> <p>7. DETERMINE that RCS Heat Removal acceptance criteria are met by ALL of the following conditions:</p> <ol style="list-style-type: none"> CHECK that at least one steam generator has BOTH of the following conditions met: <ol style="list-style-type: none"> Level is 10 to 80%. Main feedwater or TWO auxiliary feedwater pumps are operating to restore level 40 to 70%. CHECK that RCS Tc is being maintained between 530°F to 535°F. CHECK that BOTH steam generators pressure are 880 to 920 psia.
	ATC	<p>Determine Status of Containment Isolation</p> <p>8. DETERMINE that Containment Isolation acceptance criteria are met by ALL of the following:</p> <ol style="list-style-type: none"> CHECK that containment pressure is less than 1.0 psig. CHECK that NONE of the following primary plant radiation monitors have an unexplained alarm or indicate an unexplained rise in activity: <p>Radiation Monitors Inside Containment</p> <ul style="list-style-type: none"> RM-7890, Personnel Access Area RM-7891, Ctmt Refuel Floor Area RM-8240, High Range RM-8241, High Range RM-8123 A and B, Ctmt Atmosphere RM-8262 A and B, Ctmt Atmosphere CHECK that NONE of the following steam plant radiation monitors have an unexplained alarm or indicate an unexplained rise in activity: <p>Steam Plant Radiation Monitors</p> <ul style="list-style-type: none"> RM-5099, Steam Jet Air Ejector RM-4262, SG Blowdown RM-4299A and B, Main Steam Line 1 RM-4299C, Main Steam Line 2 <p>c.1 <u>IF</u> feed is available to BOTH steam generators, <u>THEN</u> THROTTLE feed to the steam generator with the highest radiation readings to maintain level 40 to 45%.</p>

Op-Test No.: <u>ES16LI2</u> Scenario No.: <u>2</u> Event No.: <u>7, 8</u>		
Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow		
Time	Position	Applicant's Actions or Behavior

	ATC	<p>Determine Status of Containment Temperature and Pressure Control</p> <p>9. DETERMINE that Containment Temperature and Pressure Control acceptance criteria are met by BOTH of the following steps:</p> <ul style="list-style-type: none"> a. CHECK that containment temperature is less than 120°F. (PPC or avg. of Points 5 and 6) b. CHECK that containment pressure is less than 1.0psig.
	SRO	<p>10. PERFORM the following:</p> <ul style="list-style-type: none"> a. DIAGNOSE the event. Refer To Appendix 1, "Diagnostic Flowchart." b. INITIATE Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions." c. Go To the appropriate EOP
	ATC/BOP	<p>{Step 10.b above}</p> <p>Perform Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions".</p> <p>Examiner Note: EOP Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions." are attached to guide.</p>
<p>Examiner Note: The Unit Supervisor refers to EOP 2541 Appendix 1, Diagnostic Flowchart to diagnose the event.</p>		
	SRO	Enters EOP 2534, Steam Generator Tube Rupture.
<p>Examiner Note: The following steps are from EOP 2534 Steam Generator Tube Rupture. Asterisked steps, within the ORP or selected FRPs being implemented, may be brought forward to restore or preserve a Safety Function. Asterisked steps are "Continuously Applicable," and may be performed out of order after they have been accomplished once.</p>		
	SRO	<p>*1. CONFIRM diagnosis of Steam Generator Tube Rupture by performing the following:</p> <ul style="list-style-type: none"> a. CHECK Safety Function Status Check Acceptance Criteria are satisfied. <p>Examiner Note: SRO checks EOP 2534-001 SGTR Safety Function Status Checks and confirms that all Safety Criteria are satisfied.</p>

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
	BOP	<p>b. CHECK for steam generator tube rupture by performing the following:</p> <ol style="list-style-type: none"> 1) CHECK "B" train RBCCW in service. 2) ENSURE 2-RB-210 "Degasifier Effluent Cooler Return Outlet" is open. 3) OPEN the steam generator sample valves: <ul style="list-style-type: none"> • MS-191A • MS-191B 4) DIRECT Chemistry to perform the following: <ul style="list-style-type: none"> • Sample both steam generators • Frisk the samples • Report frisk results • Analyze samples for boron and activity 5) <u>WHEN</u> Chemistry reports that samples have been taken, <u>PERFORM</u> the following: <ul style="list-style-type: none"> • CLOSE the steam generator sample valves • <u>IF</u> SIAS has actuated, <u>AND</u> no other sampling is in progress, CLOSE 2-RB-210, "Degasifier Effluent Cooler Return Outlet"
CUE: When directed to sample Steam Generators, respond 20 minutes later that samples have been taken. Report that frisk results show indication of activity in No. 1 Steam Generator.		
	SRO	<p>*2. CLASSIFY the event. Refer To MP-26-EPI-FAP06, "Classification and PARs"</p> <ul style="list-style-type: none"> • IF classification requires RCS sampling, Refer To Appendix 46, "Sampling for EAL Determination" and DIRECT Chemistry as required.
	SRO	<p>*3. PERFORM ALL of the following:</p> <ul style="list-style-type: none"> • OPEN the placekeeper and ENTER the EOP entry time. • ENSURE the master alarm silence switch is in "NORMAL".
	ATC	<p>*4. <u>IF</u> pressurizer pressure is less than 1714 psia, PERFORM ALL of the following:</p> <ol style="list-style-type: none"> a. ENSURE SIAS, CIAS and EBFAS have actuated. (C01) b. ENSURE ONE complete facility of CRACS is operating in the recirc mode: (C25) <p>Facility 1</p> <ul style="list-style-type: none"> • HV-203A, Fan F-21A exhaust damper is open. • Fan F-21A, supply fan is running. • HV-206A, Fan F-31A exhaust damper is open. • Fan F-31A, exhaust fan is running. • HV-212A, Fan F-32A exhaust damper is open. • Fan F-32A, filter fan is running. • HV-202, minimum fresh air damper is closed. • HV-207, cable vault exhaust damper is closed. • HV-208, exhaust air damper is closed

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
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	ATC	<p>Facility 2</p> <ul style="list-style-type: none"> • HV-203B, Fan F-21B exhaust damper is open. • Fan F-21B, supply fan is running. • HV-206B, Fan F-31B exhaust damper is open. • Fan F-31B, exhaust fan is running. • HV-212B, Fan F-32B exhaust damper is open. • Fan F-32B, filter fan is running. • HV-495, fresh air damper is closed. • HV-496, exhaust air damper is closed. • HV-497, cable vault exhaust damper is closed.
	ATC	<p>*5. <u>IF</u> SIAS has initiated, PERFORM the following:</p> <ol style="list-style-type: none"> CHECK at least one train of SIAS, CIAS and EBFAS has properly actuated. (C01X) <ol style="list-style-type: none"> IF ANY component is <i>not</i> in its required position, manually ALIGN the applicable component. CHECK that safety injection flow is adequate. Refer To Appendix 2, "Figures." <ol style="list-style-type: none"> PERFORM ANY of the following to restore safety injection flow within the SI Flow Curve: <ol style="list-style-type: none"> ENSURE electrical power to safety injection pumps and valves. ENSURE correct safety injection valve lineup. ENSURE operation of necessary auxiliary systems: <ol style="list-style-type: none"> RBCCW ESF Room Coolers START additional safety injection pumps as needed until safety injection flow is within the SI Flow Curve. <p>Examiners Note: The "C" HPSI pump must be manually started using the control switch on C-01.</p> <ol style="list-style-type: none"> ENSURE ALL available charging pumps are operating.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
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CRITICAL TASK: Manually establish the minimum design Safety Injection System flow within 30 minutes of entering the ORP (CT-1/SGTR-6).

The amount of time required to identify and report a failed safety function is subjective. A criteria may be agreed upon as follows: Usually one Safety Function Status Check is to be completed over a predefined time. Failure to report a failed Safety Function with twice the defined time frame may be reason to fail this critical task (SGTR-6). Safety Function assessments are performed upon entering the ORP/FRP and is required every 15 minutes. (OP 2260).

Time that "C" HPSI pump was started: _____

Time SIAS of actuation (manual or auto): _____

	ATC	<p>d. ENSURE vital switchgear cooling is operating for each operating ECCS train as follows:</p> <p>Facility 1</p> <ul style="list-style-type: none"> Fan F-51 is running. Fan F-134 is running. SW-178A, service water supply is open. SW-178B, service water supply is open. <p>Facility 2</p> <ul style="list-style-type: none"> Fan F-52 is running. Fan F-142 is running. Fan F-133 is running. SW-178C, service water supply is open.
	ATC	<p>*6. IF pressurizer pressure is less than 1714 psia AND SIAS has initiated, PERFORM the following:</p> <p>a. ENSURE ONE RCP in each loop is stopped.</p> <p>b. PLACE associated pressurizer spray valve controller RC-100E or RC-100F in manual and CLOSE the valve.</p> <p>c. IF pressurizer pressure lowers to less than the minimum RCP NPSH limit, PERFORM the following:</p> <ol style="list-style-type: none"> STOP ALL RCPs. PLACE TIC-4165, steam dump TAVG controller, in manual and closed. PLACE pressurizer spray valve controllers RC-100E and RC-100F in manual and CLOSE the valves.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	<p>*7. IF EBFAS has initiated AND the condenser is available, ALIGN the condenser air removal system to Unit 2 stack:</p> <ol style="list-style-type: none"> ENSURE condenser air removal fan, MF---55A or MF-55B, is running. IF condenser air removal fan MF-55A is operating, ENSURE makeup damper, EB-171, is open. OPEN EB-57, condenser air removal to Unit 2 stack. ENSURE AC-11, Purge exhaust filter outlet damper is closed. OPEN AC-59, Outside air makeup damper. START ONE main exhaust fan. ENSURE HV-118, Radwaste exhaust damper is closed. START F-20, Fuel handling area supply fan. ENSURE HV-173, Exhaust mod discharge damper is in "MOD" position. PLACE AC-59, Outside air makeup damper to "MID" position.
	SRO/BOP	<p>*8. COMMENCE an RCS cooldown at the maximum controllable rate to a T_H of less than 515 °F in both loops using the steam dumps.</p>
	ATC	<p>*9. DEPRESSURIZE the RCS by performing the following:</p> <ol style="list-style-type: none"> MAINTAIN pressurizer pressure within ALL of the following criteria: <ul style="list-style-type: none"> IF RCPs are operating, MAINTAIN RCS pressure above the NPSH curve. Refer to Appendix 2, "Figures." Less than 920 psia Within 50 psi of the most affected steam generator pressure Within the RCS P/T curve limits. Refer to Appendix 2, "Figures." OPERATE main or auxiliary spray.
	ATC	<ol style="list-style-type: none"> IF HPSI throttle/stop criteria are met, PERFORM ANY of the following to lower RCS pressure: <ul style="list-style-type: none"> CONTROL charging and letdown. THROTTLE or STOP HPSI flow.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
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	BOP/ATC	<p>*10. <u>IF</u> the main condenser is available, MAINTAIN steaming to the condenser by performing the following:</p> <ul style="list-style-type: none">a. <u>IF</u> MSI is <i>not</i> present AND MSI Block is permitted, BLOCK the automatic initiation as the cooldown and depressurization proceeds.b. <u>IF</u> MSI has actuated AND the following conditions exists:<ul style="list-style-type: none">1) Steam dumps are available2) Steaming to the condenser is desired PERFORM the following to open the MSIV for the unisolated steam generator:<ul style="list-style-type: none">1) UNLOCK and CLOSE the disconnect as applicable for MSIV bypass valves:<ul style="list-style-type: none">1) MS---65A (B5207)2) MS---65B (B6208)2) CLOSE the steam dump valves.3) OPEN the MSIV bypass valves.4) THROTTLE the ADV as necessary to achieve less than 100 psid.5) WHEN differential pressure across the MSIVs is less than 100 psid, OPEN the MSIVs.6) CLOSE the MSIV bypass valves.
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Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
	SRO/ATC/ BOP	<p>c. <u>IF</u> MSI will actuate following the isolation of the most affected steam generator <u>AND</u> the following conditions exists:</p> <ul style="list-style-type: none"> • Steam dumps are available • Steaming to the condenser is desired <p>PERFORM the following to ensure steaming to the main condenser is maintained:</p> <ol style="list-style-type: none"> 1) CLOSE the steam dump valves. 2) Manually initiate MSI. 3) <u>IF</u> differential pressure across the MSIV for the least affected steam generator is less than 100 psid, OPEN the MSIV. <p>c.1 <u>IF</u> differential pressure across the MSIV for the least affected steam generator is greater than 100 psid, PERFORM the following:</p> <ol style="list-style-type: none"> 1) UNLOCK and CLOSE the disconnect, as applicable, for least affected steam generator MSIV bypass valve: <ul style="list-style-type: none"> • MS-65A (B5207) • MS-65B (B6208) 2) ENSURE the steam dump valves are closed. 3) OPEN the MSIV bypass valve for the least affected steam generator. 4) THROTTLE the ADV as necessary to achieve less than 100 psid. 5) <u>WHEN</u> differential pressure across the MSIV for the least affected steam generator is less than 100 psid, OPEN the MSIV. 6) CLOSE the MSIV bypass valve.
	SRO/ATC	*11. <u>IF</u> SIAS is <i>not</i> present <u>AND</u> SIAS Block is permitted, BLOCK the automatic initiation as the cooldown and depressurization proceeds.
	BOP	<p>*12. <u>IF</u> offsite power has been lost OR the condenser is <i>not</i> available, PERFORM the following:</p> <ol style="list-style-type: none"> a. CLOSE BOTH MSIVs. b. ENSURE BOTH MSIV bypass valves are closed. c. OPEN AR-17, condenser vacuum breaker.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7, 8

Event Description: Steam Generator Tube Rupture, Manual Plant Trip, Loss of Safety Injection Flow

Time	Position	Applicant's Actions or Behavior
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		<p>*13. DETERMINE the most affected steam generator by considering ALL of the following:</p> <ul style="list-style-type: none">• Steam generator activities• Main steam piping radiation levels• Steam generator level change when <i>not</i> feeding• Steam generator blowdown activities• Steam generator mismatch in level with essentially the same feed and steaming rate for both steam generators• Feed flow mismatch between steam generators• Steam flow versus feed flow mismatch in a steam generator prior to the trip
	SRO/BOP	<p>*14. WHEN BOTH RCS hot leg temperatures are less than 515° F, ISOLATE the most affected steam generator by performing the following:</p> <p>Number 1 Steam Generator</p> <ol style="list-style-type: none">a. RECORD in the placekeeper, time and TC of the operating loop.b. ENSURE ALL of the following for the associated ADV:<ul style="list-style-type: none">• ADV is in AUTO, PIC-4223• ADV setpoint at 920 psia• ADV is closedc. ENSURE the MSIV, MS-64A, is closed.d. ENSURE the MSIV bypass valve, MS-65A, is closed.e. CLOSE the main feedwater regulating bypass valve, FW-41A.f. ENSURE the main feedwater block valve, FW-42A is closed.g. PLACE main feed isolation air assisted check valve, FW-5A to "CLOSE."h. ENSURE the steam generator blowdown isolation valve, MS-220A is closed.i. PLACE BOTH auxiliary feed "OVERRIDE/MAN/START/RESET" handswitches in "PULL TO LOCK".j. CLOSE the aux feedwater regulating valve, FW-43A.

CRITICAL TASK: Isolate the affected SG (CT-2/SGTR-5)

[Within 60 minutes of the tube rupturing, per OP 2260]

Time SG Tube Rupture occurred (time of manual trip): _____

Time Affected SG Isolated (Step #14 complete): _____

Once the affected SG is isolated, or at the lead examiner's direction, the scenario is completed.

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7

Event Description: **EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions**

Time	Position	Applicant's Actions or Behavior
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Examiner Note: The following steps are from EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions.

	ATC	<p>1. <u>IF</u> charging pumps suction is aligned to the VCT, <u>THEN</u> CHECK VCT level is between 72% to 86%:</p> <p>a. IF VCT level is less than 72%, THEN ALIGN charging pump suction to RWST as follows:</p> <ol style="list-style-type: none"> 1) OPEN CH- 192, RWST isolation. 2) ENSURE CH- 504, RWST to charging suction is open. 3) CLOSE CH- 501, VCT outlet isolation. 4) ENSURE CH- 196, VCT makeup bypass is closed. <p>b. IF VCT level is greater than 88%, THEN PLACE CH- 500, letdown divert handswitch, to the "RWS" position, and divert as required to maintain VCT level 72% to 86%.</p>
	ATC	<p>2. TCOA: <u>IF</u> SIAS actuated, <u>THEN</u> ENSURE ONE complete facility of CRAC operating, in RECIRC mode, as follows: (C25A/B)</p> <p>Facility 1</p> <ul style="list-style-type: none"> • HV- 203A, Fan F- 21A exhaust damper open • Fan F- 21A, supply fan running • HV- 206A, Fan F- 31A exhaust damper open • Fan F- 31A, exhaust fan running • HV- 212A, Fan F- 32A exhaust damper, open • Fan F- 32A, filter fan, running • HV- 202, minimum fresh air damper, closed • HV- 207, cable vault exhaust damper, closed • HV- 208, exhaust air damper, closed <p>Facility 2</p> <ul style="list-style-type: none"> • HV- 203B, Fan F- 21B exhaust damper open • Fan F- 21B, supply fan running • HV- 206B, Fan F- 31B exhaust damper open • Fan F- 31B, exhaust fan running • HV- 212B, Fan F- 32B exhaust damper, open • Fan F- 32B, filter fan, running • HV- 495, fresh air damper, closed • HV- 496, exhaust air damper, closed • HV- 497, cable vault exhaust damper, closed

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7

Event Description: **EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions**

Time	Position	Applicant's Actions or Behavior
	ATC	<p>3. TCOA: IF SIAS not actuated, <u>THEN</u> CHECK ONE facility of CRAC operating, in NORMAL mode, as follows: (C25A/B)</p> <p>Facility 1</p> <ul style="list-style-type: none"> • HV- 203A, Fan F- 21A exhaust damper is open • Fan F- 21A, supply fan running • HV- 206A, Fan F- 31A exhaust damper open • Fan F- 31A, exhaust fan running <p>Facility 2</p> <ul style="list-style-type: none"> • HV- 203B, Fan F- 21B exhaust damper open • Fan F- 21B, supply fan running • HV- 206B, Fan F- 31B exhaust damper open • Fan F- 31B, exhaust fan running
	ATC	<p>4. <u>IF</u> charging pumps suction aligned to the RWST <u>AND</u> boration not required, <u>THEN</u> RESTORE charging pump suction to VCT as follows:</p> <ol style="list-style-type: none"> CHECK BOTH of the following: <ol style="list-style-type: none"> VCT level between 72% and 86% VCT pressure greater than 15 psig CHECK letdown is in service. OPEN CH- 501, VCT outlet isolation. CLOSE CH- 192, RWST isolation.
	BOP	<p>5. CHECK instrument air pressure greater than 90 psig and stable.</p>
	BOP	<p>6. <u>IF</u> AFAS has actuated, <u>WHEN</u> BOTH steam generators are restored to greater than 33%, <u>THEN</u> PERFORM the following:</p> <ol style="list-style-type: none"> PLACE the following switches in "M" (Manual) and ADJUST to obtain desired flow (C- 05): <ol style="list-style-type: none"> FW- 43A, "AFW- FCV, HIC- 5276A" FW- 43B, "AFW- FCV, HIC- 5279A" PLACE BOTH of the following switches to "RESET" and ALLOW to spring return to neutral (C- 05): <ol style="list-style-type: none"> "OVERRIDE/MAN/START RESET" (Facility 1) "OVERRIDE/MAN/START RESET" (Facility 2) ADJUST the following switches to obtain desired flow (C- 05): <ol style="list-style-type: none"> FW- 43A, "AFW- FCV, HIC- 5276A" FW- 43B, "AFW- FCV, HIC- 5279A" <u>IF</u> main feedwater pump is supplying steam generators, <u>THEN</u> STOP BOTH auxiliary feedwater pumps. <p>Examiner Note: BOP may place both facilities in override (Pull-To-Lock) once the SG Tube Rupture is identified and AFW flow is under control.</p>

Op-Test No.: ES16LI2 Scenario No.: 2 Event No.: 7

Event Description: **EOP 2541, Followup Actions, Appendix 4A, Reactor Trip Subsequent Actions**

Time	Position	Applicant's Actions or Behavior
	BOP	7. CHECK Main Condenser is available, as indicated by ALL of the following: <ul style="list-style-type: none"> At least ONE MSIV open Condenser vacuum better than 15 inches HG - ABS (0 to 15 inches) At least ONE condensate pump operating At least ONE Circ Water pump operating
	BOP	8. OPEN HD- 106, subcooling valve.
	BOP	9. ENSURE BOTH heater drain pumps stopped.
	BOP	10. <u>IF</u> MFW is supplying feed to the steam generators, <u>THEN</u> PERFORM the following: <ol style="list-style-type: none"> ENSURE that only ONE main feedwater pump is operating. ENSURE that BOTH main feed block valves are closed: <ol style="list-style-type: none"> FW- 42A FW- 42B ADJUST the operating main feedwater pump pressure to 50 to 150 psi greater than SG pressure. ENSURE BOTH main feed reg bypass valves are throttled to control SG level: <ol style="list-style-type: none"> LIC- 5215 LIC- 5216 <u>IF</u> Main Feedwater Pump A is secured, <u>THEN</u> CLOSE the following: <ol style="list-style-type: none"> FW- 38A, main feedwater pump discharge valve FIC- 5237, main feedwater pump mini flow recirc valve <u>IF</u> Main Feedwater Pump B is secured, <u>THEN</u> CLOSE the following: <ol style="list-style-type: none"> FW- 38B, main feedwater pump discharge valve FIC- 5240, main feedwater pump mini flow recirc valve
	BOP	11. <u>IF</u> BOTH MFW pumps are secured, <u>THEN</u> PERFORM the following: <ol style="list-style-type: none"> CLOSE BOTH main feedwater pump mini flow recirc valves. <ul style="list-style-type: none"> FIC- 5237 FIC- 5240
	BOP	12. <u>IF</u> 25A OR 25B is energized, <u>THEN</u> ALIGN condensate pumps as follows: <ol style="list-style-type: none"> ENSURE ONE pump is running. ENSURE ONE pump is in "PULL TO LOCK." ENSURE ONE pump is in "AUTO."
Examiner Note: End of Attachment 4- A		

SIMULATOR SCENARIO #3

Facility: Millstone Unit 2	Scenario No.: 3	Op-Test No.: ES16LI3	
Examiners: _____	Operators: _____	SRO ATC BOP	
Initial Conditions: 100% Power IC-141			
Turnover: 100% Power, steady state, Nothing out of service. 24E is aligned to 24C.			
Critical Tasks: 1. LOCA-13 Trip two RCPs with SIAS actuation and a LOCA in progress. 2. LOCA-12 (TCOA) Trip ALL RCPs within 5 minutes of NPSH limits not being met. 3. 2260 2536 TCOA (ESDE-6); Isolate Aux Feed Water to the affected SG within 30 minutes following an MSI actuation. 4. LOCA-2; Start the TDAFP.			
Event No.	Malf. No.	Event Type*	Event Description
Not Run 1 Deleted	RP13D	TS (S)	"D" Ch. SG #1 Level (LI113D) fails to 0%
2	C03-A18B	C (ATC/S)	"A" RCP Anti Rev Rot Flow Low
3	RC20A	C,TS (ATC/S)	"A" RCP Seal Cooler Leak of 5-8 gpm
4	N/A	R (ALL)	Plant shutdown due to RCS leak
5	RC20A (1005)	M (ALL)	"A" RCP Seal Cooler Rupture resulting in an Inter-System SB-LOCA of 550 gpm
6	MS02B	C (ALL)	ESD outside CTMT (4.75E06 lbm/hr), upstream of #2 MSIV on the trip. 30 second time delay following the Reactor Trip
7	FW30A FW20B	C (BOP/S)	"A" AFW Pump degraded performance and "B" AFW pump trips. Start the TDAFW pump.

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual
1. Total malfunctions (5–8)	5
2. Malfunctions after EOP entry (1–2)	1
3. Abnormal events (2–4)	2
4. Major transients (1–2)	1
5. EOPs entered/requiring substantive actions (1–2)	1
6. EOP contingencies requiring substantive actions (0–2)	1
7. Critical tasks (2–3)	3

NRC 2016, Scenario 3 Summary:

The crew will take the shift with the unit at 100% power, steady state, nothing out of service.

Event 1: The crew takes the shift, then at the discretion of the Examiner malfunction for Ch. "D" SG #1 Level (LI-113D) failure to 0% is triggered. Crew will refer to applicable ARP(s), bypass the affected inputs on Channel "D" of RPS and log into the applicable instrumentation T.S.A.S.

Event 2: At the discretion of the Examiner a malfunction for "A" RCP Anti Reverse Rotation flow alarm will annunciate providing the prelude to the "A" RCP Seal Cooler leak. The Crew will refer to ARP 2590B-074 and start the "A" RCP Lift pump, evaluate the need for a Reactor Trip and then submit a CR.

Event 3: At the discretion of the Examiner a malfunction for RCP "A" seal cooler leak into RBCCW of 5-8 gpm. The Crew will enter AOP 2568 Reactor Coolant System Leak and validate by stabilizing PZR level, may start an additional Charging Pump and manually adjusting the bias on letdown. The U.S. will enter a Shutdown T.S.A.S and monitor for EAL Classification threshold. U.S. will direct a shutdown and transition to AOP 2575.

Event 4: The crew will enter AOP 2575 Rapid Downpower per the RCS Leak T.S.A.S. and commence a downpower. ATC will insert Group 7 Rods 10 steps while BOP reduces Turbine load to maintain RCS T_{COLD}. The Crew will then align for boration from the RWST requiring the ATC operator to start an additional Charging pump if not already started and the BOP to setup the Turbine HMI to lower load to maintain RCS T_{COLD}.

Event 5: At the discretion of the Examiner the malfunction for "A" RCP Seal Cooler rupture will causing a small break LOCA of approximately 550 gpm requiring the crew will validate using RCS parameter imitate and initiate a Reactor Trip and transition to perform EOP 2525 SPTA.

Event 6: On the Reactor trip during the performance of EOP 2525 an Excess Steam Demand Event will be initiated outside of CTMT, upstream of #2 S/G MSIV (Non-Isolable) requiring the BOP stop steaming to the condenser by closing both MSIVs and to secure feed the #2 S/G. When the S/G blows dry the BOP will stabilize RCS temperature using the unaffected S/G ADV. The U.S. will diagnose 2 events and enter EOP 2540 and implement the Resource Assessment Trees.

Event 7: Five minutes after the plant trip, the "A" Motor driven Aux Feedwater Pump performance will degrade and the "B" Motor driven Aux Feedwater pump will trip, requiring the BOP to start the Turbine driven Aux Feedwater Pump, if not previously already started.

The US should transition to the Functional Recovery Procedure, EOP 2540, and the Crew will begin addressing the CTMT Isolation Safety Function.

The crew is required to isolate the RCS leak into RBCCW and Isolate the #2 S/G while stabilizing RCS temperature after the #2 S/G blowdown.

INPUT SUMMARY

Either INPUT or VERIFY the following functions:

ID Num	Description	Delay Time	Ramp Time	Event Time	Sev or Value	Final Value	Rel Order
MALFUNCTIONS							
RP13D	SG #1 Ch. "D" Level failure			E-1	0%	0%	1
C03-A18B	"A" RCP Anti Rev Rot Flow Low			E-2	ON	ON	2
RC20A	"A" RCP Seal Cooler Leak of 8 gpm		2 min	E-3	8 gpm	8 gpm	3
RC20A (1005)	"A" RCP Seal Cooler Rupture of 550 gpm			E-5	550 gpm	550 gpm	5
MS02B	ESD outside CTMT, upstream of #2 MSIV		30 Sec.	E-30	4.75E06	4.75E06	6
FW30A	"A" AFW pump degraded performance.	5 min.		E-30	100%	100%	7
FW20B	"B" AFW pump trip.	5 min.		E-30	N/A	N/A	7
FW20A	"A" AFW pump trip.			E-8	N/A	N/A	8
C03-A18B	"A" RCP Anti Rev Rot Flow Low			E-9	NORMAL	NORMAL	2
REMOTE FUNCTIONS							
CCR35	RBCCW pump "A" Rad Mon isolation			E-10	CLOSE	CLOSE	10
CCR35	RBCCW pump "A" Rad Mon isolation			E-11	OPEN	OPEN	11
CCR36	RBCCW pump "B" Rad Mon isolation			E-12	CLOSE	CLOSE	12
CCR36	RBCCW pump "B" Rad Mon isolation			E-13	OPEN	OPEN	13
CCR37	RBCCW pump "C" Rad Mon isolation			E-14	CLOSE	CLOSE	14
CCR37	RBCCW pump "C" Rad Mon isolation			E-15	OPEN	OPEN	15
OVERRIDES							

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 1

Event Description: "A" Ch. RWST Level Failure

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event #1, SG #1 Ch. "D" Level (LI-113D) fails to 0%

Indications Available:

- "SG LO LEVEL TRIP CH D" C04, DB-1
- "RPS PRE TRIP" C04, AA-7

Examiner Note:

The following steps are from ARP 2590C-008 (C04, DB-1)

	ATC	<p><u>AUTOMATIC FUNCTIONS</u></p> <p>1. If 2 RPS channels actuate, reactor trips.</p> <p><u>CORRECTIVE ACTIONS</u></p> <p>1. IF reactor trips, Go To EOP 2525, "Standard Post Trip Actions" and PERFORM necessary corrective actions.</p> <p>2. OBSERVE channel "D" SG level indication and COMPARE to other safety channel indications (C-05, PPC).</p> <p>3. IF SG level is less than 49.5% AND no automatic reactor trip has occurred, manually TRIP reactor and Go To EOP 2525, "Standard Post Trip Actions."</p> <p>4. IF SG level is greater than 49.5% AND alarm is due to instrument malfunction, PERFORM the following:</p> <p>4.1 OBTAIN necessary keys and PERFORM applicable actions to bypass channel "D" SG level bistables on RPS, C-517, and C-518.</p> <p>4.2 Refer To the following Technical Specifications LCOs and DETERMINE applicability:</p> <ul style="list-style-type: none">• 3.3.1.1, Table 3.3-1• 3.3.2.1, Table 3.3-3 <p>4.3 SUBMIT Trouble Report to I&C Department.</p>												
	SRO	<p>3.3.1.1 As a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE.</p> <table><tr><td></td><td>TOTAL</td><td>TRIP</td><td>MIN</td><td>MODE</td><td>ACTION</td></tr><tr><td>7. Steam Generator Water level – Low</td><td>4</td><td>2</td><td>3</td><td>1, 2</td><td>2</td></tr></table> <p>4b) ≥ 1850 psia, operation may continue with the inoperable channel in the bypassed condition, provided the following condition is satisfied:</p> <p>Action 2 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may continue provided the following conditions are satisfied:</p> <p>a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. The inoperable channel shall either be restored to OPERABLE status, or placed in the tripped condition, within 48 hours.</p>		TOTAL	TRIP	MIN	MODE	ACTION	7. Steam Generator Water level – Low	4	2	3	1, 2	2
	TOTAL	TRIP	MIN	MODE	ACTION									
7. Steam Generator Water level – Low	4	2	3	1, 2	2									

		<p>3.3.2.1 The engineered safety feature actuation system instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.</p>												
	SRO	<table><tr><td></td><td>TOTAL</td><td>TRIP</td><td>MIN</td><td>MODE</td><td>ACTION</td></tr><tr><td>9. Auxiliary Feed Water SG Level - Low</td><td>4</td><td>2</td><td>3</td><td>1, 2, 3</td><td>2</td></tr></table> <p>Action 2 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may continue provided the following conditions are satisfied:</p> <p>a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. .</p>		TOTAL	TRIP	MIN	MODE	ACTION	9. Auxiliary Feed Water SG Level - Low	4	2	3	1, 2, 3	2
	TOTAL	TRIP	MIN	MODE	ACTION									
9. Auxiliary Feed Water SG Level - Low	4	2	3	1, 2, 3	2									
<p>Examiner Note: SRO should note that performing the actions of the ARP and bypassing channel “D” on RPS, C517 and C-518 meets the action for the LCO 3.3.1.1 and 3.3.2.1.</p> <p>Examiner Note: Once the actions of TS 3.3.1.1 and 3.3.2.1 have been completed, or at lead examiner’s direction, proceed to Event 2, “A” RCP Anti Rev Rot Flow Low.</p>														

Op-Test No.: <u>ES16LI3</u> Scenario No.: <u>3</u> Event No.: <u>2</u>		
Event Description: “A” RCP Anti Rev Rot Flow Low		
Time	Position	Applicant’s Actions or Behavior

Simulator Operator: When directed, initiate Event #2, “A” RCP Anti Rev Rot Flow Low.		
Indications Available: <ul style="list-style-type: none"> • “RCP A ANTIREV ROT FLOW LO” C02/3 AB-18 		
Examiner Note: The following steps are from ARP 2590B-074 (C02/3 AB-18).		
	ATC	<u>AUTOMATIC FUNCTIONS</u> 1. None <u>CORRECTIVE ACTIONS</u> NOTE: <i>Oil lift pump may be operated indefinitely.</i> 1. START “RCP-A LIFT PPS, P-51A/53A” (C-03).
Simulator Operator: ~1 minute after the lift pump is started, trigger Event 9 to clear alarm AB-18.		
	SRO	2. NOTIFY OMOC (Duty Officer).
Cue: OMOC is notified.		
	ATC	3. MONITOR <i>all</i> “A” RCP bearing temperatures (C-04R or PPC). 4. CHECK the following alarm windows <i>not</i> lit (C-02/3): <ul style="list-style-type: none"> • “RCP A ANTIREV BRG TEMP HI” (AA-19) • “RCP A UPPER GUIDE TEMP HI” (BB-20) • “RCP A UPPER THRUS TEMP HI” (CB-20) 5. <u>IF</u> alarm does <i>not</i> clear <u>AND</u> any alarm listed in step 4. is valid, PERFORM the following: <ul style="list-style-type: none"> 5.1 TRIP reactor and turbine. 5.2 STOP “A” RCP. 5.3 Refer To EOP 2525, “Standard Post Trip Actions” and PERFORM required actions. SUBMIT Trouble Report
Examiner Note: Because none of the annunciators listed in Step 4 are in alarm, Step 5 is N/A. Examiner Note: Once the actions of ARP 2590B-074 have been completed, or at lead examiner’s direction, proceed to Event 3, “A” RCP Seal Cooler Leak.		

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 3

Event Description: "A" RCP Seal Cooler Leak

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 3, "A" RCP Seal Cooler Leak of 5-8 gpm

Indications Available:

- PPC Alarm for RCS Leakage
- LI-6001 RB Surge TK level rise C06
- "RCP A CLG WTR TEMP HI" C-02/3 DB-17 (no alarm, but may be referenced for trip criteria)
- "PROCESS MON RAD HI HI/FAIL" C-06/7 DA-24

Examiner Note: The following steps are from ARP 2590B-072 (C-02/3 DB-17).

	ATC	<p><u>AUTOMATIC FUNCTIONS</u></p> <p>1. None</p> <p><u>CORRECTIVE ACTIONS</u></p> <p>1. IF "A" RCP RBCCW outlet temperature is above 125°F, PERFORM the following:</p> <p>1.1. TRIP Reactor.</p> <p>1.2. TRIP Turbine.</p> <p>1.3. STOP "A" RCP.</p> <p>1.4. Go To EOP 2525, "Standard Post Trip Actions."</p>
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Examiner Note: ARP 2590B-072 (C-02/3 DB-17) may be referenced for trip criteria. However, the actual temperature should stabilize far enough below 125°F to not require a plant trip/RCP shutdown.

Examiner Note: The following steps are from ARP 2590E-135 (C-06/7 DA-24).

	SRO	<p><u>AUTOMATIC FUNCTIONS</u></p> <p>1. None</p> <p><u>CORRECTIVE ACTIONS</u></p> <p><i>NOTE:</i></p> <p>1. When the "PROCESS MON RAD HI/HI FAIL" alarm is received, all TS and REMODCM radiation monitors associated with this alarm are considered to be INOPERABLE until the alarm is cleared.</p> <p>2. If the 12 hour maintenance window is applied and the "PROCESS MON RAD HI/HI FAIL" alarm will remain longer than 12 hours, then log into appropriate action statements. Track 12 hour maintenance window using LCO Module.</p>
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Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 3

Event Description: "A" RCP Seal Cooler Leak

Time	Position	Applicant's Actions or Behavior
	SRO	<ol style="list-style-type: none"> Refer To the following LCOs and DETERMINE applicability: <ul style="list-style-type: none"> TS 3.4.6.1 (RM-8123A, RM-8262A - applies only if alarm windows C-01, A-28, CH "A" CTMT AIR PARTICULATE RADIATION HI and B-28, CH "B" CTMT AIR PARTICULATE RADIATION HI are <i>not</i> OPERABLE). TS 3.3.3.1 (RM-8123A, RM-8262A - applies only if alarm windows C-01, A-28, CH "A" CTMT AIR PARTICULATE RADIATION HI and B-28, CH "B" CTMT AIR PARTICULATE RADIATION HI are <i>not</i> OPERABLE). REMODCM IV.C.1 TABLE IV.C-1 (RM-6038, RM-4262- REMODCM allows use of 12 hr Maintenance Window) REMODCM IV.C.2 TABLE IV.C-3 (RM-8132A/B- REMODCM allows use of 12 hr Maintenance Window), (RM-9095 applies only if performing a Waste Gas discharge)
	BOP	<ol style="list-style-type: none"> OBSERVE which process radiation monitor is alarming (RC-14).
Examiner Note: RBCCW rad monitor RM-6038 is in alarm, therefore the SRO should note that REMODCM IV.C.1 TABLE IV.C-1 applies in Step #1 above.		
	BOP	<ol style="list-style-type: none"> IF no "ALARM" OR "INSTRUMENT FAIL" lights lit, PERFORM the following (RC-14):
Examiner Note: Step #3 is N/A due to RBCCW rad monitor RM-6038 being in alarm.		
	SRO/BOP	<ol style="list-style-type: none"> Refer To ARP 2590H, "Alarm Response for Control Room Radiation Monitor Panels," and PERFORM applicable corrective actions for alarming radiation monitor.
Examiner Note: The SRO should refer to ARP 2590H for additional guidance and direct the BOP to either continue with the guidance of ARP 2590-135 C-06/7 DA-24, or shift to performing ARP 2590H. Upon referring to ARP 2590H, the SRO should select "RBCCW GROSS ACTIVITY RIC-2300B", RC-14D, ARP 2590H-041A. The following are the applicable steps from ARP 2590H-041A.		
	SRO/BOP	<p><u>AUTOMATIC FUNCTIONS</u></p> <ol style="list-style-type: none"> None <p><u>CORRECTIVE ACTIONS</u></p> <ol style="list-style-type: none"> OBSERVE radiation monitor indication (RC-14D, PPC). COMPARE indication to setpoint indicated on "SETPOINT" sticker on module. CHECK "PROCESS RADIATION, RJR-9373" (Channel 5) for trend data RC-14D).

Op-Test No.: <u>ES16LI3</u> Scenario No.: <u>3</u> Event No.: <u>3</u>		
Event Description: "A" RCP Seal Cooler Leak		
Time	Position	Applicant's Actions or Behavior
	SRO/BOP	<p>4. <u>IF</u> alarm is high, PERFORM the following:</p> <p>4.1. One at a time, UNLOCK and CLOSE the following valves and MONITOR instrument response for determination of which header has in-leakage:</p> <ul style="list-style-type: none"> "A" RBCCW pump radiation element flow stop, 2-RB-43 "B" RBCCW pump radiation element flow stop, 2-RB-41 "C" RBCCW pump radiation element flow stop, 2-RB-39
<p>Simulator Operator: When directed, trigger the applicable Event to close the requested RBCCW valve:</p> <ul style="list-style-type: none"> "A" RBCCW pump, 2-RB-43 – Event #10 to CLOSE, Event #11 to RE-OPEN. "B" RBCCW pump, 2-RB-41 – Event #12 to CLOSE, Event #13 to RE-OPEN. "A" RBCCW pump, 2-RB-43 – Event #14 to CLOSE, Event #15 to RE-OPEN. 		
	SRO/BOP	<p>4.2. REQUEST Chemistry Department sample the following for gamma activity:</p> <ul style="list-style-type: none"> Both RBCCW headers Service water effluent per SP 2854, Reactor Building Closed Cooling Water (RBCCW) Radiation Monitor RM 6038 Inoperative" <p>4.3. Refer To OP 2383C, "Radiation Monitor Alarm Setpoint Control" and EVALUATE need to adjust alarm setpoint.</p> <p>4.4. <u>IF</u> Chemistry results indicate short-lived activity, Go To AOP 2568, "RCS Leak."</p>
Cue: Ten minutes after sample request, report short-lived activity detected in "A" RBCCW header.		
<p>Examiner Note: The remaining steps of ARP 2590H-041A are not applicable and the SRO should enter AOP 2568, "RCS Leak" at this time.</p> <p>The applicable steps from AOP 2568 follow the remaining applicable steps of ARP 2590E-135.</p> <p>The following steps continue from ARP 2590E-135 (C-06/7 DA-24), if they are addressed, but have no bearing on the scenario or crew actions.</p>		
	SRO/BOP	<p>5. <u>IF</u> RM-8123A/B or RM-8262A/B, alarms, Refer To the following for additional guidance (C-01):</p> <p>6. CHECK "DIGITAL COMPARATOR STACK PARTICULATE, RI---8132A" (RC--14C), "ALARM" relay light <i>lit</i>.</p>
Examiner Note: Step #5 and #6 are N/A due to RBCCW rad monitor RM-6038 being in alarm.		

Op-Test No.: <u>ES16LI3</u> Scenario No.: <u>3</u> Event No.: <u>3</u>		
Event Description: "A" RCP Seal Cooler Leak		
Time	Position	Applicant's Actions or Behavior

	SRO/BOP	<p>7. DETERMINE cause of alarm and TRY to reset.</p> <p><u>NOTE:</u></p> <p><i>The "Latch/Reset" pushbutton on RIC-2300A, RIC-2300B, RIC-8123, and RIC-8262 is used to reset a "latched", or locked-in alarm.</i></p> <p>8. ATTEMPT to reset module by pushing "RESET" button.</p> <p>9. <u>IF</u> alarm does <i>not</i> reset, to allow other alarms to annunciate, PERFORM applicable action:</p> <p>9.1. IF RM-6038 alarms, OBTAIN key and place "NORMAL BYPASS CH.1 BYPASS, HS-6038B," switch to "BYPASS" (RC-14D).</p>
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Examiner Note: The remaining steps from ARP 2590E-135 (C-06/7 DA-24) are not key to the scenario.

Examiner Note: The following steps are from AOP-2568.

	ATC	<p>1. Check Pressurizer Level – DECREASING</p> <p>a. ADJUST the bias on HIC-110, LTDN FLOW CNTL</p> <p>b. CHECK Pressurizer Level – DECREASING</p>
	ATC	<p>2. Increase Charging Flow</p> <p>a. START second Charging Pump</p> <p>b. STABILIZE Pressurizer Level by performing the following:</p> <p>1. On HIC-110, LTDN FLOW CNTL, ADJUST the bias to obtain Pressurizer level to Program level</p> <p>a. CHECK Pressurizer Level - STABLE or INCREASING</p>
	ATC	<p>3. INITIATE Forcing Pressurizer Sprays</p>
	ATC	<p>4. Check Reactor Power and RCS Temperature</p> <p>a. CHECK Reactor Power – STABLE</p> <p>b. CHECK RCS temperature - STABLE or INCREASING</p> <p><u>NOTE:</u></p> <p><i>Pumping the Containment Sump with an RCS leak should be avoided.</i></p>

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 3

Event Description: "A" RCP Seal Cooler Leak

Time	Position	Applicant's Actions or Behavior
	SRO/ATC/ BOP	<p>5. Determine RCS Leak Rate By Any Of The Following:</p> <ul style="list-style-type: none"> a. ACCOUNT for RCP Bleedoff flow <u>AND</u> CALCULATE the difference in Charging and Letdown flow b. REFER to ATTACHMENT B, Thumbrules, <u>AND</u> PERFORM a mass balance c. OBTAIN SPDS Sump leak rate
	SRO	<p>6. CHECK RCS Leakage Within Limits Of T/S LCO 3.4.6.2, Reactor Coolant System Operational Leakage:</p> <ul style="list-style-type: none"> • <u>NO</u> Pressure Boundary Leakage • 1_gpm Unidentified Leakage • 10 gpm Identified Leakage • 75 gpd Primary to Secondary Leakage through any one steam generator
	ATC	7. CHECK VCT Level - STABLE
	SRO/ATC/ BOP	<p>8. CHECK For Activities That Could Affect Primary Plant Leakage - NONE IN PROGRESS</p> <ul style="list-style-type: none"> • Valve alignment • Periodic Testing • Maintenance
	SRO/ATC/ BOP	<p>9. Check for Potential Leakage Paths</p> <ul style="list-style-type: none"> a. Using ATTACHMENT D, Potential Leakage Paths, LOCATE <u>AND</u> ISOLATE leaks while continuing with this procedure
	SRO	<p>NOTE:</p> <p>Steps 11 through 20 may be performed in any order.</p>

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 3

Event Description: "A" RCP Seal Cooler Leak

Time	Position	Applicant's Actions or Behavior
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Examiner Note: SRO should note TSAS **3.4.6.2 a.** No PRESSURE BOUNDARY LEAKAGE **ACTION:** With ACTION and associated completion time of ACTION a. not met, or PRESSURE BOUNDARY LEAKAGE exists, or primary to secondary LEAKAGE not within limits, be in HOT STANDBY within 6 hours and be in COLD SHUTDOWN within 36 hours.

EAL Classification:

BARRIER FAILURE

BU2 RCS LEAKAGE (Barrier Unusual Event)

1. Pressure Boundary Leakage > 10 GPM

2. Unidentified Leakage > 10 GPM

	SRO	<p>10. USE Table 1 to determine the order for dealing with leak identification and isolation.</p> <p style="text-align: center;">Table 1</p> <table><tr><th>Event</th><th>Step</th><th>Completed</th></tr><tr><td>Steam Generator Tubes Intact</td><td>11</td><td></td></tr><tr><td>RCS Leakage In Auxiliary Building</td><td>12</td><td></td></tr><tr><td>Actions to Locate Leak-Containment</td><td>13</td><td></td></tr><tr><td>RBCCW System</td><td>14</td><td></td></tr></table>	Event	Step	Completed	Steam Generator Tubes Intact	11		RCS Leakage In Auxiliary Building	12		Actions to Locate Leak-Containment	13		RBCCW System	14	
Event	Step	Completed															
Steam Generator Tubes Intact	11																
RCS Leakage In Auxiliary Building	12																
Actions to Locate Leak-Containment	13																
RBCCW System	14																
	SRO	<p>NOTE:</p> <p>Any of the following are possible RCS leakage paths to RBCCW System:</p> <ul style="list-style-type: none">• RCP Thermal Barrier• Letdown HX• Primary Sample Sink Coolers															

Op-Test No.: <u>ES16LI3</u> Scenario No.: <u>3</u> Event No.: <u>3</u>		
Event Description: "A" RCP Seal Cooler Leak		
Time	Position	Applicant's Actions or Behavior

	BOP	<p>14. Check NO RCS Leakage Into RBCCW System</p> <p>a. CHECK the following parameters:</p> <ul style="list-style-type: none"> RBCCW Surge Tank level – NORMAL RM-6038, RBCCW System Radiation Monitor - NORMAL <p>b. RETURN TO step 10</p>
	SRO	<p>RNO Step 14</p> <p>a. PERFORM the following:</p> <p>1. REQUEST Chemistry Department to sample the RBCCW System using CP 2802G, Sampling Closed Cooling Water Systems.</p> <p>2. ATTEMPT to isolate the leak using ATTACHMENT D, Potential Leakage Paths, while continuing with this procedure starting with step 15</p> <p>3. PROCEED TO step 21.</p>

Attachment D Table 10

RCS to RBCCW Leakage Paths

<u>Item Description</u>	<u>Equipment Numbers</u>	<u>Isolated Initials</u>
A and C RCP Seal Coolers	RB-30.1A RBCCW CTMT ISOL HDR A SUPPLY	_____
	RB-37.2A RBCCW CTMT ISOL HDR A RTN	_____

Examiner Note: Current plant conditions does not allow isolation, requires plant trip and Securing A and B RCP prior to isolation following actions should be carried out in EOP 2540

Cue: Chemistry acknowledges request to sample the RBCCW for a primary leak. Wait appropriate time and report back RBCCW Sample results.

	SRO	*21 Check RCS Leakage Has Been Reduced To Within Tech Spec 3.4.6.2 Limits
	SRO	<p>RNO Step 21</p> <p>PERFORM ONE of the following to place the plant in MODE 5:</p> <ul style="list-style-type: none"> GO TO AOP 2575, Rapid Downpower <p>OR</p> <ul style="list-style-type: none"> GO TO OP 2207, Plant Cooldown

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 3

Event Description: "A" RCP Seal Cooler Leak

Time	Position	Applicant's Actions or Behavior
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Examiner Note: SRO should note TSAS 3.4.6.2

a.No PRESSURE BOUNDARY LEAKAGE ACTION:

With ACTION and associated completion time of ACTION a. not met, or PRESSURE BOUNDARY LEAKAGE exists, or primary to secondary LEAKAGE not within limits, be in HOT STANDBY within 6 hours and be in COLD SHUTDOWN within 36 hours.

Examiner Note: Based on the RCS Leak administrative guidance, the SRO should proceed to Event 4, Plant Shutdown.

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 4

Event Description: Plant Shutdown Due to RCS Leak

Time	Position	Applicant's Actions or Behavior
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Examiner Note: The SRO should initiate Event 4, Plant Shutdown Due to RCS Leak.

Indications:

- RBCCW Surge Tank level – Rising
- RM-6038, RBCCW System Radiation Monitor - Rising
- Letdown Flow – Several gpm Less than Charging Flow

Examiner Note: The following steps are from AOP-2575, Rapid Downpower, Section 3.0 Rapid Downpower.

	SRO	Enters AOP 2575, Rapid Downpower.
	SRO	<p>3.1 PERFORM focus brief on the following:</p> <p>REACTOR TRIP CRITERIA</p> <ul style="list-style-type: none">• Parameters associated with automatic reactor or turbine trips are challenged• RCS T cold <i>not</i> within 10°F of temperature program and efforts to regain control are unsuccessful <p>RCS TEMPERATURE CONTROL</p> <ul style="list-style-type: none">• RCS T cold to be maintained within +/- 5°F of Attachment 5, "Temperature vs. Power program" using Attachment 10, "Main Turbine Load Set Control."• To avoid uncontrolled cooldowns or power transients, sudden changes in RCS temperature or boron concentration should be avoided. <p>3.2 REQUEST SM/STA to Refer To Attachment 8, "Required Notifications," and PERFORM notifications.</p>
	ATC	3.3 INITIATE forcing pressurizer sprays.

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 4

Event Description: Plant Shutdown Due to RCS Leak

Time	Position	Applicant's Actions or Behavior
	SRO	<div>CAUTION</div> <p>In the case of a dropped CEA, rod motion is <i>not</i> used to initiate downpower.</p>
	ATC	3.4 IF <i>not</i> down powering due to a dropped rod, INSERT Group 7 CEAs 10 ± 2 steps to initiate downpower.
	BOP	3.5 Using the "Load Speed Control" switch, REDUCE turbine load to maintain Tc on program (+/-2 deg).
	SRO	3.6 Refer To PPC or Reactor Engineering Curve and Data Book and OBTAIN reactivity plan for the initial reactor power condition and desired load reduction.
Examiner Note: The crew should refer to Reactivity Plan for downpower parameters.		
	SRO	<div>NOTE</div> <p>Attachment 10 "Approximate Load Demand vs. Reactor Power," can be used to correlate the desired power level to a turbine load demand setpoint.</p>
	BOP	3.7 Refer To Attachment 9, "Main Turbine Load Set Control," REDUCE turbine load and MAINTAIN Tc on program (+/-2 deg).
Examiner Note: The following steps are from AOP 2575 Rapid Downpower Attachment 9 Main Turbine Load Set Control:		

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 4

Event Description: Plant Shutdown Due to RCS Leak

Time	Position	Applicant's Actions or Behavior
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	BOP	<div>CAUTION</div> <p>Operation of the "Load/Speed CONTROL" switch will change turbine load at 600%/hour, and cancel any previous load setpoint.</p> <hr/> <div>NOTE</div> <p>Steps provided in this attachment are dependent on plant conditions and may be performed in any sequence, and repeated as necessary.</p>
	BOP	<p>1. <u>IF</u> desired to commence or modify a turbine load ramp, PERFORM the following (HMI "Load" screen):</p> <ol style="list-style-type: none"> <u>IF</u> previous ramp has stopped, SELECT "Load Hold." SELECT "Load Setpt" and ENTER desired value. SELECT "Rate setpt" and ENTER desired value. <u>WHEN</u> ready to commence load reduction, SELECT "Load Resume."
	BOP	<p>2. <u>IF</u> desired to adjust the "Load Ramp Rate," PERFORM <i>any</i> of the following:</p> <ul style="list-style-type: none"> SELECT "Rate setpt" and ENTER new value. SELECT "5% / hour," <u>OR</u> "10% / hour," <u>OR</u> "20% / hour." SELECT "Raise" or "Lower" (0.25% / hour change). <ol style="list-style-type: none"> <u>IF</u> Tavg and Tc are <u>high</u> off program, PERFORM the following: <ol style="list-style-type: none"> SELECT "Load Hold" to stop ramp. <u>WHEN</u> Tavg and Tc are trending back to program, SELECT "Load Resume." <u>IF</u> Tavg and Tc are <u>low</u> off program, PERFORM the following: <ol style="list-style-type: none"> JOG the "Load/Speed CONTROL" switch to "Lower." <u>WHEN</u> Tavg and Tc are back on program, SELECT Load Setpt" and ENTER desired value. <u>IF</u> desired, Go To Step 1 and RESUME turbine load ramp. <u>IF</u> desired load has been reached SELECT "Load Hold." <p>Examiner Note: operator should select x load setpoint, x load rate. Program band for Tavg and Tc is x (+/- 2 deg for Tc).</p>

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 4

Event Description: Plant Shutdown Due to RCS Leak

Time	Position	Applicant's Actions or Behavior
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Examiner Note: The following steps are from AOP 2575 Rapid Downpower Section 3.0 Rapid Downpower.

	ATC	3.8 Based on required rate of downpower, START additional charging pumps as necessary and balance charging and letdown.
	ATC	3.9 IF desired to borate from the RWST (preferred method) PERFORM the following: a. ENSURE at least one charging pump operating. b. ENSURE CH-196, VCT makeup bypass, closed. c. ENSURE CH-504, RWST to charging suction, open. d. OPEN CH-192, RWST isolation. e. CLOSE CH-501, VCT outlet isolation. f. CHECK charging flow at desired rate. g. Go To step 3.11 Examiner Note: Crew should borate from the RWST.

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 4

Event Description: Plant Shutdown Due to RCS Leak

Time	Position	Applicant's Actions or Behavior
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	SRO/ATC/ BOP	<p>3.11 During the downpower, Refer To Attachment 1, "Rapid Downpower Parameters," and MAINTAIN parameters as specified throughout downpower:</p> <p>Examiner note: Attachment 1 Rapid Downpower Parameters:</p> <ul style="list-style-type: none">• Condensate and heater drain flows and pressures: sufficient to maintain adequate SGFP suction pressure• FRV D/P: greater than 40 psid• Turbine load: responding to changes in load demand, with control valves operating together• Steam generator levels 55 to 70%.• MSR parameters tracking together• Turbine Generator MVARs: as specified by CONVEX• Reactor power: being monitored using delta T power indication• ASI: In accordance with reactivity plan or within 0.01 of ESI or per COLR.• CEA position: greater than PDIL• Tc: less than or equal to 549 deg• Pressurizer level: between 35 and 70% <p>Pressurizer pressure: between 2,225 and 2,300 psia (DNB margin)</p>
	SRO/ATC	<div><p style="text-align: center;">NOTE</p><ol style="list-style-type: none">1. Xenon rate of change should be considered when terminating boration.2. During rapid downpower, the PPC calorimetric may be inaccurate due to SG level transients. The most accurate available indication of reactor power is RPS delta T power.</div>
<p>Examiner Note: Once power has dropped at least 5%, or at the lead examiner's direction, proceed to Event 5, "A" RCP Seal Cooler Rupture, Manual Plant Trip.</p>		

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 5

Event Description: "A" RCP Seal Cooler Rupture of 550 gpm (Inter-System SB-LOCA)

Time	Position	Applicant's Actions or Behavior
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Simulator Operator: When directed, initiate Event 5, "A" RCP Seal Cooler Rupture (550 gpm) Resulting in an Inter-System SB-LOCA of 550 gpm by modifying RC20A to 550 gpm (or trigger E-5).
Verify Event 6 triggers 30 seconds post-trip, ESD Outside CTMT, Upstream of #2 MSIV
Verify Event 7 triggers five minutes post-trip; "A" AFW pump degraded performance and "B" Motor Driven AFW pump trip. Standby to trigger Event 8 if necessary.

Indications:

- RCS Pressure - Dropping
- Pressurizer Level - Dropping

Examiner Note: The following steps are from EOP 2525, Standard Post Trip Actions, modified slightly to improve clarity.

	ATC	Determine Status of Reactivity Control – Reactor Trip 1. DETERMINE that Reactivity Control acceptance criteria are met for the reactor by performing ALL of the following steps: <ul style="list-style-type: none">• CHECK that all CEAs are fully inserted.• CHECK that reactor power is dropping.• CHECK that SUR is negative.
	BOP	Determine Status of Reactivity Control – Turbine Trip 2. DETERMINE that Reactivity Control acceptance criteria are met for the turbine by performing ALL of the following steps: a. CHECK that the main turbine is tripped by BOTH of the following: <ul style="list-style-type: none">• ALL main stop valves are closed.• Generator megawatts indicate zero.• Turbine speed is lowering. b. <u>IF</u> 15G-2XI-4, motor operated disconnect, is closed, CHECK that the main Generator output breakers 8T and 9T are open.

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 5

Event Description: "A" RCP Seal Cooler Rupture of 550 gpm (Inter-System SB-LOCA)

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Determine Status of Maintenance of Vital Auxiliaries</p> <p>3. DETERMINE that Maintenance of Vital Auxiliaries acceptance criteria are met by performing ALL of the following steps:</p> <ol style="list-style-type: none"> CHECK that ALL Facility 1 and 2 electrical buses are energized: <ul style="list-style-type: none"> 6.9kV Electrical Buses 25A, 25B 4.16kV Non-Vital Electrical Buses 24A, 24B 4.16vV Vital Electrical Buses 24C, 24D Vital DC Buses 201A, 201B, DV-10, DV-20 Vital AC Instrument Buses VA-10, VA-20 CHECK that BOTH facilities of service water are operating. CHECK that BOTH facilities of RBCCW are operating with service water cooling.
	ATC	<p>Determine Status of RCS Inventory Control</p> <p>4. DETERMINE that RCS Inventory Control acceptance criteria are met by performing ALL of the following:</p> <ol style="list-style-type: none"> CHECK that BOTH of the following conditions exist: <ul style="list-style-type: none"> Pressurizer level is 20 to 80% Pressurizer level is trending to 35 to 70% CHECK that RCS subcooling is greater than or equal to 30°F
	ATC	<p><u>RNO</u></p> <p>a.1 <u>IF</u> the Pressurizer Level Control System is not operating properly in automatic, RESTORE and MAINTAIN pressurizer level 35 to 70% by performing ANY of the following:</p> <ol style="list-style-type: none"> OPERATE the Pressurizer Level Control System. Manually OPERATE charging and letdown. <p>(Starts all available Charging pumps and isolates letdown when PZR level <20% ref:OP2260)</p>
	ATC	<p>Determine Status of RCS Pressure Control</p> <p>5. DETERMINE RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none"> CHECK that pressurizer pressure is 1900 to 2350 psia. CHECK that pressurizer pressure is trending to 2225 to 2300 psia.

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 5

Event Description: "A" RCP Seal Cooler Rupture of 550 gpm (Inter-System SB-LOCA)

Time	Position	Applicant's Actions or Behavior
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	ATC	<p><u>RNO</u></p> <p>5.1 IF the Pressurizer Pressure Control System is not operating properly in automatic, THEN RESTORE and MAINTAIN between 2225 to 2300 psia by performing ANY of the following:</p> <p>a. OPERATE the Pressurizer Pressure Control System.</p> <p>b. Manually OPERATE pressurizer heaters and spray valves.</p> <p>(NOTE PZR Heaters will trip PZR level <20%)</p> <p>5.2 PZR Spray valves (Verifies Closed)</p> <p>5.3 PORVs (Verifies Closed)</p> <p>5.4 RCS Pressure <1750 psia SIAS CIAS EBFAS on C01 annunciators.</p> <p>5.5 <1714 psia w/SIAS Secure ONE RCP in each loop (at 1800 psia manually initiates SIAS trips 2 RCP preferably "A" and "C" due to "A" RCP seal Leak)</p> <p>5.6 TCOA: RCS pressure < NPSH SECURE ALL RCPs</p>
<p><u>CRITICAL TASK:</u> LOCA-13 Trip two RCPs with SIAS actuation and a LOCA in progress.</p> <p>RCS Pressure when RCPs were tripped _____</p>		
<p><u>CRITICAL TASK:</u> LOCA-12/TCOA: RCP < NPSH Curve - 5 minutes to STOP ALL RCPs</p> <p>(NOTE: RCS conditions may not go below RCP NPSH due to the Crews actions)</p> <p>Time RCS pressure dropped below NPSH required pressure _____</p> <p>Time RCPs were tripped due to loss of NPSH pressure _____</p>		
	ATC	<p>Determine Status of Core Heat Removal</p> <p>6. DETERMINE that Core Heat Removal acceptance criteria are met by performing ALL of the following:</p> <p>a. CHECK that at least one RCP is operating and that loop delta T is less than 10°F</p> <p>b. CHECK that Th subcooling is greater than or equal to 30°F.</p>
	ATC	<p><u>RNO</u></p> <p>a.1 IF <u>RCPs are not operating</u>, OR loop ΔT is greater than 10°F, THEN PERFORM the following:</p> <p>1) PLACE TIC- 4165, steam dump TAVG controller, in manual and closed.</p> <p>2) PLACE BOTH pressurizer spray valve controllers in manual and CLOSE the valves.</p> <ul style="list-style-type: none"> • HIC- 100E • HIC- 100F

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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Simulator Operator:

Verify Event 6 triggers 30 seconds post-trip, ESD Outside CTMT, Upstream of #2 MSIV

Verify Event 7 triggers five minutes post-trip; "A" AFW pump degraded performance and "B" Motor Driven AFW pump trip. Standby to trigger Event 8 if necessary.

Examiner Note: Once Event 6 ESDE is initiated the BOP will re-perform Step 7 of EOP 2525 if the OPERATOR has already completed the Step.

	BOP	Determine Status of RCS Heat Removal 7. DETERMINE that RCS Heat Removal acceptance criteria are met by ALL of the following conditions: a. CHECK that at least one steam generator has BOTH of the following conditions met: <ul style="list-style-type: none">• Level is 10 to 80%.• Main feedwater or TWO auxiliary feedwater pumps are operating to restore level 40 to 70%.
	BOP	RNO a.1 RESTORE level to between 40% to 70% in at least ONE steam generator using ANY of the following: <ul style="list-style-type: none">• Main feedwater• Motor- driven auxiliary feedwater pump• TDAFW Pump. Refer To Appendix 6, "TDAFW Pump Normal Startup."• TDAFW Pump. Refer To Appendix 7, "TDAFW Pump Abnormal Startup." (EVENT 7 Operator notes that "A" AFW Pump has degraded performance and the "B" AFW Pump has tripped, refers to Appendix 7 to start the TDAFW pump)

Simulator Operator: If "A" AFW pump malfunction is not enough to cause unacceptable loss of feed flow such that the TDAFW pump is not needed, trigger Event 8, "A" AFW Pump trip.

CRITICAL TASK: LOCA-2; Start the TDAFP (Ensure RCS Heat Sink is maintained).

OP 2260 (TCOA); SG level lowering and no feedwater flow from MDAFW pumps, start TDAFW pump within 10 minutes of loss of feedwater flow.

Time AFW Flow is lost _____

Time TDAFW pump started _____

Op-Test No.: <u>ES16LI3</u> Scenario No.: <u>3</u> Event No.: <u>6&7</u>		
Event Description: ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow		
Time	Position	Applicant's Actions or Behavior

	BOP	b. CHECK that RCS Tc is being maintained between 530°F to 535°F.
	BOP	RNO b.2 IF RCS TC is less than 530°F, THEN CONFIRM steam generator steam and feed rates are NOT excessive:
	BOP	c. CHECK that BOTH steam generators pressure are 880 to 920 psia.

CRITICAL TASK: Main Steam Line Break (SFRM 2.8.2.8.2) INITIATING EVENT:

Excess steam demand event resulting in a Main Steam Isolation Signal (MSIS)

OP 2260 (TCOA); Isolate AFW flow to the affected S/G from control room or local Within 30 minutes of a Main Steam Isolation Signal

TIME Main Steam Isolation Signal (MSIS):_____

TIME AFW Isolated EOP 2525 RNO Step 7c2:_____

	BOP	RNO (CRITICAL TASK START TIME) c.1 IF ANY SG pressure is less than 572 psia, THEN ENSURE MSI actuated. (C01)
	BOP	RNO c.2 TCOA: IF ANY SG pressure is less than 572 psia AND an ESDE is in progress, THEN PERFORM the following to isolate AFW to the most affected SG 1) PLACE BOTH auxiliary feed "OVERRIDE/ MAN/START/ RESET" handswitches in "PULL TO LOCK." 2) CLOSE applicable Aux Feed Reg valve: <ul style="list-style-type: none"> • 2- FW- 43A • 2- FW- 43B 3) IF necessary, CONSIDER use of 2- FW- 44: <ul style="list-style-type: none"> • IF #1 SG faulted, THEN CLOSE 2- FW- 44 and STOP the motor driven AFW pumps • IF #2 SG faulted, THEN CLOSE 2- FW- 44 and STOP the TDAFW pump 4) IF necessary, DISPATCH operator to to close applicable AFRV manual isolation valve: <ul style="list-style-type: none"> • 2- FW- 11A • 2- FW- 11B (CRITICAL TASK STOP TIME)

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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	BOP	RNO c.3 IF ANY steam generator pressure is less than 572 psia AND an excess steam demand event is in progress, THEN PERFORM the following: 1) CLOSE the ADV for the most affected steam generator. 2) IF the most affected steam generator has boiled dry, as indicated by CET temperature rising, THEN OPERATE the ADV for the least affected steam generator to stabilize CET temperature. 3) Proceed To Step 8
	BOP	c.4 IF ANY steam generator pressure is less than 800 psia AND lowering, THEN PERFORM the following: 1) CLOSE BOTH MSIVs. 2) ENSURE BOTH MSIV bypass valves are closed. 3) NOT APPLICABLE FOR THIS SCENARIO
	BOP	c.5 IF ANY steam generator pressure is less than 880 psia, THEN PERFORM the following: 1) NOT APPLICABLE FOR THIS SCENARIO 2) NOT APPLICABLE FOR THIS SCENARIO 3) CHECK main steam safety valves are closed. c.6 NOT APPLICABLE FOR THIS SCENARIO

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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	ATC	<p>Containment Isolation</p> <p>8. ENSURE Containment Isolation met by ALL of the following:</p> <p>a. CHECK Containment pressure is less than 1.0 psig.</p> <p>b. CHECK NONE of the following primary plant radiation monitors have an unexplained alarm or indicate an unexplained rise in activity:</p> <p>Radiation Monitors Inside Containment</p> <ul style="list-style-type: none"> • RM- 7890, Personnel Access Area • RM- 7891, Ctmt Refuel Floor Area • RM- 8240, High Range • RM- 8241, High Range • RM- 8123 A and B, Ctmt Atmosphere • RM- 8262 A and B, Ctmt Atmosphere • <p>c. CHECK NONE of the following primary plant radiation monitors have an unexplained alarm or indicate an unexplained rise in activity:</p> <p>Steam Plant Radiation Monitors</p> <ul style="list-style-type: none"> • RM- 5099, Steam Jet Air Ejector • RM- 4262, SG Blowdown • RM- 4299A and B, Main Steam Line 1 • RM- 4299C, Main Steam Line 2
	ATC	<p>Containment Temperature and Pressure Control</p> <p>9. ENSURE Containment Temperature and Pressure Control met by BOTH of the following conditions:</p> <p>a. CHECK Containment temperature is less than 120°F. (PPC or avg of Points 5 and 6)</p> <p>b. CHECK Containment pressure is less than 1.0 psig</p>
	SRO	<p>Event Diagnosis</p> <p>10. PERFORM the following:</p> <p>a. DIAGNOSE the event. Refer To Appendix 1, "Diagnostic Flowchart."</p> <p>b. INITIATE Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions."</p> <p>c. Go To the appropriate EOP.</p>
<p>Examiner Note: The Unit Supervisor refers to EOP 2541 Appendix 1, Diagnostic Flowchart to diagnose the event.</p>		

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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	ATC/BOP	{Step 10.b above} Perform Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions". Examiner Note: EOP Appendix 4, Attachment 4A "Reactor Trip Subsequent Actions." are attached to guide.
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Examiner Note: The following steps are from EOP 2540, Functional Recovery.

Indications:

- #2 S/G Pressure
- RCS Cold Leg Temperature
- Sub Cool Margin

	SRO	1. CLASSIFY the event. Refer To MP-26-EPI-FAP06, "Classification and PARs" <ul style="list-style-type: none"> • <u>IF</u> classification requires RCS sampling, Refer To Appendix 46, "Sampling for EAL Determination" and DIRECT Chemistry as required.
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Examiner Note:

RCS BARRIER

☐ RCB2 ☐ LOSS
☐ L RCS Subcooling < 30°F
☐ RCB4

☐ POTENTIAL LOSS

☐ P Reactor Coolant Leak > CVCS Capacity AND Entry Into EOP-2525, Standard Post Trip Actions

CTMT BARRIER

☐ CNB3

☐ POTENTIAL LOSS

☐ P Entry Into EOP-2532, Loss of Primary Coolant, AND Leakage Exists Outside CTMT Requiring Isolation From Inside the Control Room

	SRO	2. PERFORM ALL of the following: <ul style="list-style-type: none"> • OPEN the Safety Function Tracking Page and ENTER the EOP entry time. • ENSURE the master alarm silence switch is in "NORMAL".
--	-----	--

	ATC	3. <u>IF</u> pressurizer pressure is less than 1714 psia <u>AND</u> SIAS has initiated, PERFORM the following: <ol style="list-style-type: none"> ENSURE ONE RCP in each loop is stopped. PLACE associated pressurizer spray valve controller RC-100E or RC-100F in manual and CLOSE the valve. <u>IF</u> pressurizer pressure lowers to less than the minimum RCP NPSH limit, PERFORM the following: <ol style="list-style-type: none"> STOP ALL RCPs. PLACE TIC-4165, steam dump TAVG controller, in manual and closed. PLACE pressurizer spray valve controllers RC-100E and RC-100F in manual and CLOSE the valves.
--	-----	--

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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	BOP	<p>4. SAMPLE steam generators that are available for RCS heat removal as follows:</p> <ol style="list-style-type: none"> CHECK "B" train RBCCW in service. ENSURE 2-RB-210 "Degasifier Effluent Cooler Return Outlet" is open. OPEN appropriate steam generator sample valves: <ul style="list-style-type: none"> MS-191A MS-191B DIRECT Chemistry to perform ALL of the following: <ul style="list-style-type: none"> Sample ANY steam generator that is available for RCS Heat Removal Frisk the samples Report frisk results Analyze samples for boron and activity WHEN Chemistry reports that samples have been taken, PERFORM the following: <ul style="list-style-type: none"> CLOSE the steam generator sample valves <u>IF</u> SIAS has actuated, <u>AND</u> no other sampling is in progress, CLOSE 2-RB-210, "Degasifier Effluent Cooler Return Outlet"
CUE: When directed to sample Steam Generators, respond 20 minutes later that samples have been taken. Report that frisk results show all background levels.		
	BOP	5. PLACE the hydrogen analyzers in service. Refer To Appendix 19, "Hydrogen Analyzer Operation."
	SRO	<p>NOTE</p> <p>If the Safety Function Status Checklist is <i>not</i> satisfied for the selected success path, the US may commence the operator actions for safety functions which are <i>not</i> met based on Safety Function hierarchy. The remaining Safety Functions should be prioritized as time permits.</p>
	SRO	<p>6. IDENTIFY success paths to be used to satisfy each safety function using BOTH of the following:</p> <ul style="list-style-type: none"> Resource Assessment Trees Safety Function Tracking Page

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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	SRO	<p>7. PRIORITIZE safety functions to be addressed first based on ALL of the following:</p> <ul style="list-style-type: none"> a. Safety functions which do <i>not</i> meet the Safety Function Status Checklist for the selected success path. b. Safety functions for which the equipment to support the success path is <i>not</i> operating. c. Safety functions for which success path three has been selected. d. Safety functions for which success path two has been selected. e. Safety functions for which success path one has been selected.
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NOTE: SRO will direct the Board Operators through the Resource Assessment Trees and query plant status to determine the correct Functional Procedure to use.

	SRO	4.0 SAFETY FUNCTION STATUS CHECKLIST				
		SAFETY FUNCTION TRACKING PAGE		EOP ENTRY TIME		
		Safety Function	Success Path		Procedure	SFSC Met
		Reactivity Control	RC-1	CEA Insertion	EOP 2540A	Y
			RC-2	Boration CVCS		
			RC-3	Boration SI		
		Maintenance of Vital DC Power	MVA-DC-1	Battery Chargers/ Station Batteries	EOP 2540B	Y
		Maintenance of Vital AC Power	MVA-AC-1	RSST	EOP 2540B	Y
			MVA-AC-2	EDG		
			MVA-AC-3	BUS 34A/34B		
	SRO	RCS Inventory Control	IC-1	CVCS	EOP 2540C1	
			IC-2	Safety Injection		Y
		RCS Pressure Control	PC-1	Subcooled	EOP 2540C2	Y
			PC-2	Saturated		Y
			PC-3	PORVs		
		RCS Core Heat Removal	HR-1	SI no operating	EOP 2540D	
			HR-2	SI operating		Y
			HR-3	O-T-C		
		Containment Isolation	CI-1	Automatic/Manual	EOP 2540E	N
		Containment Temperature and Pressure Control	CTPC-1	CARs (Normal)	EOP 2540F	Y
			CTPC-1	CARs (Emerg)		
			CTPC-1	CTMT Spray		

NOTE MAYBE Sub or Sat depending on crew actions
7,3

3,4

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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	SRO	8. DIRECT the STA to check that Safety Function Status Checklist Criteria are satisfied for chosen success paths.
		9. PERFORM operator actions for chosen success paths based on priority assigned. TRANSITION to EOP 2540E Functional Recovery Containment Isolation

Examiner Note: The following steps are from EOP 2540E, Functional Recovery Containment Isolation.

		Check SIAS/CIAS Actuation * 1. IF ANY of the following conditions exist: <ul style="list-style-type: none"> Containment pressure is greater than or equal to 4.42 psig Radiation monitors inside containment are greater than their alarm setpoint An unexplained rise in containment radiation level or activity NOT APPLICABLE FOR THIS SCENARIO previously checked
		Identify and Isolate SGTR * 2. IF a SGTR is indicated by ANY of the following: NOT APPLICABLE FOR THIS SCENARIO no SGTR
		Isolate RCS to RBCCW Leakage * 3. CHECK no leakage in the RBCCW system by BOTH of the following: <ul style="list-style-type: none"> CHECK RM-6038, RBCCW Radiation Monitor, is not alarming or trending to alarm. CHECK that the RBCCW surge tank level is not rising.
		RNO 3.1 IF ANY RCPs are operating, PERFORM the following: <ol style="list-style-type: none"> STOP the operating RCPs. PLACE the associated pressurizer spray valve controller, RC-100E or RC-100F, in manual and CLOSE the valve. IF ALL RCPs are stopped, PLACE TIC-4165, steam dump TAVG controller, in manual and closed.

Examiner Note: Completed in previously step for SIAS actuation

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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		RNO 3.2 CLOSE ALL of the following RBCCW CTMT header isolation valves: Facility 1 <ul style="list-style-type: none"> • RB-30.1A • RB-37.2A Facility 2 <ul style="list-style-type: none"> • RB-30.1B • RB-37.2B
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Examiner Note: Closing Facility 1 isolation satisfies Safety Function for CTMT Isolation

		4. CHECK that CI-1 (Automatic/Manual Isolation) is satisfied by ALL of Condition 1 or ALL of Condition 2 is met: Condition 2 <ul style="list-style-type: none"> • Each containment penetration required to be closed for current plant conditions has an isolation valve closed • ONE of the following: <ul style="list-style-type: none"> ○ No steam plant radiation monitors have an unexplained alarm or unexplained rises in activity ○ ALL release paths from the most affected SG to the environment isolated unless a planned release is in progress • IF SGTR is present, steam generator pressure is less than 920 psia
--	--	---

Examiner Note: Condition 2 is Satisfied SRO should transition to the next priority Safety Function for Inventory EOP 2540C1(IC-2Safety Injection).

Examiner Note: The following steps are from EOP 2540C1 IC-2, Functional Recovery Safety Injection

		2.0 SUCCESS PATH: IC-2: SAFETY INJECTION
	ATC	Ensure SIAS Initiated * 1. PERFORM ALL of the following: Completed in EOP 2525 or 2540

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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	ATC	Optimize Safety Injection * 2. PERFORM the following to optimize safety injection flow: <ul style="list-style-type: none"> a. CHECK at least one train of SIAS, CIAS and EBFAS has properly actuated. (C01X) b. CHECK that safety injection flow is adequate. Refer To Appendix 2, "Figures." c. ENSURE ALL available charging pumps are operating. d. ENSURE vital switchgear cooling is operating for each operating ECCS train as follows: (Completed previously)
Examiner Note: Once the SRO meets the SI Injection flow curve the SRO should handoff the rest of the procedure to the ATC and Transition to RCS Core Heat Removal to isolate the #2 S/G EOP 2540D		
Examiner Note: The following steps are from EOP 2540D HR-2, Functional Recovery Heat Removal		
	SRO	2.0 SUCCESS PATH: HR- 2: SG HEAT SINK WITH SI OPERATING Pulls Forward Step 14
	SRO	Determine Presence of ESDE * 14. DETERMINE if an ESDE is in progress by considering ALL of the following: <ul style="list-style-type: none"> • Steam generator pressures • Steam generator levels • RCS cold leg temperatures (Determined #2 S/G)
		NOTE If there is a conflict between isolating a SG and maintaining adequate heat removal, at least one SG should be maintained for heat removal whenever possible.
	SRO	Perform ESDE Response * 15. IF indications of an ESDE exist, PERFORM ESDE actions. Refer To Appendix 11, "ESDE Response." (SRO Directs the BOP to perform Appendix 11 isolate the #2 S/G)
		EOP 2541, Appendix 11 ESDE Response
		1. PERFORM the following to isolate the leak: <ul style="list-style-type: none"> a. ENSURE MSI has actuated. (C01) b. CHECK at least one train of MSI has properly actuated. (C01X) c. OPEN AR-17, condenser vacuum breaker.

Op-Test No.: ES16LI3 Scenario No.: 3 Event No.: 6&7

Event Description: **ESD Outside CTMT, Upstream of #2 MSIV and Loss of AFW Flow**

Time	Position	Applicant's Actions or Behavior
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		<p>2. DETERMINE the most affected steam generator by considering ALL of the following:</p> <ul style="list-style-type: none">• High steam flow from steam generator• Lowering steam generator pressures• Lowering steam generator levels• Lowering RCS cold leg temperatures
		<p>*3. IF the leak has <i>not</i> been isolated, ISOLATE the most affected steam generator by performing the following:</p> <p>Number 2 Steam Generator</p> <ul style="list-style-type: none">a. ENSURE MS-64B, MSIV, is closed.b. ENSURE MS-65B, MSIV bypass valve, is closed.c. ENSURE ALL of the following for the associated ADV:<ul style="list-style-type: none">• PIC-4224, ADV controller, is in manual.• ADV is closed.d. PLACE ADV Quick Open Permissive switch to "OFF".e. CLOSE LIC-5216, main feedwater regulating bypass valve.f. ENSURE FW-42B, main feedwater block valve, is closed.g. PLACE FW-5B, main feed isolation air assisted check valve, to "CLOSE".h. UNLOCK and CLOSE "DISC FOR 2-MS-202" (NS6202).i. CLOSE MS-202, steam to turbine driven aux feed pump supply valve.j. ENSURE MS-220B, steam generator blowdown isolation valve, is closed.k. PLACE BOTH auxiliary feed "OVERRIDE/MAN/START/ RESET" handswitches in "PULL-TO-LOCK".l. CLOSE FW-43B, aux feedwater regulating valve.m. PLACE FW-12B, aux feed isolation air assisted check valve, to "CLOSE".n. CLOSE MS-266B, main steam low point drain.o. CHECK main steam safety valves are closed.
Examiner discretion the objectives for the scenario are complete and can terminate the session		

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Shutdown Safety Assessment Decay Heat Removal

JPM Number: JPM-292-R-RO Revision: 0/1

Initiated:

David J. Jacobs 05/18/2016
Developer Date

Reviewed:

Robert L. Cimmino, Jr. 07/05/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
05/18/2016	New JPM for I LT	0/0
08/18/2016	Incorporated NRC comments	0/1

JPM WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-292-R-RO Revision: 0/1

Task Title: Shutdown Safety Assessment Decay Heat Removal

System: Conduct of Operations

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 60

Task Number(s): 119-01-044

Applicable To: SRO X STA _____ RO X PEO _____

K/A Number: 2.1.18 K/A Rating: 3.6/3.8

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM the examinee has determined the appropriate color code for the predicted Decay Heat Removal Key Safety Function when in Reduced Inventory.

Required Materials: MP-PROC-000-OU-M2-201[r018.00] Shutdown Safety Assessment Checklist
(procedures, equipment, etc.)

General References: MP-PROC-000-OU-M2-201[r018.00] Shutdown Safety Assessment Checklist

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-292-R-RO**

Revision : **0/1**

Initial Conditions:

The plant is in MODE 5 day 2 of a scheduled 28 day refueling outage. Reactor disassembly is in progress and the Reactor Head is expected to be removed within the next 12 hours.

The following additional conditions presently exist:

- “A” Train is protected.
- “B” EDG tagged for Maintenance
- Back Feeding from the NSST
- No Off-Site GRID Risk Penalty Factors
- RCS Boron concentration is 2200 ppm.
- RCS temperature is 105°F.
- PZR level is 20%
- PZR Vent Port Removed

Initiating Cues:

The US has given you the current Shutdown Safety Assessment and directed you perform a predicted SSA for the RCS in Reduce Inventory for the following Sections only:

- Section 3 Decay Heat Removal (DHR)
- Section 7 Power Availability

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking “Y”. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-292-R-RO Revision: 0/1

Task Title: Shutdown Safety Assessment Decay Heat Removal

START TIME: _____

STEP # 1	Performance: Refers to MP-PROC-000-OU-M2-201 Shutdown Safety Assessment Checklist And Current Condition SSA	Standard: Examinee reviews Current Condition SSA	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 2	Performance: 3.1 Key Safety Functions 3.1.1 ASSESS and MANAGE the following KSFs for risk during shutdown conditions: <ul style="list-style-type: none">Decay Heat Removal (DHR)Power Availability	Standard: Examinee Assess the following Key Safety Functions: <ul style="list-style-type: none">Decay Heat RemovalPower Availability	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-292-R-RO**

Revision: **0/1**

Task Title: **Shutdown Safety Assessment Decay Heat Removal**

STEP #3	<p>Performance:</p> <p>3.3 Shutdown Safety Assessment (SSA) Checklist Preparation</p> <p>3.3.1 Using the following detailed information for each KSF, COMPLETE Attachment 1:</p> <p>f. Section 3 - Decay Heat Removal (DHR)</p> <p>1. RCS Decay Heat Removal (DHR)</p> <ul style="list-style-type: none">• REFER to Attachment 4 for background information of each element associated with the Decay Heat Removal KSF.• CHECK appropriate boxes for conditions supporting “Key Safety Function” of RCS decay heat removal.• TOTAL score and ENTER value in RCS DHR Total box.• CIRCLE Condition color corresponding to point total.	<p>Standard:</p> <p>Examinee refers to the following:</p> <ul style="list-style-type: none">• ATTACHMENT 4 Decay Heat Removal Requirements and performs Attachment 1 Section 3 Decay Heat Removal• Subtracts 1 point for Reduced Inventory Operations• Change Total Condition to 1 points• Circles ORANGE	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-292-R-RO

Revision: 0/1

Task Title: Shutdown Safety Assessment Decay Heat Removal

STEP # 4	<p>Performance:</p> <p>3.3 Shutdown Safety Assessment (SSA) Checklist Preparation</p> <p>3.3.1 Using the following detailed information for each KSF, COMPLETE Attachment 1:</p> <p>j. Section 7 - Power Availability</p> <p>1. REFER to Attachment 8 for background information for each element associated with Power Availability KSF.</p> <p>2. CHECK appropriate boxes for conditions supporting “Key Safety Function” of Power Availability.</p> <p>3. IF required, THEN RECORD applicable Off-Site GRID Risk Penalty Factor and SUBTRACT from Power Availability subtotal to determine Power Availability Total.</p> <p>4. TOTAL score and ENTER the value in Power Availability Total box.</p> <p>5. CIRCLE Condition color corresponding to point total.</p>	<p>Standard:</p> <p>Examinee refers to the following:</p> <ol style="list-style-type: none"> 1. ATTACHMENT 8 background information Power Availability Requirements and performs 2. Attachment 1Section 7 Power Availability <ul style="list-style-type: none"> • Reviews Required Equipment and does not meet 2 EDG available = RED 3. No GRID Penalty 4. Total Score remains 4 5. Circle Condition RED for not meeting Minimum Equipment 	<p>Critical:</p> <p>Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade</p> <p>S <input type="checkbox"/> U <input type="checkbox"/></p>

PERFORMANCE INFORMATION

JPM Number: **JPM-292-R-RO** Revision: **0/1**

Task Title: **Shutdown Safety Assessment Decay Heat Removal**

STEP # 5	Performance: 3.4.6 DOCUMENT notification to OMOG and Maintenance Rule Coordinator for any unplanned RED or ORANGE conditions. a. IF OCC is staffed, THEN NOTIFY the SOM and OOM to ensure OMOG notifications are made.	Standard: Examinee Reports going to Reduce Inventory will cause a RED Condition for Power Availability	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-292-R-RO

Revision: 0/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	30	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number:

JPM-292-R-RO

Revision:

0/1

Initial Conditions:

The plant is in MODE 5 day 2 of a scheduled 28 day refueling outage. Reactor disassembly is in progress and the Reactor Head is expected to be removed within the next 12 hours.

The following additional conditions presently exist:

- “A” Train is protected.
- “B” EDG tagged for Maintenance
- Back Feeding from the NSST
- No Off-Site GRID Risk Penalty Factors
- RCS Boron concentration is 2200 ppm.
- RCS temperature is 105°F.
- PZR level is 20%
- PZR Vent Port Removed

Initiating Cues:

The US has given you the current Shutdown Safety Assessment and directed you perform a predicted SSA for the RCS in Reduce Inventory for the following Sections only:

- Section 3 Decay Heat Removal (DHR)
- Section 7 Power Availability

	Total Score and Condition Color
Section 3 Decay Heat Removal (DHR)	
Section 7 Power Availability	
Required Report (If Any)	



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(SSA) Checklist

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Section 1

Protected Train A ☒ / B ☐ (Check one or both) ☐ with exceptionDate/Time Performed: Today / 0000Date/Time of Shutdown: 2 Days ago 0000☒ Actual ConditionsDays Shutdown: 2☐ Predicted Conditions for _____

Reason for Shutdown Safety Assessment:

00:00

(00:00 hour, mode change, configuration changes)

Section 2 Heatup Data

Time To Core Boil

☒ Bubble does not exist in pressurizer AND fuel is in the vessel, THEN complete the following:

- RCS Temp: 105 °F
- RCS Level: 11 feet above flange
- RCS Time to Boil: 44.6 mins

☐ NA if DEFUELED

Spent Fuel Pool Heatup Time

- SFP Temp: 95 °F
- SFP Level: 36 feet 10 inches
- SFP Time to 150°F
- ☒ NA if NO freshly discharged fuel assemblies transferred to SFP or fuel assemblies are reloaded into reactor vessel
- or
- ____ hrs ____ mins
- SFP Time to 200°F 23 hrs 10 mins

Time to 200°F (EA2 criterion): 39 mins☐ NA if DEFUELEDTime to Heatup 10°F (EU1 criterion, uncontrolled heatup): 8.7 mins☐ NA if DEFUELEDRBCCW HX Outlet Temp: 80 °FRefuel Boron C_b per TS: 2100 ppmRCS Boron C_b: 2200 ppmSFP Boron C_b: 2200 ppmShutdown Risk Color is: ☐ GREEN☒ YELLOW☐ ORANGE☐ RED

Limiting Safety Function

- ☒ RCS or ☐ SFP Decay Heat Removal
- ☐ RCS or ☐ SFP Inventory Control
- ☐ Reactivity Control
- ☐ Containment
- ☐ Power Availability

SDC Responder phone: x4335

Comments: _____

Millstone Unit 2 Shutdown Safety Assessment
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Section 3 Decay Heat Removal**RCS Decay Heat Removal**

Check boxes for available equipment

☒ 'A' SDC with associated RBCCW and SW pumpPoint
Value

Score

(1)

1☒ 'B' SDC with associated RBCCW and SW pump

(1)

1☐ 'A' CS with associated RBCCW and SW pump⁽³⁾

(1)

☐ 'B' CS with associated RBCCW and SW pump⁽³⁾

(1)

☐ Both SGs⁽¹⁾

(1)

☐ Refuel Pool $\geq 35'6''$ ⁽⁴⁾ or Notes ⁽²⁾⁽⁴⁾

(1)

Reduced Inventory Operation (RIO) Penalty

(-1)

Total

Condition

(Circle)

0

RED

1

ORANGE

2

YELLOW

3

GREEN

RCS Decay Heat Removal Total

2

NA if DEFUELED

Required Equipment (minimum):

(Check)

☐ If only one train of SDC available ensure:A ☐B ☐☐ Associated train EDG availableA ☐B ☐☐ One U2 controlled offsite power source
associated with available SDC trainRSST ☐NSST ☐☐ During Reduced Inventory Operation (RIO)
ensure:☐ Both trains of SDC available with one train in
service that is energized from a bus powered
from an offsite sourceYes ☐No ☐Required
Equipment
NOT met

RED

AND☐ One RBCCW pump powered from
independent power supplies for each credited
SDC trainA ☐B ☐C ☐AND☐ One SW pump powered from independent
power supplies for each credited SDC trainA ☐B ☐C ☐⁽¹⁾Maintain all of the following satisfied to ensure two steam generators available and proper RCS conditions are established to support natural circulation:

- Both available SG NR levels greater than 10%
- Capability to feed available SGs with a MD AFW pump
- Capability to release steam from available SGs
- RCS loops associated with the available SGs; filled and unisolated
- Pressurizer pressure ≥ 50 psia AND a steam bubble is established in the pressurizer

⁽²⁾When refuel pool level is reduced to 31'6" to lift and set the UGS.⁽³⁾CS can be credited to backup LPSI for DHR in MODES 6 and Defueled per calculation ENG-04223M2, Rev. 0, Addendum 9. If CS is placed in service, no Core Alterations are allowed per Tech Specs.⁽⁴⁾In Modes 5 and 6, IF RCS is vented AND Refuel Pool is less than full ($< 35'6''$), an Operator must be stationed in the vicinity of the SW/Fire Water Supply valves to the EDG to be ready to take action to shift cooling water to Fire Water if directed by the SM.

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Section 3 Decay Heat Removal (Continued)	
BEYOND DESIGN BASIS	
Mode 5:	NA for Mode 0
Steam Generator available for Decay Heat Removal: <input type="checkbox"/> 1 <input type="checkbox"/> 2	<input checked="" type="checkbox"/> Pressurizer Vent Port Removed
AC Independent Aux Feedwater Pump: <input type="checkbox"/> TDAFW Pump <input checked="" type="checkbox"/> BDB AFW Pump	<u>OR</u> <input type="checkbox"/> BDB AFW Pump Available for RCS Injection
Mode 6: <input checked="" type="checkbox"/> BDB AFW Pump pre-staged for injection into the RCS	

Millstone Unit 2 Shutdown Safety Assessment
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Section 3 Decay Heat Removal (Continued)**SFP Decay Heat Removal**

	Point Value	Score	Total	Condition
<input checked="" type="checkbox"/> SFP level $\geq 35'6''$	(1)	1		(Circle)
<input checked="" type="checkbox"/> 'A' SFPC pump & HX with SFP level $\geq 36'4''$ ***	(0, 1/2, 1)*	1	0	RED
<input checked="" type="checkbox"/> 'B' SFPC pump & HX with SFP level $\geq 36'4''$ ***	(0, 1/2, 1)*	1	1	ORANGE
<input type="checkbox"/> 'A' LPSI pump and SFP level $\geq 36'10''$ ***	(1)	—	2	YELLOW
<input type="checkbox"/> 'B' LPSI pump and SFP level $\geq 36'10''$ ***	(1)	—	> 3	GREEN
<input type="checkbox"/> 'A' CS pump and SFP level $\geq 36'10''$ ***	(1)**	—		
<input type="checkbox"/> 'B' CS pump and SFP level $\geq 36'10''$ ***	(1)**	—		

SFP Decay Heat Removal Total**3**

*Count each available SFPC pump as 1 point prior to fuel movement. With ≤ 80 fuel assemblies transferred to the SFP, each available SFPC pump should be counted as $\frac{1}{2}$ point. With > 80 fuel assemblies transferred to the SFP, each available SFPC pump should be counted as 0 points unless a cycle specific analysis demonstrates both SFPC pumps are one viable source of decay heat removal (i.e., each SFPC pump should be counted as $\frac{1}{2}$ point). For 2R23, Calculation ENG-04223M2, Rev. 0, Addendum 9, demonstrates that both SFPC pumps together can be credited as one viable means of SFPC provided the reactor has been shutdown ≥ 8.3 days and RBCCW temperature is maintained at $< 80^\circ\text{F}$. Following the core reload, each available SFPC pump should be counted as 1 point if requirements of TRM 3.9.3.3 are met. For 2R23, PM-1701, Rev. 0, demonstrates that TRM 3.9.3.3 will be met at ≥ 17 days following shutdown, since 85 fuel assemblies will be discharged during 2R23.

** A cycle specific analysis is required for counting each available CS pump as 1 point for SFPC. For 2R23, Calculation ENG-04223M2, Rev 0, Addendum 9, supports each CS pump being counted as 1 point provided that fuel movement begins ≥ 150 hours and RBCCW temperature is maintained at $< 80^\circ\text{F}$. The UHS must be $< 70^\circ\text{F}$, with excursions allowed for < 3 hours, if the moving average is $< 70^\circ\text{F}$.

*** $\geq 36'10''$ if two SFP cooling pumps are operating or EITHER LPSI or CS supplying SFP cooling independent of Shutdown Cooling. Level restriction is not applicable if SFP is cooled via Shutdown Cooling with 2-RW-280 open, since SDC suction is via the hot leg and 2-SI-651 and 2-SI-652.

Required Equipment (minimum):

	(Check)	
<input checked="" type="checkbox"/> One RBCCW pump	A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/>	Required Equipment NOT met
<input checked="" type="checkbox"/> One SW pump	A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/>	RED
<input checked="" type="checkbox"/> One RBCCW heat exchanger	A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/> One SFPC or <input type="checkbox"/> SDC heat exchanger	A SFPC HX <input checked="" type="checkbox"/> B SFPC HX <input checked="" type="checkbox"/> A SDC HX <input type="checkbox"/> B SDC HX <input type="checkbox"/>	

NOTE: To maintain defense in depth for SFP cooling after the 81st fuel assembly is in the SFP during offload, additional equipment is required. TRM 3.9.3.3b requirements will be met for the 85 fuel assemblies discharged for Cycle 24 ≥ 17 days shutdown and core reload is complete.

Fuel Offload (81 to 217 Fuel Assemblies) Required**Equipment (minimum, until reload complete):**

	(Check)	
<input type="checkbox"/> Two RBCCW pumps	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>	Required Equipment NOT met
<input type="checkbox"/> Two SW pumps	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>	ORANGE
<input type="checkbox"/> One RBCCW heat exchanger	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>	
<input type="checkbox"/> Either of the following:		
<input type="checkbox"/> Two SFPC heat exchangers	A <input type="checkbox"/> B <input type="checkbox"/>	
<input type="checkbox"/> One SDC heat exchanger	A <input type="checkbox"/> B <input type="checkbox"/>	

Millstone Unit 2 Shutdown Safety Assessment
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Section 4 Inventory Control**RCS Inventory Control**

Check boxes for available equipment:

	Point Value	Score	Total	Condition
			(Circle)	
<input checked="" type="checkbox"/> 'A' HPSI pump	(1)	1	0	RED
<input checked="" type="checkbox"/> 'B' HPSI pump	(1)	1	1	ORANGE
<input checked="" type="checkbox"/> 'C' HPSI pump	(1)	1	2	YELLOW
<input checked="" type="checkbox"/> 'A' Charging pump via <input checked="" type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)	(1/2, 1) ⁽³⁾	1/2	≥3	GREEN
<input checked="" type="checkbox"/> 'B' Charging pump via <input checked="" type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)	(1/2, 1) ⁽³⁾	1/2		
<input type="checkbox"/> 'C' Charging pump via <input type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)	(1/2, 1) ⁽³⁾			
<input type="checkbox"/> RCS Inventory Control not required if DEFUELED AND RCS isolated from SFP by one of the following:				
<input type="checkbox"/> 2-RW-280 CLOSED				
<u>OR</u>				
<input type="checkbox"/> West SFP Gate INSTALLED				

RCS Inventory Control Total

4

NA if DEFUELED
AND
RCS isolated from SFP

Required during RIO (minimum):

☐ One HPSI pumpRequired Equipment
NOT met RED**SFP Inventory Control**

Check boxes for available equipment:

	Point Value	Score	Total	Condition
			(Circle)	
<input type="checkbox"/> One AFW pump aligned to CST	(1)		0	RED
<input type="checkbox"/> One Refuel Purification pump	(1)		1	ORANGE
<input type="checkbox"/> One PMW pump	(1)		2	YELLOW
<input type="checkbox"/> Makeup available from Fire Protection System (e.g., hoses)	(1)		≥3	GREEN

SFP Inventory Control Total

N/A

NA if MODE 5, 6, or
Refuel Pool ≥ 36'4"

Requirements for RCS drain down conditions:

☐ SFP Cooling System vent and drain paths, which could affect SFP inventory, are identified and safety tagged prior to release of impacting work.

Tagout Number: _____

☐ Controls are in place to ensure safety tags are in place during RCS drain down.

Tagout Number: _____

⁽¹⁾T.S. 3.1.1.3.b. allows only two charging pumps capable of injecting when RCS is less than 300°F (boron dilution).⁽²⁾RWST ≥ 57,300 gallons (12%) or BAST > 3,750 gallons (65.8%) to be available per TRM 4.1.2.7a and SP 2601F, "Borated Water Sources Verification, MODE 5 or 6."⁽³⁾If ≤ 384 hrs (16 days) since shutdown, at least two Charging pumps with suction from the RWST or BAST and aligned to RCS to be credited as ONE viable makeup source.

Millstone Unit 2 Shutdown Safety Assessment
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Section 5 Reactivity Control**Reactivity Control while in MODEs 5 or 6**

Check boxes for available equipment and conditions:

	Point Value	Score	Total	Condition
<input checked="" type="checkbox"/> RCS <u>AND</u> SFP boron concentrations greater than required by applicable Tech Specs	(1)	<u>1</u>	(Circle) 0-2 RED 3 ORANGE 4 YELLOW 5 GREEN	
<input checked="" type="checkbox"/> Dilution flowpaths identified (procedurally controlled <u>or</u> tagged) Tagout Number: <u>2207X99-0007</u>	(1)	<u>1</u>		
<input checked="" type="checkbox"/> Inventory Flow Paths	(0-2)	<u>2</u>		
<input checked="" type="checkbox"/> 'A' HPSI pump				
<input type="checkbox"/> 'B' HPSI pump				
<input checked="" type="checkbox"/> 'C' HPSI pump				
<input checked="" type="checkbox"/> 'A' Charging pump aligned to <input checked="" type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)				
<input checked="" type="checkbox"/> 'B' Charging pump aligned to <input checked="" type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)				
<input type="checkbox"/> 'C' Charging pump aligned to <input type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)				
<input checked="" type="checkbox"/> ≥ 2 Source Range Monitor	(1)	<u>1</u>		

RCS Reactivity Control while in MODE 5 or 6 Total**5****NA if DEFUELED**Required Equipment (minimum):

	(Check)				
<input checked="" type="checkbox"/> ≥ 2 Source Range Monitors	<input checked="" type="checkbox"/>	A	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Inventory Flow Paths	<input checked="" type="checkbox"/>	C	<input checked="" type="checkbox"/>	D	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> RCS <u>AND</u> SFP Boron concentrations greater than required by applicable Tech Specs					

Required Equipment
NOT met
RED**Reactivity Control while DEFUELED**

Check boxes for available equipment and conditions

	Point Value	Score	Total	Condition
<input type="checkbox"/> RCS <u>AND</u> SFP boron concentrations greater than required by applicable Tech Specs	(1)	_____	(Circle) 0 RED 1 YELLOW 2 GREEN	
<input type="checkbox"/> Dilution flowpaths identified (procedurally controlled or Safety Tagging)	(1)	_____		
Tagout Number: <u>2207X99-0007</u>				

RCS Reactivity Control while DEFUELED Total**N/A****NA if in MODE 5 or 6**⁽¹⁾Only two charging pumps must be capable of injecting based on T.S. 3.1.1.3.b., "Boron Dilution."⁽²⁾RWST ≥ 57,300 gallons (12%) or BAST > 3,750 gallons (65.8%) to be available per TRM 4.1.2.7a and SP 2601F, "Borated Water Sources Verification, MODE 5 or 6."

Millstone Unit 2 Shutdown Safety Assessment
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Section 6 Containment**NOTE:** See OP 2264, Attachment 5, Containment Penetration Work Activities Affecting Containment Closure, and Attachment 9, Containment Penetration Tracking Sheet, for status of containment penetrations.

Check boxes that apply for current conditions

- ☒ Containment Closure Capability⁽¹⁾ (3 points)
☐ Containment Closure Set (3 points)
OR
☒ Containment Closure Set with exceptions tracked and capable of being closed prior to the lesser of:
☒ Time to Core Boil (2 points)
OR
☐ 4 hours (Loss of RCS DHR, TS 3.9.8.1, action c.) (2 points)
OR
☐ Containment Closure Set with administrative controls of OP 2209A during fuel movement within the containment building (2 points)

- ☒ No significant fuel failures indicated⁽²⁾ (1) 1
☒ No Core Alterations in progress in Containment⁽³⁾ (1) 1
☐ RCS Pressure Boundary intact⁽⁴⁾ (1)
☐ Low Decay Heat (>8 days shutdown)⁽⁵⁾ (1)
☒ Decay Heat, Inventory Control, Power Availability Functions **NOT** Orange/Red⁽⁶⁾ (1) 1

Point Value
(0,2,3) 2

Total	Condition
	(Circle)
0	RED
1	ORANGE
2	YELLOW
<u>≥ 3</u>	<u>GREEN</u>

Containment Total

5**NA if DEFUELED**

⁽¹⁾ Closure capability is scored based on all penetrations closed by at least one isolation valve or exceptions tracked and managed in accordance with OP 2264, "Conduct of Outages."

⁽²⁾ This item is scored a "1" if no significant fuel failures are indicated by radiochemistry sampling. For the purposes of the SDR assessment, identification from radiochemistry samples and confirmation from NAF of significant fuel rod/pin failures is necessary to score this item as "0."

⁽³⁾ No Core Alterations in progress in Containment is an indicator of the susceptibility to a fuel handling event. This item is scored a "1" if no Core Alterations are in progress or a "0" if Core Alterations are in progress.

⁽⁴⁾ This item is scored a "1" if the RCS is intact or a "0" if any RCS opening exists.

⁽⁵⁾ After 8 days (from the start of the outage), it is assumed that the short-lived, volatile isotopes that are principally responsible for early health effects have decayed sufficiently such that the event would not contribute to Large Early Release Frequency (LERF).

⁽⁶⁾ No Activities are in progress to preclude mitigation to a fuel handling accident. This item is scored a "1" if Decay Heat Removal, Inventory Control, and Power Availability are **NOT** Orange/Red. This item is scored a "0" if Decay Heat Removal, Inventory Control, and Power Availability are Orange/Red.

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Section 7 Power Availability

Check boxes for available equipment and conditions:	Point Value	Score	Total	Condition
<input checked="" type="checkbox"/> Power Availability				
<input checked="" type="checkbox"/> Bus 24E aligned to: <input checked="" type="checkbox"/> 24C <input type="checkbox"/> 24D				
<u>On-site Power Source:</u>				
<input checked="" type="checkbox"/> 'A' EDG with 'A' SW pump <u>or</u> 'B' SW pump supplied by the 'A' EDG	(1)	1	0-1	RED
<input type="checkbox"/> 'B' EDG with 'C' SW pump <u>or</u> 'B' SW pump supplied by the 'B' EDG	(1)		2	ORANGE
<input type="checkbox"/> SBO Diesel via 24E (Time to Boil > 60 min)	(1)		3	YELLOW
			> 4	GREEN
<u>Off-site Power Source:</u>				
<input checked="" type="checkbox"/> Unit 2 RSST	(1)	1		
<input checked="" type="checkbox"/> Unit 2 NSST	(1)	1		
<input checked="" type="checkbox"/> Unit 3 <input checked="" type="checkbox"/> RSST or <input type="checkbox"/> NSST via 34A/B	(1)	1		
Power Source Sub-Total			4	
<u>Required Equipment:</u>				
<input checked="" type="checkbox"/> One EDG + One Unit 2 Controlled Off-site Source			Required Equipment	RED
<input type="checkbox"/> IF in RIO at least one additional on site power source:			NOT met	
• SBO Diesel and Calculated Time to Boil > 60 minutes				
• Additional Unit 2 EDG				
Off-Site GRID Risk Penalty Factor				
Environmental Conditions ⁽¹⁾				
<input type="checkbox"/> Avg sustained wind speed \geq 75 mph				
<input type="checkbox"/> Salt contamination buildup or arcing in the 345 kV switchyard				
<u>OR</u>				
Switchyard Activities ⁽¹⁾				
<input type="checkbox"/> Trip Testing affecting more than one 345 kV line				
<input type="checkbox"/> Two 345 kV lines out of service				
<u>OR</u>				
ISO-NE/CONVEX Alerts ⁽¹⁾				
<input type="checkbox"/> Abnormal transmission network conditions with potential for loss of grid				
<u>OR</u>				
Planned Maintenance or Projects ⁽²⁾				
<input type="checkbox"/> _____				
SUBTRACT from Power Sub-Total ⁽¹⁾		-	()	Penalty
Power Availability Total			4	

⁽¹⁾ Apply offsite power source sub-total⁽²⁾ If 345 kV or main transformer switchyard work is in progress which jeopardizes off-site sources, then deduct points equivalent to the number of offsite sources that could be affected.

Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

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Section 3 Decay Heat Removal**RCS Decay Heat Removal**

Check boxes for available equipment

	Point Value	Score	Total	Condition
<input type="checkbox"/> 'A' SDC with associated RBCCW and SW pump	(1)	_____		(Circle)
<input type="checkbox"/> 'B' SDC with associated RBCCW and SW pump	(1)	_____	0	RED
<input type="checkbox"/> 'A' CS with associated RBCCW and SW pump ⁽³⁾	(1)	_____	1	ORANGE
<input type="checkbox"/> 'B' CS with associated RBCCW and SW pump ⁽³⁾	(1)	_____	2	YELLOW
<input type="checkbox"/> Both SGs ⁽¹⁾	(1)	_____	3	GREEN
<input type="checkbox"/> Refuel Pool $\geq 35'6''$ ⁽⁴⁾ or Notes ⁽²⁾⁽⁴⁾	(1)	_____		
Reduced Inventory Operation (RIO) Penalty	(-1)	_____		

RCS Decay Heat Removal Total

NA if DEFUELED

Required Equipment (minimum):

(Check)

<input type="checkbox"/> If only one train of SDC available ensure:	A <input type="checkbox"/>	B <input type="checkbox"/>	
<input type="checkbox"/> Associated train EDG available	A <input type="checkbox"/>	B <input type="checkbox"/>	
<input type="checkbox"/> One U2 controlled offsite power source associated with available SDC train	RSST <input type="checkbox"/>	NSST <input type="checkbox"/>	
<input type="checkbox"/> During Reduced Inventory Operation (RIO) ensure:			
<input type="checkbox"/> Both trains of SDC available with one train in service that is energized from a bus powered from an offsite source	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Required Equipment NOT met RED
<u>AND</u>			
<input type="checkbox"/> One RBCCW pump powered from independent power supplies for each credited SDC train	A <input type="checkbox"/>	B <input type="checkbox"/>	C <input type="checkbox"/>
<u>AND</u>			
<input type="checkbox"/> One SW pump powered from independent power supplies for each credited SDC train	A <input type="checkbox"/>	B <input type="checkbox"/>	C <input type="checkbox"/>

⁽¹⁾Maintain all of the following satisfied to ensure two steam generators available and proper RCS conditions are established to support natural circulation:

- Both available SG NR levels greater than 10%
- Capability to feed available SGs with a MD AFW pump
- Capability to release steam from available SGs
- RCS loops associated with the available SGs; filled and unisolated
- Pressurizer pressure ≥ 50 psia AND a steam bubble is established in the pressurizer

⁽²⁾When refuel pool level is reduced to 31'6" to lift and set the UGS.

⁽³⁾CS can be credited to backup LPSI for DHR in MODES 6 and Defueled per calculation ENG-04223M2, Rev. 0, Addendum 9. If CS is placed in service, no Core Alterations are allowed per Tech Specs.

⁽⁴⁾In Modes 5 and 6, IF RCS is vented AND Refuel Pool is less than full ($< 35'6''$), an Operator must be stationed in the vicinity of the SW/Fire Water Supply valves to the EDG to be ready to take action to shift cooling water to Fire Water if directed by the SM.

*Millstone Unit 2 Shutdown Safety Assessment
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Section 3 Decay Heat Removal (Continued)	
BEYOND DESIGN BASIS	
Mode 5:	NA for Mode 0
Steam Generator available for Decay Heat Removal: <input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> Pressurizer Vent Port Removed
AC Independent Aux Feedwater Pump: <input type="checkbox"/> TDAFW Pump <input type="checkbox"/> BDB AFW Pump	<u>OR</u> <input type="checkbox"/> BDB AFW Pump Available for RCS Injection
Mode 6:	
<input type="checkbox"/> BDB AFW Pump pre-staged for injection into the RCS	

Millstone Unit 2 Shutdown Safety Assessment
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Section 7 Power Availability

Check boxes for available equipment and conditions:	Point Value	Score	Total	Condition
<input type="checkbox"/> Power Availability				
<input type="checkbox"/> Bus 24E aligned to: <input type="checkbox"/> 24C <input type="checkbox"/> 24D				
<u>On-site Power Source:</u>				
<input type="checkbox"/> 'A' EDG with 'A' SW pump <u>or</u> 'B' SW pump supplied by the 'A' EDG	(1)	_____	0-1	RED
<input type="checkbox"/> 'B' EDG with 'C' SW pump <u>or</u> 'B' SW pump supplied by the 'B' EDG	(1)	_____	2	ORANGE
<input type="checkbox"/> SBO Diesel via 24E (Time to Boil > 60 min)	(1)	_____	3	YELLOW
			≥ 4	GREEN
<u>Off-site Power Source:</u>				
<input type="checkbox"/> Unit 2 RSST	(1)	_____		
<input type="checkbox"/> Unit 2 NSST	(1)	_____		
<input type="checkbox"/> Unit 3 <input type="checkbox"/> RSST or <input type="checkbox"/> NSST via 34A/B	(1)	_____		
Power Source Sub-Total				
<u>Required Equipment:</u>				
<input type="checkbox"/> One EDG + One Unit 2 Controlled Off-site Source				
<input type="checkbox"/> <u>IF</u> in RIO at least one additional on site power source:				
• SBO Diesel and Calculated Time to Boil > 60 minutes				
• Additional Unit 2 EDG				
			Required Equipment NOT met	RED
Off-Site GRID Risk Penalty Factor				
Environmental Conditions ⁽¹⁾				
<input type="checkbox"/> Avg sustained wind speed ≥ 75 mph		_____		
<input type="checkbox"/> Salt contamination buildup or arcing in the 345 kV switchyard		_____		
<u>OR</u>				
Switchyard Activities ⁽¹⁾				
<input type="checkbox"/> Trip Testing affecting more than one 345 kV line		_____		
<input type="checkbox"/> Two 345 kV lines out of service		_____		
<u>OR</u>				
ISO-NE/CONVEX Alerts ⁽¹⁾				
<input type="checkbox"/> Abnormal transmission network conditions with potential for loss of grid		_____		
<u>OR</u>				
Planned Maintenance or Projects ⁽²⁾				
<input type="checkbox"/> _____		_____		
SUBTRACT from Power Sub-Total ⁽¹⁾	-	()		Penalty
Power Availability Total				

⁽¹⁾Apply offsite power source sub-total⁽²⁾If 345 kV or main transformer switchyard work is in progress which jeopardizes off-site sources, then deduct points equivalent to the number of offsite sources that could be affected.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: OP 2304C Batch Makeup to VCT calculation

JPM Number: JPM-291-R-RO Revision: 0/1

Initiated:

David Jacobs 05/20/2016
Developer Date

Reviewed:

Robert L. Cimmino, Jr. 07/12/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
05/20/2016	Modified for ILT NRC Exam	0/0
08/18/2016	Incorporated NRC comments	0/1

JPM WORKSHEET

Facility: _____ Examinee: _____

JPM Number: **JPM-291-R-RO** Revision: **0/1**

Task Title: **OP 2304C Batch Makeup to VCT Calculation**

System: CVCS 004

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 30

Task Number(s): 004-01-191

Applicable To: SRO _____ STA _____ RO **X** PEO _____

K/A Number: A4.12 K/A Rating: 3.8 / 3.3

Method of Testing: Simulated Performance: _____ Actual Performance: **X**

Location: Classroom: **X** Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM the Examinee will perform a calculation for a Batch Make Up to the Volume Control Tank

Required Materials: MP-PROC-OPS-OP 2208[r015] Reactivity Calculations
(procedures, equipment, etc.) MP-PROC-OPS-OP 2304C[r026.00] Make UP Portion of CVCS

General References: MP-PROC-OPS-OP 2208[r015] Reactivity Calculations
MP-PROC-OPS-OP 2304C[r026.00] Make UP Portion of CVCS

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-291-R-RO**

Revision : **0/1**

Initial Conditions:

The plant is currently at 100% reactor power with the following conditions:

- RCS boron concentration is 605 ppm boron
- “C” Charging pump in service
- “A” BAST is in service with a boron concentration of 5445 ppm
- Makeup Reactivity Correction Factor = 1
- The PPC is currently unavailable

Initiating Cues:

The Unit Supervisor has directed you to perform the following:

- Calculate a Neutral blend to raise VCT level from 75% to 85%
- Disregard volume of the blending tee to the charging pump suction
- Determine Total Gallons
- Determine Gallons of PMW
- Determine Gallons of “A” BAST Boric Acid

Using OP 2304C “Makeup (Boration & Dilution) Portion of CVCS” section 4.6 Batch Make Up to VCT.

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking “Y”. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-291-R-RO Revision: 0/1

Task Title: OP 2304C Batch Makeup to VCT Calculation

START TIME: _____

STEP # 1	Performance: Using OP 2304C “Makeup (Boration & Dilution) Portion of CVCS” Section 4.6 Batch Make Up to VCT. 4.6.3 Determine desired VCT level change in %	Standard: Examinee refers to the Initial Conditions and determines 10%	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 2	Performance: 4.6.4 DETERMINE total gallons required to make desired level change as follows: <i>Desired level change in</i> <i>desired level change =</i> <i><u>% x 34 gallons</u> = Total gallons for make up</i> <i>1% level</i>	Standard: Examinee calculates: <u>10% x 34 gallons</u> = 340 gallons total 1% level	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-291-R-RO

Revision: 0/1

Task Title: OP 2304C Batch Makeup to VCT Calculation

STEP # 3	<p>Performance: 4.6.5 Refer To OP 2208, “Reactivity Calculations,” or PPC and DETERMINE required ratio of boric acid flow to PMW flow, corrected for Boron-10 depletion.</p> <p style="text-align: center;"><u>Attachment 4</u> <u>Blended Makeup Flowrate Determination Formula:</u></p> <p>flowrate = $[K \times (\text{boric acid flowrate})] \div CF$</p> <p>Where, $K = \frac{(\text{ppm boron in BAST}) - (\text{ppm boron in makeup})}{\text{ppm boron in makeup}}$</p> <p>CF= <i>Makeup Reactivity Correction Factor</i> (From Att 5. “Reactivity Thumb Rules,” sheet OR Reactor Engineer)</p>	<p>Standard: Examinee refers to OP 2208 Reactivity Calculations</p> <p>PMW flowrate = $[8 \times (1)] \div 1 = 8$</p> <p>Where, $8 = \frac{(5445) - (605)}{605}$</p> <p>CF = 1 from initial conditions</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
Cue:				
Comments:				
STEP # 4	<p>Performance: 4.6.6 DETERMINE total gallons of boric acid required to make desired level change as follows: (BA = boric acid)</p> <p><i>Total gallons for makeup</i> $\times \frac{\text{BA flowrate}}{\text{BA} + \text{PMW flow rate}} = \text{Total boric acid volume}$</p>	<p>Standard: Examinee determines:</p> <p>340 gallons total $\times \frac{1}{(1 + 8)}$</p> <p>= 37.7777777 (38 gallons)</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
Cue:				
Comments:				

PERFORMANCE INFORMATION

JPM Number: JPM-291-R-RO Revision: 0/1

Task Title: OP 2304C Batch Makeup to VCT Calculation

STEP # 5	<p>Performance: 4.6.7 DETERMINE total gallons of PMW required to make desired level change as follows: (BA = boric acid):</p> $\text{Total gallons for makeup} \times \frac{\text{PMW flowrate}}{\text{BA+ PMW flow rate}} = \text{Total PMW volume}$	<p>Standard: Examinee determines:</p> <p>340 gallons total x $\frac{8}{(8+1)}$</p> <p>= 302.22222222 (302 gallons)</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
Cue:				
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

Total Gallons	340 gallons
PMW Gallons	302 gallons
“A” BAST Gallons	38 gallons

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-291-R-RO

Revision: 0/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	30	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number:

JPM-291-R-RO

Revision:

0/1

Initial Conditions:

The plant is currently at 100% reactor power with the following conditions:

- RCS boron concentration is 605 ppm boron
- “C” Charging pump in service
- “A” BAST is in service with a boron concentration of 5445 ppm
- Makeup Reactivity Correction Factor = 1
- The PPC is currently unavailable

Initiating Cues:

The Unit Supervisor has directed you to perform the following:

- Calculate a Neutral blend to raise VCT level from 75% to 85%
- Disregard volume of the blending tee to the charging pump suction
- Determine Total Gallons
- Determine Gallons of PMW
- Determine Gallons of “A” BAST Boric Acid

Using OP 2304C “Makeup (Boration & Dilution) Portion of CVCS” section 4.6 Batch Make Up to VCT.

ANSWER:

Total Gallons	
PMW Gallons	
“A” BAST Gallons	

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: SP 2602B Transient Temperature, Pressure Verification

JPM Number: JPM-290-R-4B Revision: 0/1

Initiated:

David J. Jacobs 05/24/2016
Developer Date

Reviewed:

Robert L. Cimmino, Jr. 07/13/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
05/24/2016	New JPM for NRC ILT Exam 2016	0
08/18/2016	Incorporated NRC comments	0/1

JPM WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-290-R-4B Revision: 0/1

Task Title: SP 2602B Transient Temperature, Pressure Verification

System: 005 RHR

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 30

Task Number(s): 121-01-167

Applicable To: SRO X STA _____ RO X PEO _____

K/A Number: 005 A1.01 / 2.2.42 K/A Rating: 3.5 / 3.6 3.9 /4.6

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: At the completion of the JPM the Examinee has reviewed the Computer Printout and referred to SP 2602B to determined cooldown rates are NOT within the Tech. Spec Limits

Required Materials: SP 2602B Transient Temperature, Pressure Verification
(procedures, equipment, etc.) SP 2602B-001 Transient Temperature, Pressure Verification Data Sheet
 PPC SP 2602B Printout

General References: SP 2602B Transient Temperature, Pressure Verification

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-290-R-4B**

Revision : **0/1**

Initial Conditions:

The Plant has completed a cooldown to 125°F in accordance with OP 2207 “Cooldown” using “A” and “B” RCPs concurrently with SDC.

- SDC was placed in service at 0105
- RCPs secured at 0300.

Initiating Cues:

The Unit Supervisor has directed you to use the computer data from the cooldown and perform SP 2602B “Transient Temperature, Pressure Verification.”

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking “Y”. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-290-R-4B Revision: 0/1

Task Title: SP 2602B Transient Temperature, Pressure Verification

START TIME: _____

STEP # 1	Performance: Refers to SP 2602B Transient Temperature, Pressure Verification 4.1 Heatup and Cooldown Initial and Conditional Actions 4.1.2 IF available, DESIGNATE a person not involved in controlling the Heatup or cooldown to perform the following: <ul style="list-style-type: none">• DETERMINE and RECORD required data on SP 2602B-001.• MONITOR parameters, limits, and Heatup or cooldown rates between entries.	Standard: Examinee refers to OP 2602B, the Computer Print outs performs the following: <ul style="list-style-type: none">• Records the Cooldown starting at 0000• Uses T115 (refer to Stem A&B RCPs Loop #1)• Uses T351Y at 0330 when RCPs are secured	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 2	Performance: 4.1.3 IF PPC data points are available, PERFORM the following: <ul style="list-style-type: none">• ESTABLISH trend(s) of selected parameters for trending and data gathering during Heatup or cooldown.• OBTAIN required 30 minute data sheets from PPC printer, and Go To step 4.1.10.	Standard: Examinee records and determines Hourly Cooldown Rates recording parameters every half hour	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-290-R-4B Revision: 0/1

Task Title: SP 2602B Transient Temperature, Pressure Verification

STEP #3	Performance: 4.1.10 IF at any time, any administrative limit (except pressurizer spray line differential temperature between 200°F and 350°F) or any TS/TRM acceptance criteria is not met, PERFORM the following: <ul style="list-style-type: none">• Immediately NOTIFY Shift Manager.	Standard: Examine determines during the transition from RCPs to SDC when securing the RCPs the Technical Specification was exceeded at 51°F per hour below 220°F at time 0230 to 0330 and informs the Unit Supervisor	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-290-R-4B

Revision: 0/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	30	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-290-R-4B Revision: 0/1

Initial Conditions:

The Plant has completed a cooldown to 125°F in accordance with OP 2207 “Cooldown” using “A” and “B” RCPs concurrently with SDC.

- SDC was placed in service at 0105
- RCPs secured at 0300.

Initiating Cues:

The Unit Supervisor has directed you to use the computer data from the cooldown and perform SP 2602B “Transient Temperature, Pressure Verification.”

Circle

Technical Specification Limits Exceeded: YES NO

If “YES” TIME(S): _____

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Review RWP and Survey Map

JPM Number: JPM-293-R-RO Revision: 2/3

Initiated:

<u>David Jacobs/Robert L. Cimmino</u>	<u>09/28/2016</u>
Developer	Date

Reviewed:

<u>Paul Prichard</u>	<u>09/28/2016</u>
Technical Reviewer	Date

Approved:

<u>John W. Riley</u>	<u>09/29/16</u>
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
10/23/08	Revised JPM for LOIT 2008 NRC Exam	1/0
12/29/08	Incorporated NRC Post-Validation comments	1/0
06/02/2016	Up dated for ILT NRC Exam 2016	2/0
08/18/2016	Incorporated NRC comments	2/1
09/15/2016	Incorporated changes due to abbreviated survey map	2/2
09/28/2016	Incorporated changes due to change in interpretation of Initiating Cue Item #7	2/3

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: JPM-293-R-RO Revision: 2/3

Task Title: Review RWP and Survey Map

System: Radiation Control

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): 404-01-004

Applicable To: SRO X STA _____ RO X PEO _____

K/A Number: 2.3.7 K/A Rating: 3.5 / 3.6

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM the examinee has reviewed the applicable RWP and survey map to determine the radiological requirements to perform the assigned task.

Required Materials: Operations blanket RWP No. 5.
(procedures, equipment, etc.) Survey map for -5' 6" West Piping Penetration Room

General References: MP-PROC-HP-RPM 5.2.2[r016] Basic Radiation Worker Responsibilities

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-293-R-RO**

Revision : **2/3**

Initial Conditions:

- The crew is performing a plant heat up in accordance with OP 2201, Plant Heatup
- The plant is in MODE 3 with pressurizer pressure at 1400 psia. Two Charging Pumps are in operation.
- The gate in the -5 penetration room is currently unlocked

Initiating Cues:

- You have been directed to isolate Letdown Flow Control Valve, 2-CH-110Q.
- Based on previous experience, you estimate that this task will take 20 minutes.
- Your available dose is 1,000 mR.
- State the radiological requirements for entering this area. Include in your answer:
 1. Which RWP task (job step) is appropriate for this assignment
 2. Highest radiation level in the work area (including units of measure)
 3. Highest contamination level in the immediate work area (including units of measure)
 4. Protective clothing required in the immediate work area (including transition to and from the area)
 5. Expected dose for this assignment area (including units of measure)
 6. Dose rate alarm for this area (including units of measure)
 7. Assuming significant difficulties are encountered, the longest possible stay time for this area per the RWP requirements

The examiner will act as Health Physics (HP) for any related questions.

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-293-R-RO Revision: 2/3

Task Title: Review RWP and Survey Map

START TIME: _____

STEP # 1	Performance: Review Operations Blanket RWP No. 5 and Radiation Survey Figure 21A	Standard: <i>Examinee reviews Operations Blanket RWP No. 5 and Radiation Survey Figure 21A and answers the following questions:</i>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <div style="background-color: #e0e0e0; padding: 5px;"> <ul style="list-style-type: none"> • Provide examinee with Operations Blanket RWP No. 205 and Radiation Survey map. </div>			
	Comments:			
STEP # 2	Performance: 1. Determine which RWP task (job step) is appropriate for this assignment.	Standard: <i>Examinee states that task (job step) No. 1 (No. 2, if HRA is noted on map) is appropriate for this task.</i>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: 2-CH-110Q is located in an area that has been designated as a High Radiation Area in the past due to changing radiation levels, therefore Task No. 2 may be selected instead of Task No. 1. Critical aspect of JPM is that subsequent data pertains to the chosen task.			
STEP # 3	Performance: 2. Determine the highest radiation level in the immediate work area.	Standard: <i>Examinee states that the highest radiation level in immediate work area is 45 mr/hr (may note 400mr/hr hot spot, but not a Critical Step)</i>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: The examinee may point out the 400 mr/hr hot spot near 2-SI-709, but that the assigned task does NOT require him/her to approach that area. Hence the possibility of using Task No. 1.			
STEP # 4	Performance: 3. Determine the highest contamination level in the work area.	Standard: <i>Examinee states that the highest contamination level in this area is 2,000 DPM/100cm².</i>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-293-R-RO

Revision: 2/3

Task Title: Review RWP and Survey Map

STEP # 5	Performance: 4. Determine what protective clothing is required in the area.	Standard: <i>Examinee states that contamination levels require full PCs (with modesty garments underneath).</i>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: Examinee may state the individual items that make up “full PCs” (Cotton liners, Booties, Coveralls, Shoe covers, Rubber gloves, Modesty garments)			
STEP # 6	Performance: 5. Determine the expected dose for this assignment.	Standard: <i>Examinee states that the expected dose is approximately 15mrem (14-16 mrem).</i>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: 45 mrem/hr Dose Rate X 1/3 hrs. (i.e.; 20 min.) \cong 15 mr			
STEP # 7	Performance: 6. Determine the expected dose rate alarm for this assignment.	Standard: <i>Examinee states the following: <u>If using Task #1:</u> 50 mr/hr dose rate alarm <u>If using Task #2:</u> 300 mr/hr dose rate alarm</i>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-293-R-RO** Revision: **2/3**

Task Title: **Review RWP and Survey Map**

STEP # 8	Performance: 7. Determine the longest possible stay time for this assignment.	Standard: <i>Examinee states the maximum stay time:</i> <i><u>If using Task #1: 26 minutes</u></i> <i><u>If using Task #2: 53 minutes</u></i>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: 25 mrem Dose Limit Alarm / 45 mrem/hr Dose Rate X 80% RWP Exit Requirement = 26.6 minutes (25 minutes to 28 minutes) 50 mrem Dose Limit Alarm / 45 mrem/hr Dose Rate X 80% RWP Exit Requirement = 53.3 minutes (52 minutes to 55 minutes)			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-293-R-RO

Revision: 2/3

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number:

JPM-293-R-RO

Revision:

2/3

Initial Conditions:

- The crew is performing a plant heat up in accordance with OP 2201, Plant Heatup
- The plant is in MODE 3 with pressurizer pressure at 1400 psia. Two Charging Pumps are in operation.
- The gate in the -5 penetration room is currently unlocked

Initiating Cues:

- You have been directed to isolate Letdown Flow Control Valve, 2-CH-110Q.
- Based on previous experience, you estimate that this task will take 20 minutes.
- Your available dose is 1,000 mR.
- State the radiological requirements for entering this area. Include in your answer:
 1. Which RWP task (job step) is appropriate for this assignment
 2. Highest radiation level in the work area (including units of measure)
 3. Highest contamination level in the immediate work area (including units of measure)
 4. Protective clothing required in the immediate work area (including transition to and from the area)
 5. Expected dose for this assignment area (including units of measure)
 6. Dose rate alarm for this area (including units of measure)
 7. Assuming significant difficulties are encountered, the longest possible stay time for this area per the RWP requirements

The examiner will act as Health Physics (HP) for any related questions.

1. RWP Task	
2. Highest Rad. Lvl.	
3. Highest contamination Lvl.	
4. Required PCs	
5. Expected Dose	
6. Dose Rate Alarm	
7. Max Stay Time	

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Shutdown Safety Assessment Review for RIO conditions

JPM Number: JPM-295-R-SRO Revision: 0/1

Initiated:

David Jacobs 06/14/2016
Developer Date

Reviewed:

Robert L. Cimmino, Jr. 07/05/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
06/14/2016	Newly Created for NRC ILT Exam 2016	0
08/19/2016	Incorporated NRC comments	0/1

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: JPM-295-R-SRO Revision: 0/1

Task Title: Shutdown Safety Assessment Review for RIO conditions

System: Conduct of Operations

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 40

Task Number(s): 119-01-044

Applicable To: SRO X STA _____ RO _____ PEO _____

K/A Number: 2.1.23 K/A Rating: 4.3 / 4.4

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM the examinee has reviewed the SSA for the predicted condition of the Key Safety Functions when in Reduced Inventory.

Required Materials: MP-PROC-000-OU-M2-201[r018.00] Shutdown Safety Assessment Checklist
(procedures, equipment, etc.) Handout SSA Predicted Conditions pdf format
 Handout CTMT pen closure plan pdf format

General References: MP-PROC-000-OU-M2-201[r018.00] Shutdown Safety Assessment Checklist

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-295-R-SRO**

Revision : **0/1**

Initial Conditions:

The plant is in MODE 5 day 1 of a scheduled 28 day refueling outage. Reactor disassembly is in progress and the RCS is expected to be in Reduced Inventory within the next 12 hours.

The following additional conditions presently exist:

- PZR level is 20%
- PZR Vent Port Removed
- No Equipment out of service required for Mode 5
- Containment Closure is set with 1 exception Penetration #48 with a closure time of 30 minutes. (See attached Closure Plan)
- Time to Core Boil for Reduced Inventory was verified by the STA

Assume no change in Equipment Status from the current condition to when the plant is in Reduced Inventory.

Initiating Cues:

Review the Predicted changes to the Shutdown Safety Assessment for the RCS in Reduce Inventory that was completed by the RO with the exception of Time To Core Boil calculation.

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, ALL critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under NO circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-295-R-SRO Revision: 0/1

Task Title: Shutdown Safety Assessment Review for RIO conditions

START TIME: _____

STEP # 1	Performance: Reviews Section 2 Heatup Data:	Standard: Examinee should note the following:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	<ul style="list-style-type: none"> Time to Core Boil Shutdown Risk Color 	<ul style="list-style-type: none"> Shutdown risk Color should be ORANGE 		
	Cue:			
	Comments: Section 3 Decay heat removal and Section 6 Containment were incorrectly calculated and should be ORANGE			
STEP # 2	Performance: Reviews Section 3 Decay Heat Removal Data:	Standard: Examinee should note the following:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	<ul style="list-style-type: none"> Reduced Inventory Operation (RIO) Penalty RCS Decay Heat Removal Total DHR Color Condition 	<ul style="list-style-type: none"> The RIO Penalty was not subtracted RCS Decay Heat Removal Total was not calculated correctly and should be 1 SF Color ORANGE should be circled 		
	Cue:			
	Comments:			
STEP # 3	Performance: Reviews Section 4 Inventory Control Data:	Standard: Examinee should note No Discrepancies	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	<ul style="list-style-type: none"> No Discrepancies 			
	Cue:			
	Comments: For Inventory control refer to Control Room daily Surveillance SP 2619A-003 page 20 for the availability of all 3 HPSI pumps			

PERFORMANCE INFORMATION

JPM Number: JPM-295-R-SRO Revision: 0/1

Task Title: Shutdown Safety Assessment Review for RIO conditions

STEP # 4	Performance: Reviews Section 5 Reactivity Control Data: <ul style="list-style-type: none"> No Discrepancies 	Standard: Examinee should note No Discrepancies	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: For Reactivity the difference in the number of HPSI pumps available as compared to Inventory Control is described in a NOTE in OU-M2-201 Attachment 6 page 48 of 57.			
STEP # 5	Performance: Reviews Section 6 Containment Data: <ul style="list-style-type: none"> Containment Closure Capability <ul style="list-style-type: none"> Containment Closure Set with exceptions tracked and capable of being closed prior to the lesser of: <ul style="list-style-type: none"> Time to Core Boil Decay Heat, Inventory Control, Power Availability Functions NOT Orange/Red⁽⁶⁾ Containment Total Score CTMT Color Condition 	Standard: Examinee should note the following: <ul style="list-style-type: none"> Containment Closure Capability <ul style="list-style-type: none"> Set with Exception Tracked, no longer Qualifies due to the change in Time to Core Boil is less than the closure time for the penetration Decay Heat, Inventory Control, Power Availability Functions NOT Orange/Red⁽⁶⁾ should not be checked due to the discrepancy in the DHR SF changing to ORANGE (Error carried forward) Containment Total Score should be 1 CTMT Color ORANGE should be circled 	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 6	Performance: Reviews Section 7 Power Availability Data:	Standard: Examinee should note No Discrepancies	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-295-R-SRO**

Revision: **0/1**

Date Performed:

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	40	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

Evaluator:

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number:

JPM-295-R-SRO

Revision:

0/1

Initial Conditions:

The plant is in MODE 5 day 1 of a scheduled 28 day refueling outage. Reactor disassembly is in progress and the RCS is expected to be in Reduced Inventory within the next 12 hours.

The following additional conditions presently exist:

- PZR level is 20%
- PZR Vent Port Removed
- No Equipment out of service required for Mode 5
- Containment Closure is set with 1 exception Penetration #48 with a closure time of 30 minutes. (See attached Closure Plan)
- Time to Core Boil for Reduced Inventory was verified by the STA

Assume no change in Equipment Status from the current condition to when the plant is in Reduced Inventory.

Initiating Cues:

Review the Predicted changes to the Shutdown Safety Assessment for the RCS in Reduce Inventory that was completed by the RO with the exception of Time To Core Boil calculation.



Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

OU-M2-201 – Attachment 1

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Section 1

Protected Train A ☒ / B ☐ (Check one or both) ☐ with exceptionDate/Time Performed: Today / 0000Date/Time of Shutdown: 3 DAYS AGO 0000☐ Actual ConditionsDays Shutdown: 3☒ Predicted Conditions for reduced inventory

Reason for Shutdown Safety Assessment:

Configuration Change

(00:00 hour, mode change, configuration changes)

Section 2 Heatup Data

Time To Core Boil

☒ Bubble does not exist in pressurizer AND fuel is in the vessel, THEN complete the following:

- RCS Temp: 105 °F
- RCS Level: -3 feet above flange
- RCS Time to Boil: 12.77 mins

☐ NA if DEFUELED

Spent Fuel Pool Heatup Time

- SFP Temp: 95 °F
- SFP Level: 36 feet 10 inches
- SFP Time to 150°F
- ☒ NA if NO freshly discharged fuel assemblies transferred to SFP or fuel assemblies are reloaded into reactor vessel
- or
- hrs mins
- SFP Time to 200°F 23 hrs 10 mins

Time to 200°F (EA2 criterion): 11.34 mins☐ NA if DEFUELEDTime to Heatup 10°F (EU1 criterion, uncontrolled heatup): 2.15 mins☐ NA if DEFUELEDRBCCW HX Outlet Temp: 80 °FRefuel Boron C_b per TS: 2100 ppmRCS Boron C_b: 2200 ppmSFP Boron C_b: 2200 ppmShutdown Risk Color is: ☐ GREEN☒ YELLOW☐ ORANGE☐ RED

Limiting Safety Function

- ☒ RCS or ☐ SFP Decay Heat Removal
- ☐ RCS or ☐ SFP Inventory Control
- ☐ Reactivity Control
- ☐ Containment
- ☐ Power Availability

SDC Responder phone: x4335

Comments: _____

Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

OU-M2-201 – Attachment 1

Page 2 of 9

Section 3 Decay Heat Removal**RCS Decay Heat Removal**

Check boxes for available equipment

	Point Value	Score	Total	Condition
<input checked="" type="checkbox"/> 'A' SDC with associated RBCCW and SW pump	(1)	<u>1</u>		(Circle)
<input checked="" type="checkbox"/> 'B' SDC with associated RBCCW and SW pump	(1)	<u>1</u>	0	RED
<input type="checkbox"/> 'A' CS with associated RBCCW and SW pump ⁽³⁾	(1)	_____	1	ORANGE
<input type="checkbox"/> 'B' CS with associated RBCCW and SW pump ⁽³⁾	(1)	_____	2	YELLOW
<input type="checkbox"/> Both SGs ⁽¹⁾	(1)	_____	3	GREEN
<input type="checkbox"/> Refuel Pool $\geq 35'6"$ ⁽⁴⁾ or Notes ⁽²⁾⁽⁴⁾	(1)	_____		
Reduced Inventory Operation (RIO) Penalty	(-1)	_____		

RCS Decay Heat Removal Total

2**NA if DEFUELED****Required Equipment (minimum):****(Check)**

<input type="checkbox"/> If only one train of SDC available ensure:	A <input type="checkbox"/>	B <input type="checkbox"/>	
<input type="checkbox"/> Associated train EDG available	A <input type="checkbox"/>	B <input type="checkbox"/>	
<input type="checkbox"/> One U2 controlled offsite power source associated with available SDC train	RSST <input type="checkbox"/>	NSST <input type="checkbox"/>	
<input checked="" type="checkbox"/> During Reduced Inventory Operation (RIO) ensure:			
<input checked="" type="checkbox"/> Both trains of SDC available with one train in service that is energized from a bus powered from an offsite source	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Required Equipment NOT met
<u>AND</u>			
<input checked="" type="checkbox"/> One RBCCW pump powered from independent power supplies for each credited SDC train	A <input checked="" type="checkbox"/>	B <input type="checkbox"/>	C <input checked="" type="checkbox"/>
<u>AND</u>			
<input checked="" type="checkbox"/> One SW pump powered from independent power supplies for each credited SDC train	A <input checked="" type="checkbox"/>	B <input type="checkbox"/>	C <input checked="" type="checkbox"/>

⁽¹⁾Maintain all of the following satisfied to ensure two steam generators available and proper RCS conditions are established to support natural circulation:

- Both available SG NR levels greater than 10%
- Capability to feed available SGs with a MD AFW pump
- Capability to release steam from available SGs
- RCS loops associated with the available SGs; filled and unisolated
- Pressurizer pressure ≥ 50 psia AND a steam bubble is established in the pressurizer

⁽²⁾When refuel pool level is reduced to 31'6" to lift and set the UGS.

⁽³⁾CS can be credited to backup LPSI for DHR in MODES 6 and Defueled per calculation ENG-04223M2, Rev. 0, Addendum 9. If CS is placed in service, no Core Alterations are allowed per Tech Specs.

⁽⁴⁾In Modes 5 and 6, IF RCS is vented AND Refuel Pool is less than full ($< 35'6"$), an Operator must be stationed in the vicinity of the SW/Fire Water Supply valves to the EDG to be ready to take action to shift cooling water to Fire Water if directed by the SM.

*Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist*

OU-M2-201 – Attachment 1

Page 3 of 9

Section 3 Decay Heat Removal (Continued)	
BEYOND DESIGN BASIS	
Mode 5:	NA for Mode 0
Steam Generator available for Decay Heat Removal: <input type="checkbox"/> 1 <input type="checkbox"/> 2	<input checked="" type="checkbox"/> Pressurizer Vent Port Removed
AC Independent Aux Feedwater Pump: <input type="checkbox"/> TDAFW Pump <input checked="" type="checkbox"/> BDB AFW Pump	<u>OR</u> <input type="checkbox"/> BDB AFW Pump Available for RCS Injection
Mode 6:	
<input type="checkbox"/> BDB AFW Pump pre-staged for injection into the RCS	

Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

OU-M2-201 – Attachment 1

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Section 3 Decay Heat Removal (Continued)**SFP Decay Heat Removal**

	Point Value	Score	Total	Condition
<input checked="" type="checkbox"/> SFP level $\geq 35'6''$	(1)	<u>1</u>		(Circle)
<input checked="" type="checkbox"/> 'A' SFPC pump & HX with SFP level $\geq 36'4''$ ***	(0, 1/2, 1)*	<u>1</u>	0	RED
<input checked="" type="checkbox"/> 'B' SFPC pump & HX with SFP level $\geq 36'4''$ ***	(0, 1/2, 1)*	<u>1</u>	1	ORANGE
<input type="checkbox"/> 'A' LPSI pump and SFP level $\geq 36'10''$ ***	(1)	<u> </u>	2	YELLOW
<input type="checkbox"/> 'B' LPSI pump and SFP level $\geq 36'10''$ ***	(1)	<u> </u>	<u>≥ 3</u>	<u>GREEN</u>
<input type="checkbox"/> 'A' CS pump and SFP level $\geq 36'10''$ ***	(1)**	<u> </u>		
<input type="checkbox"/> 'B' CS pump and SFP level $\geq 36'10''$ ***	(1)**	<u> </u>		

SFP Decay Heat Removal Total**3**

*Count each available SFPC pump as 1 point prior to fuel movement. With ≤ 80 fuel assemblies transferred to the SFP, each available SFPC pump should be counted as $\frac{1}{2}$ point. With > 80 fuel assemblies transferred to the SFP, each available SFPC pump should be counted as 0 points unless a cycle specific analysis demonstrates both SFPC pumps are one viable source of decay heat removal (i.e., each SFPC pump should be counted as $\frac{1}{2}$ point). For 2R23, Calculation ENG-04223M2, Rev. 0, Addendum 9, demonstrates that both SFPC pumps together can be credited as one viable means of SFPC provided the reactor has been shutdown ≥ 8.3 days and RBCCW temperature is maintained at $< 80^\circ\text{F}$. Following the core reload, each available SFPC pump should be counted as 1 point if requirements of TRM 3.9.3.3 are met. For 2R23, PM-1701, Rev. 0, demonstrates that TRM 3.9.3.3 will be met at ≥ 17 days following shutdown, since 85 fuel assemblies will be discharged during 2R23.

** A cycle specific analysis is required for counting each available CS pump as 1 point for SFPC. For 2R23, Calculation ENG-04223M2, Rev 0, Addendum 9, supports each CS pump being counted as 1 point provided that fuel movement begins ≥ 150 hours and RBCCW temperature is maintained at $< 80^\circ\text{F}$. The UHS must be $< 70^\circ\text{F}$, with excursions allowed for < 3 hours, if the moving average is $< 70^\circ\text{F}$.

*** $\geq 36'10''$ if two SFP cooling pumps are operating or EITHER LPSI or CS supplying SFP cooling independent of Shutdown Cooling. Level restriction is not applicable if SFP is cooled via Shutdown Cooling with 2-RW-280 open, since SDC suction is via the hot leg and 2-SI-651 and 2-SI-652.

Required Equipment (minimum):

	(Check)	
<input checked="" type="checkbox"/> One RBCCW pump	A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/>	Required Equipment
<input checked="" type="checkbox"/> One SW pump	A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/>	NOT met
<input checked="" type="checkbox"/> One RBCCW heat exchanger	A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/> One SFPC or <input type="checkbox"/> SDC heat exchanger	A SFPC HX <input checked="" type="checkbox"/> B SFPC HX <input checked="" type="checkbox"/> A SDC HX <input type="checkbox"/> B SDC HX <input type="checkbox"/>	RED

NOTE: To maintain defense in depth for SFP cooling after the 81st fuel assembly is in the SFP during offload, additional equipment is required. TRM 3.9.3.3b requirements will be met for the 85 fuel assemblies discharged for Cycle 24 ≥ 17 days shutdown and core reload is complete.

Fuel Offload (81 to 217 Fuel Assemblies) Required**Equipment (minimum, until reload complete):**

	(Check)	
<input type="checkbox"/> Two RBCCW pumps	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>	Required Equipment
<input type="checkbox"/> Two SW pumps	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>	NOT met
<input type="checkbox"/> One RBCCW heat exchanger	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>	
<input type="checkbox"/> Either of the following:		
<input type="checkbox"/> Two SFPC heat exchangers	A <input type="checkbox"/> B <input type="checkbox"/>	
<input type="checkbox"/> One SDC heat exchanger	A <input type="checkbox"/> B <input type="checkbox"/>	ORANGE

Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

OU-M2-201 – Attachment 1

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Section 4 Inventory Control**RCS Inventory Control**

Check boxes for available equipment:

	Point Value	Score	Total	Condition
<input checked="" type="checkbox"/> 'A' HPSI pump	(1)	<u>1</u>	(Circle)	
<input checked="" type="checkbox"/> 'B' HPSI pump	(1)	<u>1</u>	0	RED
<input checked="" type="checkbox"/> 'C' HPSI pump	(1)	<u>1</u>	1	ORANGE
<input checked="" type="checkbox"/> 'A' Charging pump via <input checked="" type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)	(¹ / ₂ , 1) ⁽³⁾	<u>1/2</u>	2	YELLOW
<input checked="" type="checkbox"/> 'B' Charging pump via <input checked="" type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)	(¹ / ₂ , 1) ⁽³⁾	<u>1/2</u>	≥3	GREEN
<input type="checkbox"/> 'C' Charging pump via <input type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)	(¹ / ₂ , 1) ⁽³⁾	_____		
<input type="checkbox"/> RCS Inventory Control not required if DEFUELED AND RCS isolated from SFP by one of the following: <input type="checkbox"/> 2-RW-280 CLOSED OR <input type="checkbox"/> West SFP Gate INSTALLED				

RCS Inventory Control Total

4

NA if DEFUELED
AND
RCS isolated from SFP

Required during RIO (minimum):

☒ One HPSI pump

Required Equipment NOT met RED

SFP Inventory Control

Check boxes for available equipment:

	Point Value	Score	Total	Condition
<input type="checkbox"/> One AFW pump aligned to CST	(1)	_____	(Circle)	
<input type="checkbox"/> One Refuel Purification pump	(1)	_____	0	RED
<input type="checkbox"/> One PMW pump	(1)	_____	1	ORANGE
<input type="checkbox"/> Makeup available from Fire Protection System (e.g., hoses)	(1)	_____	2	YELLOW
			≥3	GREEN

SFP Inventory Control Total

N/A

NA if MODE 5, 6, or
Refuel Pool ≥ 36'4"

Requirements for RCS drain down conditions:

☐ SFP Cooling System vent and drain paths, which could affect SFP inventory, are identified and safety tagged prior to release of impacting work.

Tagout Number: _____

☐ Controls are in place to ensure safety tags are in place during RCS drain down.

Tagout Number: _____

⁽¹⁾T.S. 3.1.1.3.b. allows only two charging pumps capable of injecting when RCS is less than 300°F (boron dilution).⁽²⁾RWST ≥ 57,300 gallons (12%) or BAST > 3,750 gallons (65.8%) to be available per TRM 4.1.2.7a and SP 2601F, "Borated Water Sources Verification, MODE 5 or 6."⁽³⁾If ≤ 384 hrs (16 days) since shutdown, at least two Charging pumps with suction from the RWST or BAST and aligned to RCS to be credited as ONE viable makeup source.

Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

OU-M2-201 – Attachment 1

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Section 5 Reactivity Control**Reactivity Control while in MODEs 5 or 6**

Check boxes for available equipment and conditions:

	Point Value	Score	Total	Condition
<input checked="" type="checkbox"/> RCS <u>AND</u> SFP boron concentrations greater than required by applicable Tech Specs	(1)	<u>1</u>	(Circle) 0-2	RED
<input checked="" type="checkbox"/> Dilution flowpaths identified (procedurally controlled <u>or</u> tagged) Tagout Number: <u>2207X99-0007</u>	(1)	<u>1</u>	3	ORANGE
<input checked="" type="checkbox"/> Inventory Flow Paths	(0-2)	<u>2</u>	4	YELLOW
<input checked="" type="checkbox"/> 'A' HPSI pump			5	GREEN
<input type="checkbox"/> 'B' HPSI pump				
<input checked="" type="checkbox"/> 'C' HPSI pump				
<input checked="" type="checkbox"/> 'A' Charging pump aligned to <input checked="" type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)				
<input checked="" type="checkbox"/> 'B' Charging pump aligned to <input checked="" type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)				
<input type="checkbox"/> 'C' Charging pump aligned to <input type="checkbox"/> RWST or <input type="checkbox"/> BAST ^(1,2)				
<input checked="" type="checkbox"/> ≥ 2 Source Range Monitor	(1)	<u>1</u>		

RCS Reactivity Control while in MODE 5 or 6 Total**5****NA if DEFUELED**Required Equipment (minimum):

	(Check)				
<input checked="" type="checkbox"/> ≥ 2 Source Range Monitors	<input checked="" type="checkbox"/>	A	B	C	D
<input checked="" type="checkbox"/> Inventory Flow Paths	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> RCS <u>AND</u> SFP Boron concentrations greater than required by applicable Tech Specs					
				Required Equipment NOT met	RED

Reactivity Control while DEFUELED

Check boxes for available equipment and conditions

	Point Value	Score	Total	Condition
<input type="checkbox"/> RCS <u>AND</u> SFP boron concentrations greater than required by applicable Tech Specs	(1)	<u> </u>	(Circle) 0	RED
<input type="checkbox"/> Dilution flowpaths identified (procedurally controlled or Safety Tagging)	(1)	<u> </u>	1	YELLOW
Tagout Number: <u>2207X99-0007</u>			2	GREEN

RCS Reactivity Control while DEFUELED Total**N/A****NA if in MODE 5 or 6**⁽¹⁾ Only two charging pumps must be capable of injecting based on T.S. 3.1.1.3.b., "Boron Dilution."⁽²⁾ RWST ≥ 57,300 gallons (12%) or BAST > 3,750 gallons (65.8%) to be available per TRM 4.1.2.7a and SP 2601F, "Borated Water Sources Verification, MODE 5 or 6."

Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

OU-M2-201 – Attachment 1

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Section 6 Containment**NOTE:** See OP 2264, Attachment 5, Containment Penetration Work Activities Affecting Containment Closure, and Attachment 9, Containment Penetration Tracking Sheet, for status of containment penetrations.

Check boxes that apply for current conditions

- ☒ Containment Closure Capability⁽¹⁾ (3 points)
☐ Containment Closure Set (3 points)
OR
☒ Containment Closure Set with exceptions tracked and capable of being closed prior to the lesser of:
☒ Time to Core Boil (2 points)
OR
☐ 4 hours (Loss of RCS DHR, TS 3.9.8.1, action c.) (2 points)
OR
☐ Containment Closure Set with administrative controls of OP 2209A during fuel movement within the containment building (2 points)
- ☐ No significant fuel failures indicated⁽²⁾ (1)
☒ No Core Alterations in progress in Containment⁽³⁾ (1)
☐ RCS Pressure Boundary intact⁽⁴⁾ (1)
☐ Low Decay Heat (>8 days shutdown)⁽⁵⁾ (1)
☒ Decay Heat, Inventory Control, Power Availability Functions **NOT** Orange/Red⁽⁶⁾ (1)

Point Value**Score**

(0,2,3)

2**Total****Condition**

(Circle)

0

RED

1

ORANGE

2

YELLOW

≥ 3GREEN**Containment Total****4****NA if DEFUELED**⁽¹⁾ Closure capability is scored based on all penetrations closed by at least one isolation valve or exceptions tracked and managed in accordance with OP 2264, "Conduct of Outages."⁽²⁾ This item is scored a "1" if no significant fuel failures are indicated by radiochemistry sampling. For the purposes of the SDR assessment, identification from radiochemistry samples and confirmation from NAF of significant fuel rod/pin failures is necessary to score this item as "0."⁽³⁾ No Core Alterations in progress in Containment is an indicator of the susceptibility to a fuel handling event. This item is scored a "1" if no Core Alterations are in progress or a "0" if Core Alterations are in progress.⁽⁴⁾ This item is scored a "1" if the RCS is intact or a "0" if any RCS opening exists.⁽⁵⁾ After 8 days (from the start of the outage), it is assumed that the short-lived, volatile isotopes that are principally responsible for early health effects have decayed sufficiently such that the event would not contribute to Large Early Release Frequency (LERF).⁽⁶⁾ No Activities are in progress to preclude mitigation to a fuel handling accident. This item is scored a "1" if Decay Heat Removal, Inventory Control, and Power Availability are **NOT** Orange/Red. This item is scored a "0" if Decay Heat Removal, Inventory Control, and Power Availability are Orange/Red.

Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

OU-M2-201 – Attachment 1

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Section 7 Power Availability			Point Value	Score	Total	Condition
Check boxes for available equipment and conditions:						
<input checked="" type="checkbox"/> Power Availability						
<input checked="" type="checkbox"/> Bus 24E aligned to: <input checked="" type="checkbox"/> 24C <input type="checkbox"/> 24D						
<u>On-site Power Source:</u>						
<input checked="" type="checkbox"/> 'A' EDG with 'A' SW pump <u>or</u> 'B' SW pump supplied by the 'A' EDG	(1)	1	0-1	RED		
<input checked="" type="checkbox"/> 'B' EDG with 'C' SW pump <u>or</u> 'B' SW pump supplied by the 'B' EDG	(1)	1	2	ORANGE		
<input type="checkbox"/> SBO Diesel via 24E (Time to Boil > 60 min)	(1)		3	YELLOW		
			≤ 4	GREEN		
<u>Off-site Power Source:</u>						
<input checked="" type="checkbox"/> Unit 2 RSST	(1)	1				
<input type="checkbox"/> Unit 2 NSST	(1)					
<input checked="" type="checkbox"/> Unit 3 <input checked="" type="checkbox"/> RSST or <input type="checkbox"/> NSST via 34A/B	(1)	1				
Power Source Sub-Total			4			
<u>Required Equipment:</u>						
<input checked="" type="checkbox"/> One EDG + One Unit 2 Controlled Off-site Source					Required Equipment	RED
<input checked="" type="checkbox"/> IF in RIO at least one additional on site power source:					NOT met	
• SBO Diesel and Calculated Time to Boil > 60 minutes						
• Additional Unit 2 EDG						
Off-Site GRID Risk Penalty Factor						
Environmental Conditions ⁽¹⁾						
<input type="checkbox"/> Avg sustained wind speed ≥ 75 mph						
<input type="checkbox"/> Salt contamination buildup or arcing in the 345 kV switchyard						
<u>OR</u>						
Switchyard Activities ⁽¹⁾						
<input type="checkbox"/> Trip Testing affecting more than one 345 kV line						
<input type="checkbox"/> Two 345 kV lines out of service						
<u>OR</u>						
ISO-NE/CONVEX Alerts ⁽¹⁾						
<input type="checkbox"/> Abnormal transmission network conditions with potential for loss of grid						
<u>OR</u>						
Planned Maintenance or Projects ⁽²⁾						
<input type="checkbox"/> _____						
SUBTRACT from Power Sub-Total ⁽¹⁾			-	()	Penalty	
Power Availability Total			4			

⁽¹⁾ Apply offsite power source sub-total⁽²⁾ If 345 kV or main transformer switchyard work is in progress which jeopardizes off-site sources, then deduct points equivalent to the number of offsite sources that could be affected.

Millstone Unit 2 Shutdown Safety Assessment
(SSA) Checklist

OU-M2-201 – Attachment 1

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Assessment Completion

Conflicts between the availability reflected in the outage schedule and this checklist have been brought to the attention of the SM.	Conflicts? YES <input type="checkbox"/> / NO <input checked="" type="checkbox"/>	<u>Initial</u> RO
Remarks:		
Shutdown Safety Assessment (SSA) Checklist Performed By:	Reactor Operator _____ Signature (Licensed Operator or STA)	
SSA Equipment Status Board(s) / PPC Programs Updated.	RO _____ Initials	
OMOC and Maintenance Rule Coordinator Notifications made for <i>unplanned</i> RED or ORANGE.	N/A _____ Initials	
CR written to address unplanned entries into RED or ORANGE conditions	CR Number: _____ N/A	
The SSA Checklist items have been reviewed and the Protected Equipment signs are in place based on SSA.	Shift Technical Advisor _____ Signature (Licensed Operator or STA)	
Shift Manager Review	_____ Signature	
Completed SSA Checklist maintained with the Shift Turnover Report.	_____ Initials	

Attachment 3

Closure Plan for Containment Penetration Work Activities

(Sheet 1 of 1)

WO #(s) or Procedure #(s): 53102126453

Penetration #: 48
 Penetration Name: Pressure Test Boundary Spare
 Penetration Location: _____

Penetration Name: Pressure Test Boundary Spare

Penetration Location: _____

Closure Plan: Re-bolt flange after removing temporary instrumentation

Estimated Time to Establish Containment Closure (min): 30 minutes

Prepared By: Scott Getman Department: Maintenance
Job Supervisor

Job Supervisor

Approved By: Gerry Baker
Shift Manager/OCC Shift Manager

Shift Manager/OCC Shift Manager

Level of Use Reference



OP 2264
Rev. 013-02
21 of 31

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: AEAS Broken Boundary Door

JPM Number: JPM-297-R-SRO Revision: 0

Initiated:

David Jacobs 06/01/2016
Developer Date

Reviewed:

Robert L. Cimmino, Jr. 07/12/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
06/01/2016	Modified from JPM-218 for 2016 ILT NRC Exam	0

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: **JPM-297-R-SRO** Revision: **0**

Task Title: **AEAS Broken Boundary Door**

System: Conduct of Operations / Fuel HandlingTime Critical Task: ☐ YES ☒ NOValidated Time (minutes): 15

Task Number(s): 119-01-086

Applicable To: SRO X STA RO PEO

K/A Number: 2.1.42 K/A Rating: 2.5 / 3.4

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM, examinee will have determined the type of door affected and state the required actions for suspending fuel movement.

Required Materials: MP-PROC-OPS-OP 2356[r004.00] Doors
(procedures, equipment, etc.) MP-PROC-OPS-OPS-FH 216[r006.00] Spent Fuel Handling Operations

General References: MP-PROC-OPS-OP 2356[r004.00] Doors
MP-PROC-OPS-OPS-FH 216[r006.00] Spent Fuel Handling Operations

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-297-R-SRO**

Revision : **0**

Initial Conditions:

You are currently on watch as the Control Room Unit Supervisor during a refueling outage that's in its 10th day with a Core Offload in progress.

Initiating Cues:

The Aux Building Watch reports that Door 205-14-007 Double Door Access From Aux. bldg. to Railway Access has been knocked off its hinges and will not close.

Record any procedural actions required to respond to the Aux Building Watch's report.

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-297-R-SRO Revision: 0

Task Title: AEAS Broken Boundary Door

START TIME: _____

STEP # 1	<p>Performance: Examinee refers to OP 2356 Doors: Section 4.1 Door Class Determination: 4.1.1 WHEN any Unit 2 Door is, or will be, <i>not</i> OPERABLE, or <i>not</i> FUNCTIONAL, PERFORM the following: a. OBTAIN the following information for each affected door:</p> <ul style="list-style-type: none"> Door ID number and location Nature of inoperability (blocked open, does <i>not</i> latch, etc.) If door is being blocked open, AWO/clearance number/activity If known, expected duration of inoperability <p>b. SUBMIT a CR.</p>	<p>Standard: Examinee determines the following: ID Door 205-14-007 AB 14' 6" RR Access Not Operable does not Latch Submits a CR</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:			
	Comments:			
STEP # 2	<p>4.1.2 Refer To Attachment 1, "Unit 2 Door Attributes," and DETERMINE whether affected door is classified as <i>any</i> of the following:</p> <ul style="list-style-type: none"> Spent Fuel Pool Ventilation Boundary 	<p>Standard: Examinee refers OP 2356 Doors Attachment 1 page 7 of 15 and notes the following Attributes:</p> <ul style="list-style-type: none"> Non TRM Fire Door SFP Ventilation Boundary (AEAS) 	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-297-R-SRO Revision: 0

Task Title: AEAS Broken Boundary Door

STEP # 3	Performance: Examinee refers to OP 2356 Doors: Section 4.7 Spent Fuel Pool Ventilation Boundary (AEAS) (A): 4.7.1 IF a SFP boundary door <i>cannot</i> be closed and latched, PERFORM the following: a. SUBMIT a CR. b. DEVELOP a closure plan and TRACK as specified in OPS-FH 216 section "Maintaining SFP Boundary Integrity," until door is repaired.	Standard: Examinee determines the following for the Door: <ul style="list-style-type: none">• Will not latch• CR is submitted• Refers to OPS-FH 216 section 4.10 Maintaining SFP Boundary Integrity	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 4	Performance: Examinee refers to OPS-FH 216 Section 4.10 Maintaining SFP Boundary Integrity 4.10.2 IF an unplanned breach in the SFP area boundary is identified, PERFORM the following: a. STOP any movement of irradiated fuel or Cask operation in the SFP.	Standard: Examinee directs the Stopping of Fuel Movement in the Spent Fuel Pool Ventilation Boundary Area	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-297-R-SRO**

Revision: 2

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number:

JPM-297-R-SRO

Revision:

2

Initial Conditions:

You are currently on watch as the Control Room Unit Supervisor during a refueling outage that's in its 10th day with a Core Offload in progress.

Initiating Cues:

The Aux Building Watch reports that Door 205-14-007 Double Door Access From Aux. bldg. to Railway Access has been knocked off its hinges and will not close.

Record any procedural actions required to respond to the Aux Building Watch's report.

Procedure #

Requirement

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: TECH SPEC Evaluation LTOP

JPM Number: JPM-294-R-SRO Revision: 0/1

Initiated:

David Jacobs 07/12/2016
Developer Date

Reviewed:

Robert L. Cimmino, Jr. 07/13/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
06/01/2016	New JPM developed for NRC exam 2016	0
08/18/2016	Incorporated NRC comments	0/1

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: JPM-294-R-SRO Revision: 0/1

Task Title: TECH SPEC Evaluation LTOP

System: Generic Equipment ControlTime Critical Task: ☐ YES ☒ NOValidated Time (minutes): 20

Task Number(s): *MP2* 119-029-01-02

Applicable To: SRO X STA RO PEO

K/A Number: 2.2.40 K/A Rating: 3.4 / 4.7

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: Examinee has determined that both PORVs are NOT OPERABLE for MODE 4 requiring entering Tech. Spec. Action Statement and suspending the cooldown.

<u>Required Materials:</u>	MP-PROC-OPS-U2-14-OPS-BAP05	Tech. Specs.
(procedures, equipment, etc.)	MP-PROC-OPS-OP 2207[r039]	Plant Cooldown

<u>General References:</u>	MP-PROC-OPS-U2-14-OPS-BAP05	Tech. Specs.
	MP-PROC-OPS-OP 2207[r039]	Plant Cooldown
	MP-PROC-OPS-ARP 2590B-209	Alarm Response C02/03 A-37 LT/OP T115

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-294-R-SRO**

Revision : 0/1

Initial Conditions:

OP 2207 cooldown is in progress with the following conditions:

- RCS temperature at 275°F
- Pressure at 375# P-103-1 and P-103
- 2 PORVs with "LT/OP SETPOINT SELECTOR" in "HIGH"
- 2 Charging pump available to inject
- 1 HPSI pump available to inject

Initiating Cues:

Determine any required actions for the current condition

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-293-R-SRO Revision: 0/1

Task Title: TECH SPEC Evaluation LTOP

START TIME: _____

STEP # 1	Performance: After reviewing the Initial Conditions the SRO determines the applicable action required by OP 2207 Cooldown.	Standard: SRO determines the need to SUSPEND the COOLDOWN OP 2207 Section 4.14 Establishing LTOP Protection Step 4.18.8	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 2	Performance: After reviewing the Initial Conditions the SRO determines applicable Tech. Spec. Action required for the conditions.	Standard: Technical Specification Actions of 3.4.9.3a action “c” Declare BOTH Channels of LTOP <u>not</u> OPERABLE Perform either of the following: <ul style="list-style-type: none">Depressurize and vent the RCS through a \geq 2.2 square inch vent within 8 hours. OR <ul style="list-style-type: none">Raise $T_{COLD} > 275^{\circ}\text{F}$ (MODE above where PORV's are not required)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-294-R-SRO

Revision: 0/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	20	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	What action in the Plant Cooldown cannot be accomplished if P103, “PZR PRES LO RGE” and P103-1, “PZR PRES LO RGE” are not within 30 psi of each other?
<u>Answer #1:</u>	Concurrent RCP and SDC operations
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	In MODE 6 when is Low Temperature Over Pressure protection no longer required?
<u>Answer #2:</u>	Reactor vessel head has been removed or a vent of sufficient size has been established such that RCS pressurization is not possible. (T.S. Basis)
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-294-R-SRO Revision: 0/1

Initial Conditions:

OP 2207 cooldown is in progress with the following conditions:

- RCS temperature at 275°F
- Pressure at 375# P-103-1 and P-103
- 2 PORVs with “LT/OP SETPOINT SELECTOR” in “HIGH”
- 2 Charging pump available to inject
- 1 HPSI pump available to inject

Initiating Cues:

Determine any required actions for the current conditions.

**Examinee
Response:**

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Radiological Assessment and Task Supervision**

JPM Number: JPM-296-R-SRO Revision: 1

Initiated:

David Jacobs 06/02/2016
Developer Date

Reviewed:

Robert L. Cimmino, Jr. 07/06/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training
Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
12/07/10	Created JPM for LOIT 2011 NRC Exam	0/0
06/02/2016	Revised and modified for ILT 2016 NRC Exam	1/0

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: JPM-296-R-SRO Revision: 1

Task Title: **Radiological Assessment and Task Supervision**System: Radiation Control 2.3Time Critical Task: ☐ YES ☒ NOValidated Time (minutes): 20

Task Number(s): _____

Applicable To: SRO X STA RO PEO

K/A Number: 2.3.4 K/A Rating: 3.3 / 3.7

Method of Testing: Simulated Performance: _____ Actual Performance: _____

Location: Classroom: X Simulator: In-Plant:

Task Standards: At the completion of this JPM, the SRO should analyze the given conditions and designate which PEO should perform each of the two specified tasks, based on the radiological concerns of each.

Required Materials: (procedures, equipment, etc.)

- RPM 5.2.2 Basic Radiation Worker Responsibilities

General References:

- RPM 5.2.2 Basic Radiation Worker Responsibilities
- MP-PROC-EP-MP-26-EPI-FAP09[r004] Radiation Exposure Controls

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-296-R-SRO**

Revision : **1**

Initial Conditions:

You are the Unit Supervisor currently mitigating a medium size LOCA and directing steps in EOP 2532 with the following conditions:

- Shift Manager has declared an SITE AREA CHARLIE 2
- 2-RB-30.1A has failed to Close remotely
- RBCCW Surge Tank is slowly Rising
- PEO #1 current year to date exposure is 875 millirem
- PEO #2 current year to date exposure is 203 millirem
- PEO #1 can restore the charging pump in 44 minutes
- PEO #2 can restore the charging pump in 50 minutes
- PEO #1 can manually close RB MOV in 18 minutes
- PEO #2 can manually close RB MOV in 20 minutes

Task #1 restore the "B" charging pump with general area dose rate of 5 rem/hr.

Task #2 manually close MOV 2-RB-30.1A "RBCCW CTMT ISOL HDR A SPLY" with general area dose rate of 12 rem/hr.

Initiating Cues:

Determine the allowable Exposure for PEO #1 and PEO #2 for the given event.

Determine the dose each PEO will receive for each task.

Determine which PEO will perform the individual tasks based on the Radiological requirements for the PEOs.

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-296-R-SRO Revision: 1

Task Title: Radiological Assessment and Task Supervision

START TIME: _____

STEP # 1	Performance: Review the Initial Conditions and Initiating Cue. Using Emergency Exposure Control Guidance limits and the expected exposure rate in the area, calculate the maximum dose available for each PEO.	Standard: Using Emergency Exposure Control Guidance at an ALERT level and higher classification dose limits are automatically extended to 4.5 Rem minus their current dose. <ul style="list-style-type: none"> PEO #1 = $4.5R - 0.875R = 3.625R$ PEO #2 = $4.5R - 0.203R = 4.297R$ 	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 2	Performance: Determine the expected Dose each PEO will receive for the stated task, the dose rates and times required to accomplish the tasks.	Standard: <ul style="list-style-type: none"> PEO #1 task #1 = $3.667R \pm 0.001R$ PEO #1 task #2 = $3.600R \pm 0.001R$ PEO #2 task #1 = $4.167R \pm 0.001R$ PEO #2 task #2 = $4.000R \pm 0.001R$ 	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 3	Performance: Based on available Dose, decide which PEO must perform each task.	Standard: <ul style="list-style-type: none"> PEO #1 task #2 = $3.600R \pm 0.001R$ PEO #2 task #1 = $4.167R \pm 0.001R$ 	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-296-R-SRO

Revision: 1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	20	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number:

JPM-296-R-SRO

Revision:

1

Initial Conditions:

You are the Unit Supervisor currently mitigating a medium size LOCA and directing steps in EOP 2532 with the following conditions:

- Shift Manager has declared an SITE AREA CHARLIE 2
- 2-RB-30.1A has failed to Close remotely
- RBCCW Surge Tank is slowly Rising
- PEO #1 current year to date exposure is 875 millirem
- PEO #2 current year to date exposure is 203 millirem
- PEO #1 can restore the charging pump in 44 minutes
- PEO #2 can restore the charging pump in 50 minutes
- PEO #1 can manually close RB MOV in 18 minutes
- PEO #2 can manually close RB MOV in 20 minutes

Task #1 restore the “B” charging pump with general area dose rate of 5 rem/hr.

Task #2 manually close MOV 2-RB-30.1A “RBCCW CTMT ISOL HDR A SPLY” with general area dose rate of 12 rem/hr.

Initiating Cues:

Determine the allowable Exposure for PEO #1 and PEO #2 for the given event.

Determine the dose each PEO will receive for each task.

Determine which PEO will perform the individual tasks based on the Radiological requirements for the PEOs.

	Exposure Limit	Task #1 Dose	Task #2 Dose	Task to perform
PEO #1				
PEO #2				

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Emergency Classification

JPM Number: JPM-298-R-SRO Revision: 0

Initiated:

Robert Royce 6 /14/2016
Developer Date

Reviewed:

David Jacobs 07/05/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training
Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE

JPM WORKSHEET

Facility: Millstone 2 Examinee: _____

JPM Number: JPM-298-R-SRO Revision: 0

Task Title: Emergency Classification

System: _____

Time Critical Task: ☒ YES ☐ NO

Validated Time (minutes): 10

Task Number(s): _____

Applicable To: SRO X RO _____

K/A Number: GEN.2.4.41 K/A Rating: 2.9 / 4.6

Method of Testing: Simulated Performance: X Actual Performance: _____

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM, the examinee has correctly classified the proposed event and provided the appropriate Protective Action Recommendation.

Required Materials:

- MP-26-EPI-FAP06-002, Millstone Unit 2 Emergency Action Levels
- (procedures, equipment, etc.) • MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations.
- MP-26-EPI-FAP06, Classification and PARs

General References:

- MP-26-EPI-FAP06-002, Millstone Unit 2 Emergency Action Levels
- MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations.

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: JPM-298-R-SRO

Revision : 0

- Initial Conditions:
- The plant is operating at 100% power.
 - Bus 24E is aligned to Bus 24C.
 - The "B" LPSI Pump is OOS.
 - Wind at the site is from 15 degrees at 3 mph.

- Time = 0 Minutes:
- The following sequence of events occurs:
- The Reactor trips,
 - The Turbine trips,
 - The crew enters EOP 2525, *Standard Post Trip Actions*.

- Time + 17 Minutes:
- EOP 2525 is complete
 - The BOP reports secondary conditions as follows:
 - Buses 25A/B, 24A/B, and 24C de-energized
 - Bus 24D energized by the 'B' D/G
 - S/G press: #1 is 745 psia, #2 is 740 psia, both slowly lowering
 - T_{hot} is 289°F, T_{cold} is 262°F, both slowly lowering
 - S/G levels: #1 is 18%, #2 is 16%, both rising slowly
 - "B" AFP supplying both S/Gs

- Time + 19 Minutes:
- RO reports primary conditions as follows:
 - Pressurizer level is 0%
 - Reactor vessel level (RVLMS) is 0%. (Both #8 string HJTCs are inoperable)
 - Pressurizer pressure is 53 psia and slowly lowering
 - CETS are 847°F and slowly rising
 - Subcooling (CET) indicates -478°F and becoming more negative
 - Facility 2 SIAS, CIAS, EBFS have actuated; however, Letdown Isolation Valves, CH-515, 516, and 089, indicate open and will NOT close from C-02
 - CTMT pressure is 42 psig, rising slowly
 - CTMT temperature is not available

- Time + 22 Minutes:
- STA reports the following:
 - Main Steam Line RM-4299A and B indicate 1.6 R/hr, RM-4299C indicates 1.8 R/hr, all rising
 - CTMT Hi Range, RM-8240 / 8241 is 20,000R/hr / 21,000 R/hr, both rising
 - CTMT Personnel Access Area, RM-7890, off scale high
 - Facility 2 CTMT atmosphere, RM-8262A/B show pre CIAS spikes and alarm
 - The Kaman Rad Monitor, RM-8168 is reading 5E+02μCi/cc, rising, and in ALARM.
 - All other RMs outside CTMT are elevated, but NOT in alarm
 - Main Steam Line RM-4299A/B were reading 0.7 R/hr, RM-4299C was reading 0.9 R/hr, 15 minutes ago
 - CTMT Hi Range, RM-8240 / 8241 were reading 350R/hr / 370 R/hr, 15 minutes ago
 - The Kaman Rad Monitor, RM-8168 was reading 1.2E+01μCi/cc 15 minutes ago
 - All other Rad Monitors outside of CTMT started rising about 15 minutes ago.

Time + 25 Minutes: Crew transitions to EOP 2532, *Loss of Coolant Accident*

Initiating Cues: You are the on-duty SM.

Your task is to determine the NRC and state posture code classification for this event, and as required, provide any additional recommendations.

***** TIME CRITICAL JPM*****

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-298-R-SRO Revision: 0

Task Title: Emergency Classification

START TIME: _____

STEP # 1	Performance: Obtain Millstone 2 Emergency Action Levels, MP -26-EPI-FAP06-002.	Standard: The examinee reads the student Handout and obtains Millstone 2 Emergency Action Levels, MP -26-EPI-FAP06-002.	Critical: Y [] N [X]	Grade S [] U []
	Cue: When requested, provide Millstone 2 Emergency Action Levels, MP-26-EPI-FAP06-002 and MP-26-EPI-FAP06, Classification and PARs, to the examinee. The CRDSEO book with EALs may be provided at the start of the JPM.			
	Comments: The 15 minute clock starts when the examinee obtains Millstone 2 Emergency Action Levels, MP -26-EPI-FAP06-002, and ends when the classification is made.			
STEP # 2	Performance: Classify the event as a GENERAL EMERGENCY, State Posture Code, ALPHA, within 15 minutes, based on Barrier Failure, BG1, any three barriers failed.	Standard: Using the barrier reference table, examinee determines the event as a GENERAL EMERGENCY, State Posture Code, ALPHA, based on; <ul style="list-style-type: none"> Fuel Clad Barrier failed FCB3 (L) RCS Barrier failed RCB2 (L), CTMT Barrier, CNB3(P) or CNB4 (P) <p>Could also arrive at the same classification from Off Site Releases OG1 or In-Plant Radiation RG1.</p> <ul style="list-style-type: none"> OG1 MP2 Kaman Vent Monitor (RM-8168) reading $\geq 2\mu\text{ci/cc}$ for > 15 minutes. Current reading $5\text{E} +02 \mu\text{ci/cc}$ (500 $\mu\text{ci/cc}$) and was $1.2\text{E} +01 \mu\text{ci/cc}$ (12 $\mu\text{ci/cc}$) 15 minutes ago. RG1 RM-8240/8241 reading > 1,200 R/hr. Currently reading 20,000 R/hr and 21,000 R/hr. 	Critical: Y [X] N []	Grade S [] U []
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-298-R-SRO

Revision: 0

Task Title: Emergency Classification

STEP # 3	<p>Performance: For Control Room PARs, Refer to EPI-FAP06-005, "Control Room Protective Action recommendations" and determines the PAR recommendation as;</p> <ul style="list-style-type: none">• Evacuate Zones A and B and Plum Island.• Shelter all other zones.	<p>Standard: Using the Control Room PAR Process Flowchart, determine that the present wind direction (between 340° - 029°) requires the examinee to recommend an evacuation of Zones A, B, and Plum Island, and to shelter all other zones.</p> <ul style="list-style-type: none">• General Emergency – <u>Yes</u>• General Emergency – Alpha – <u>Yes</u>• Rapidly Progressing Event – <u>No</u> (Clad <1200°F)• Does CTMT Radiation Exceed Table 1 Values – <u>Yes</u> (20,000 and 21,000 R/hr are >19,000R)• GE-ALPHA PAR<ul style="list-style-type: none">• Evacuate 5 mile radius• Evacuate 10 miles downwind: Sector 340-029: Zones to evacuate to 10 miles; A and B and Plum Island.• Shelter all other zones.	<p>Critical: Y [X] N []</p>	<p>Grade S [] U []</p>
	Cue: When requested, provide MP-26-EPI-FAP06-05, Control Room Protective Action Recommendations.			
	Comments: Thyroid CDE is NOT known; therefore, issuance of KI tablets should not be recommended.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-298-R-SRO**

Revision: **0**

Date Performed:

Candidate: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Validated Time (minutes):	15 minutes for EAL PAR within 15 minutes after Classification	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM HANDOUT

JPM Number:

JPM-298-R-SRO

Revision:

0

Initial Conditions:

- The plant is operating at 100% power.
- Bus 24E is aligned to Bus 24C.
- The "B" LPSI Pump is OOS.
- Wind at the site is from 15 degrees at 3 mph.

Time = 0 Minutes:

The following sequence of events occurs:

- The Reactor trips,
- The Turbine trips,
- The crew enters EOP 2525, *Standard Post Trip Actions*.

Time + 17 Minutes:

- EOP 2525 is complete
- The BOP reports secondary conditions as follows:
 - Buses 25A/B, 24A/B, and 24C de-energized
 - Bus 24D energized by the 'B' D/G
 - S/G press: #1 is 745 psia, #2 is 740 psia, both slowly lowering
 - T_{hot} is 289°F, T_{cold} is 262°F, both slowly lowering
 - S/G levels: #1 is 18%, #2 is 16%, both rising slowly
 - "B" AFP supplying both S/Gs

Time + 19 Minutes:

- RO reports primary conditions as follows:
 - Pressurizer level is 0%
 - Reactor vessel level (RVLMS) is 0%. (Both #8 string HJTCs are inoperable)
 - Pressurizer pressure is 53 psia and slowly lowering
 - CETS are 847°F and slowly rising
 - Subcooling (CET) indicates -478°F and becoming more negative
 - Facility 2 SIAS, CIAS, EBFS have actuated; however, Letdown Isolation Valves, CH-515, 516, and 089, indicate open and will NOT close from C-02
 - CTMT pressure is 42 psig, rising slowly
 - CTMT temperature is not available

- Time + 22 Minutes:
- STA reports the following:
 - Main Steam Line RM-4299A and B indicate 1.6 R/hr, RM-4299C indicates 1.8 R/hr, all rising
 - CTMT Hi Range, RM-8240 / 8241 is 20,000R/hr / 21,000 R/hr, both rising
 - CTMT Personnel Access Area, RM-7890, off scale high
 - Facility 2 CTMT atmosphere, RM-8262A/B show pre CIAS spikes and alarm
 - The Kaman Rad Monitor, RM-8168 is reading 5E+02μCi/cc, rising, and in ALARM.
 - All other RMs outside CTMT are elevated, but NOT in alarm
 - Main Steam Line RM-4299A/B were reading 0.7 R/hr, RM-4299C was reading 0.9 R/hr, 15 minutes ago
 - CTMT Hi Range, RM-8240 / 8241 were reading 350R/hr / 370 R/hr, 15 minutes ago
 - The Kaman Rad Monitor, RM-8168 was reading 1.2E+01μCi/cc 15 minutes ago
 - All other Rad Monitors outside of CTMT started rising about 15 minutes ago.

Time + 25 Minutes: Crew transitions to EOP 2532, *Loss of Coolant Accident*

Initiating Cues: You are the on-duty SM.

Your task is to determine the NRC and state posture code classification for this event, and as required, provide any additional recommendations.

***** TIME CRITICAL JPM*****

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: LOCA Cooldown "A" Steam Dump lose Vacuum go to ADVs (ALT PATH)

JPM Number: JPM-270 Revision: 0/1

Initiated:

<u>David J. Jacobs</u>	<u>07/15/2014</u>
Developer	Date

Reviewed:

<u>Lenny E. Mausteller</u>	<u>07/15/2014</u>
Technical Reviewer	Date

Approved:

<u>Mike J. Cote</u>	<u>07/17/2014</u>
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
07/15/2014	New JPM for 2013-2014 ILT Audit Exam	0
08/16/2016	Incorporate NRC comments	0/1

JPM WORKSHEET

Facility: **Millstone Unit 2** Examinee: _____

JPM Number: JPM-270 Revision: **0/1**

Task Title: LOCA Cooldown "A" Steam Dump lose Vacuum go to ADVs

System: **039 Main and Reheat Steam System**

Time Critical Task: () YES (X) NO

Validated Time (minutes): 30

Task Number(s): 599-05-011

Applicable To: SRO **X** STA _____ RO **X** PEO _____

K/A Number: **A2.01** K/A Rating: 3.1 / 3.2

Method of Testing: Simulated Performance: _____ Actual Performance: **X**

Location: Classroom: _____ Simulator: **X** In-Plant: _____

Task Standards: At the completion of the JPM the Examinee will have recognized a loss of Condenser Vacuum and transferred Cooling down for the "A" Steam Dump to both ADVs while maintaining > 40 degree per hour

Required Materials: MP-PROC-OPS-EOP 2532
(procedures, equipment, etc.)

General References: Ensure S/G levels > 50%

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: JPM-270

Revision : 0/1

Initial Conditions: The Plant was manually tripped due to a Loss of Primary Coolant Accident.

All actions from EOP 2525 SPTA have been completed and EOP 2532 Loss of Coolant Accident up to Step #17

Initiating Cues: You are directed to commence controlled cool down In Accordance with Step 17 of EOP 2532 LOCA

Simulator Requirements: Reset to IC 290 password "2013>loit"

Insert Malfunction RC04 at 500 gpm

Trigger #1 Malfunction FW33 at 7.5 BP@ 10 mins

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-270 Revision: 0/1

Task Title: LOCA Cooldown "A" Steam Dump lose Vacuum go to ADVs

START TIME: _____

STEP # 1	Performance: NOTE 1. RCS cooldown should be initiated within one hour after the event to conserve condensate inventory and comply with the Long Term Cooling Analysis. 2. RCS cooldown rate greater than 40_F/hr should be maintained until the steam dump/bypass valves or atmospheric dump valves are full open. 3. The starting point for the RCS cooldown should be the TC or CET temperatures where RCS has stabilized. 4. TC should be used for monitoring RCS cooldown if in forced or natural circulation. CETs should be used for all other cases.	Standard: Examinee reads NOTE and understands the requirements for RCS Cooldown	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

STEP # 2	Performance: NOTE Technical Specification cooldown rates should be observed during the cooldown. The cooldown rates are as follows: 1. RCS TC greater than 220 ⁰ F the cooldown rate is 100 ⁰ F/hr. 2. RCS TC less than or equal to 220 ⁰ F the cooldown rate is 50 ⁰ F/hr.	Standard: Examinee reads and complies with Tech. Spec. Limits	Critical: Y [] N [X]	Grade S [] U []
	Cue:			
	Comments:			
STEP # 3	Performance: Perform Controlled Cooldown *17.INITIATE a controlled cooldown using the steam dumps to establish shutdown cooling entry conditions.	Standard: Examinee Locates and Places “A” Steam Dump to Manual, increases the Output approximately by 10% then monitors Cooldown Rate.	Critical: Y [X] N []	Grade S [] U []
	Cue: After the Examinee establishes a control Cooldown rate > 40 ⁰ F per hour and less then TS limit INSERT Malfunction FW33 at 7.5 BP@ 10 minutes			
	Comments:			
STEP # 4	Performance: C06/07 A-37 “COND VACUUM LO” alarms, the Examinee refers to the Alarm Response 2590E-185 Confirms loss of the Main Condenser.	Standard: Examinee uses diverse indications to confirm a loss of the Main Condenser. Examinee understands that the “A” Steam Dump Valve will close when Condenser Vacuum rises to 10”	Critical: Y [] N [X]	Grade S [] U []
	Cue:			
	Comments:			

STEP # 5	Performance: Perform Controlled Cooldown *17.1 INITIATE a controlled cooldown using the ADVs to establish shutdown cooling entry conditions.	Standard: Examinee refers back to EOP 2532 Loss of Coolant Accident Step 17.1 Contingency Actions and transfers Cooldown to the ADVs	Critical: Y [X] N []	Grade S [] U []
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: _____ JPM-270 _____

Revision: _____ **0/1** _____

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.
As necessary, refer to TIG-04 for additional Pass/Fail criteria.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	30	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-270 Revision: 0/1

Initial Conditions: The Plant was manually tripped due to a Loss of Primary Coolant Accident.

All actions from EOP 2525 SPTA have been completed and EOP 2532 Loss of Coolant Accident up to Step #17

Initiating Cues: You are directed to commence controlled cool down In Accordance with Step 17 of EOP 2532 LOCA

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to a 10 Step CEA Misalignment

JPM Number: JPM-284-S-1 Revision: 0/1

Initiated:

<u>Robert L. Cimmino, Jr.</u>	<u>03/15/2016</u>
Developer	Date

Reviewed:

<u>David J. Jacobs</u>	<u>07/05/2016</u>
Technical Reviewer	Date

Approved:

<u>Supervisor, Nuclear Training</u>	<u> </u>
	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
03/15/2016	New JPM for 2015-16 NRC License Exam	0
08/15/2016	Incorporated NRC comments	0/1

JPM WORKSHEET

Facility: Millstone Unit 2 Examinee: _____

JPM Number: JPM-284-S-1 Revision: 0/0

Task Title: Respond to a 10 Step CEA Misalignment

System: CEDS

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 20

Task Number(s): 000-04-097

Applicable To: SRO _____ STA _____ RO X PEO _____

K/A Number: 001/A2.03 K/A Rating: 3.5/4.2

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: The Examinee will attempt to insert Group 7 CEAs to start the downpower, recognize CEA #1 in Group 7 has slipped 10 steps to 170 steps withdrawn, and then perform the required actions to realign CEA #1 with the group.

Required Materials: MP-PROC-OPS-AOP 2575, Rapid Downpower
(procedures, equipment, etc.) MP-PROC-OPS-ARP 2590C-111, ACTM TROUBLE
MP-PROC-OPS-ARP 2590C-140, CEA GP DEV BK/UP
MP-PROC-OPS-OP 2302A, Control Element Drive System

General References: MP-PROC-OPS-OP 2302A, Control Element Drive System
Reactivity Plan for ~ 30%/hr power reduction

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-284-S-1**

Revision : **0/1**

Initial Conditions: The plant is stable at 100 % power, about to commence a down power to 55%.
The crew has entered AOP 2575, Rapid Downpower, and has completed steps to 3.3, Forcing Pressurizer Sprays.
The BOP is standing by to reduce turbine load.

Initiating Cues: You are the RO.
Insert Group 7 rods 10 steps in accordance with step 3.4 of AOP 2575.

Simulator Requirements: 100% power, steady state, ARO, forcing PZR sprays.
Insert Malfunction RD0301 (10) to slip CEA #1 10 steps when Group 7 is given an insert command.
{Consider creating a Boolean trigger based on CEA #1 being < 180 steps.
[RDCEAPOS(01) < 180]}

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-284-S-1 Revision: 0/1

Task Title: Respond to a 10 Step CEA Misalignment

START TIME: _____

STEP # 1	Performance: AOP 2575 CAUTION In the case of a dropped CEA, rod motion is <i>not</i> used to initiate downpower.	Standard: Examinee obtains a copy of AOP 2575. <ul style="list-style-type: none"> Examinee turns to the Caution statement proceeding step 3.4 on page 8. Examinee reads and acknowledges the Caution. 	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Provide the Examinee with a marked up copy of AOP 2575 “RAPID DOWNPOWER”			
	Comments:			
STEP # 2	Performance: 3.4. IF <i>not</i> downpowering due to a dropped rod, AND Reactor power is greater than 99% (2673 MWTh) INSERT Group 7 CEAs 10 ± 2 steps to initiate downpower.	Standard: <ul style="list-style-type: none"> CEA are inserted 	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Ensure malfunction RD0301 triggers (causing CEA #1 to slip to 170 steps) when Group 7 CEAs begin to insert.			
	Comments: Ensure the Rod slip does not EXCEED 10 steps which would require entering AOP 2556 CEA MALFUNCTION. The specific steps required for CEA insertion as directed by an AOP are considered “Skill Of The Craft” and, as such, do not need to be performed using OP 2302A at this time.			
STEP # 3	Performance: CEA #1 slips to 170 steps withdrawn. C-04 Annunciators in alarm: <ul style="list-style-type: none"> C-04/DA-18, CEA GP DEV BK/UP C-04/BA-18, CEA MOTION INHIBIT 	Standard: Examinee performs the following: <ul style="list-style-type: none"> CEA control switch released. C-04 alarms acknowledged. US notified of CEA misalignment. 	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: Examinee may refer to AOP 2556 but does not meet entry conditions.			

PERFORMANCE INFORMATION

JPM Number: **JPM-284-S-1** Revision: **0/1**

Task Title: **Respond to a 10 Step CEA Misalignment**

STEP # 4	<p>Performance: ARP 2590C-136 CEA Motion Inhibit (BA-18)</p> <ol style="list-style-type: none">1. VERIFY CEA motion has stopped (C-04, PPC).2. To determine cause of alarm, OBSERVE any associated CEDS annunciators lit (C-04).3. IF other associated CEDS annunciators are lit, Refer To applicable alarm response section and PERFORM necessary corrective actions.4. IF necessary, SUBMIT Trouble Report to I&C Department.	<p>Standard: Examinee references ARP 2590C-136 and notes the need to reference additional ARPs pertaining to the actual cause of the alarm.</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue: If Examinee expresses the need to have I&C and/or a PEO investigate CEA #1, state that you have already made the calls and both are enroute to the East DC switchgear room. Acknowledge any suggestion to submit a Trouble Report and state another operator will submit one.</p>			
	<p>Comments: Examinee may not reference this ARP as the cause is known based on C-04 annunciator DA-18 and the actions are to simply verify CEA motion has stopped and then reference the applicable ARP that caused the CMI.</p>			

PERFORMANCE INFORMATION

JPM Number: **JPM-284-S-1** Revision: **0/1**

Task Title: **Respond to a 10 Step CEA Misalignment**

STEP # 5	<p>Performance: ARP 2590C-111 ACTM Trouble (AB-15)</p> <ol style="list-style-type: none">1. STOP all CEA motion.2. REQUEST I&C Department investigate ACTM trouble condition.3. IF alarm is momentary, PERFORM the following:<ol style="list-style-type: none">3.1. MONITOR all ACTMs and REPORT all abnormal red lights (East DC switchgear room).3.2. OPEN the “ACTM TROUBLE ALARMS” display on CEAPDS.3.3. RESET ACTMs.3.4. IF ACTM alarm on CEAPDS display clears (is <i>not</i> flashing or steady red), CEA motion may be resumed.3.5. IF ACTM alarm on CEAPDS display does <i>not</i> clear, NOTIFY SM.	<p>Standard: Examinee references ARP 2590C-136 and notes the need to reference additional ARPs pertaining to the actual cause of the alarm.</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue: If Examinee expresses the need to have I&C and/or a PEO investigate CEA #1, state that you have already made the calls and both are enroute to the East DC switchgear room.</p>			
	<p>Comments: Examinee may not reference this ARP as the cause is known based on the other C-04 annunciators, the alarm is momentary and the actions are not critical at this time.</p>			

PERFORMANCE INFORMATION

JPM Number: JPM-284-S-1 Revision: 0/1

Task Title: Respond to a 10 Step CEA Misalignment

STEP # 6	Performance: <u>ARP 2590C-140</u> (DA-18) 1. IDENTIFY misaligned CEA and DETERMINE actual steps misaligned. 2. IF deviation is greater than 10 steps, Go To AOP 2556, "CEA Malfunctions." 3. IF deviation is less than or equal to 10 steps, Refer To OP 2302A, "Control Element Drive System" and PERFORM applicable actions to align all CEAs in affected group to within one step of each other, using manual individual mode in conjunction with bypassing CMI. 4. IF necessary, RESET affected group CEA positions on PPC as follows: 4.1. SELECT "CEA POSITION" on PPC. 4.2. SELECT "CEA POSITION EDITOR." 4.3. PERFORM directions as indicated on PPC. 5. IF an instrument malfunction is indicated, SUBMIT Trouble Report to I&C Department.	Standard: 1. Identifies CEA #1 as being misaligned with Group 7 by (less than or equal to) 10 steps. 2. Informs US of the need to realign CEA #1 with Group 7 using OP 2302A (based on magnitude of CEA misalignment).	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	<p>Cue: If Examinee expresses the need to have I&C and/or a PEO investigate CEA #1, state that you have already made the calls and both are enroute to the East DC switchgear room. When later questioned by the Examinee about the status of CEA #1, state that I&C is on station and that they believe they have addressed the cause of the slipped CEA. I&C and a PEO will remain on station in the East DC switchgear room to ensure proper operation of the CEDS during subsequent CEA motion.</p> <p>The Examinee has permission to proceed with the actions to correct the CEA misalignment.</p>			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-284-S-1** Revision: **0/1**

Task Title: **Respond to a 10 Step CEA Misalignment**

STEP # 7	Performance: OP 2302A Section 4.2 CEA Operation in Manual Individual Mode NOTE: When operating in this mode, any individual CEA in any group can be moved using CEA control switch and is primarily used for trimming CEAs and testing.	Standard: Examinee obtains a copy of OP 2302A, turns to Section 4.2, reads and acknowledges the Note.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 8	Performance: 4.2.1 IF at any time it is necessary to bypass CMI during CEA movement, using Section 4.5 PERFORM applicable actions in conjunction with this section.	Standard: Examinee reads and acknowledges the need to use Section 4.5 of OP 2032A to realign CEA #1.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-284-S-1 Revision: 0/1

Task Title: Respond to a 10 Step CEA Misalignment

STEP # 9	Performance: Section 4.5 Bypass CMI Interlocks NOTE 1. This Section may be used to move CEAs in order to clear alarms or continue operations when malfunctions in the alarm or control circuitry exists. 2. When CMI relay actuates, CEDM raise, lower, and lift signals to CPPs are overridden. If this happens during CEA movement, the CEA could slip and result in misalignment. 3. When CMI is bypassed, PDIL alarm circuit and CEA Deviation circuit are both inoperable. 4. Prior to bypassing any interlock, permission must be obtained from SM/US.	Standard: Examinee refers to Section 4.5, reads and acknowledges the Note.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When asked, state that Examinee has permission to bypass the CMI for the purpose of realigning CEA #1 with Group 7 and that all applicable Tech Spec have been entered.			
	Comments: Examinee may review Section 4.5 up to step 4.5.7, or in its entirety to be prepared to utilize it in concert with Section 4.2 when withdrawing CEA #1. Either way is acceptable as long as the applicable actions of section 4.5 required to bypass the CMI are executed.			

PERFORMANCE INFORMATION

JPM Number: JPM-284-S-1 Revision: 0/1

Task Title: Respond to a 10 Step CEA Misalignment

STEP # 1 0	Performance:	Standard:	Critical:	Grade
	4.5.1 REQUEST SM/US authorization to bypass CMI.	1. "Inhibit Bypass" pushbutton for Group 7 is pressed and verified lit, and annunciator C-04/BA-19 alarm is acknowledged.	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	S <input type="checkbox"/> U <input type="checkbox"/>
	4.5.2 CHECK annunciator C-04, window BA-18, "CEA MOTION INHIBIT," lit.	2. "CEA Motion Inhibit Bypass" button is pressed and held, button verified lit.		
	4.5.3 Refer To the following and LOG entry in Shift Turnover Log (CMI bypassed): <ul style="list-style-type: none"> • TSAS 3.1.3.1, ACTION b • TSAS 3.1.3.1, ACTION c • TSAS 3.1.3.6, ACTION d 			
	4.5.4 PRESS appropriate <i>group</i> "INHIBIT BYPASS" pushbutton and CHECK the following: <ul style="list-style-type: none"> • Appropriate group red "INHIBIT BYPASS" pushbutton, lit • Annunciator C-04, window BA-19, "CEA MOTION INHIBIT BYP," lit 	<i>Note: When the CMI for Group 7 is bypassed, the CEA MOTION INHIBIT annunciator will "reset". This is a quirk in the system design and totally expected. The Examinee may or may not explain.</i>		
	4.5.5 PRESS and HOLD <i>system</i> "CEA MOTION INHIBIT BYPASS" pushbutton.			
	4.5.6 CHECK <i>system</i> red "CEA MOTION INHIBIT BYPASS," lit.			
Cue: If not already done, state that Examinee has permission to bypass the CMI for the purpose of realigning CEA #1 with Group 7 and that all applicable Tech Spec have been entered.				
Comments: It is not necessary for the RO to personally address the applicable TSAS that are affected when bypassing the CMI. If the Examinee attempts to do so, state that the US will address them and the RO is to focus on correcting the CEA misalignment.				

PERFORMANCE INFORMATION

JPM Number: JPM-284-S-1 Revision: 0/1

Task Title: Respond to a 10 Step CEA Misalignment

STEP # 1 1	<p>Performance:</p> <p>4.5.7 Using applicable Section and PERFORM necessary actions to operate CEA(s):</p> <ul style="list-style-type: none">• IF operating in Manual Individual mode, Section 4.2• IF operating in Manual Group mode, Section 4.3• IF operating in Manual Sequential mode, Section 4.4 <p>NOTE CMI should remain bypassed for at least three seconds after CEA motion is stopped to allow CPP operations to be completed.</p> <p>4.5.8 WHEN CEA motion has been stopped for at least three seconds, RELEASE <i>system</i> "CEA MOTION INHIBIT BYPASS" pushbutton.</p>	<p>Standard:</p> <p>Based on the guidance of step 4.5.7, Examinee returns to Section 4.2 of OP 2302A, if not being used in concert with Section 4.5.</p> <p>Examinee may review the Note proceeding step 4.5.8 at this time, or wait until returning to this section of the procedure after the CEA is realigned.</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-284-S-1** Revision: **0/1**

Task Title: **Respond to a 10 Step CEA Misalignment**

STEP # 1 2	Performance: Section 4.2 CEA Operation in Manual Individual Mode	Standard: 1. “MI” button pressed and light verified lit. 2. Group 7 “Group Select” button pressed and verified lit. 3. CEA #1 button pressed and verified lit.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	4.2.2 PRESS “MANUAL INDIVIDUAL, MI” pushbutton and CHECK light, lit.			
	4.2.3 SELECT applicable group for CEA to be moved on one of the following scales (“CEAPDS MONITOR”): <ul style="list-style-type: none">• “FULL RANGE”• “+/- 15”			
	4.2.4 PRESS applicable “GROUP SELECTION” pushbutton for CEA to be moved and CHECK light, lit.			
	4.2.5 PRESS “INDIVIDUAL CEA SELECTION” pushbutton for CEA to be moved and CHECK light, lit.			
	4.2.6 MONITOR CEA movement on the following: <ul style="list-style-type: none">• “CEAPDS MONITOR”• PPC (desired display)• Core mimic			
Cue:				
Comments: It is not critical to monitor the Core Mimic for CEA motion until the CEA reaches the fully withdrawn position.				

PERFORMANCE INFORMATION

JPM Number: JPM-284-S-1 Revision: 0/1

Task Title: Respond to a 10 Step CEA Misalignment

STEP # 13	<p>Performance:</p> <p>4.2.7 WHEN desired to initiate CEA movement, PERFORM applicable action:</p> <ul style="list-style-type: none"> • IF desired to insert CEA, PLACE and HOLD CEA control switch to “INSERT.” • IF desired to withdraw CEA, PLACE and HOLD CEA control switch to “WITHDRAW.” <p>4.2.8 WHEN movement of selected CEA is <i>no</i> longer desired, <i>slowly</i> RELEASE CEA control switch and CHECK CEA movement has stopped.</p>	<p>Standard:</p> <ol style="list-style-type: none"> 1. Examinee moves the CEA control switch to the “withdraw” position and monitors CEA movement. 2. CEA motion is stopped when CEA #1 is aligned with the rest of Group 7 CEAs. 	<p>Critical:</p> <p>Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade</p> <p>S <input type="checkbox"/> U <input type="checkbox"/></p>
Cue: If stated, US acknowledges the restoration of CEA alignment.				
Comments:				
STEP # 14	<p>Performance:</p> <p>Section 4.5 Bypass CMI Interlocks</p> <p>NOTE</p> <p>CMI should remain bypassed for at least three seconds after CEA motion is stopped to allow CPP operations to be completed.</p> <p>4.5.8 WHEN CEA motion has been stopped for at least three seconds, RELEASE <i>system</i> “CEA MOTION INHIBIT BYPASS” pushbutton.</p>	<p>Standard:</p> <p>Examinee may have already reviewed this Note and step 4.5.8, performing it immediately after releasing the CEA control switch.</p> <p>Examinee <i>may</i> verify the CEA Motion Inhibit Bypass button light goes out at this time.</p>	<p>Critical:</p> <p>Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade</p> <p>S <input type="checkbox"/> U <input type="checkbox"/></p>
Cue:				
Comments:				

PERFORMANCE INFORMATION

JPM Number: JPM-284-S-1 Revision: 0/1

Task Title: Respond to a 10 Step CEA Misalignment

STEP # 15	Performance: 4.5.9 CHECK <i>system</i> red “CEA MOTION INHIBIT BYPASS,” light <i>not</i> lit. 4.5.10 PRESS appropriate <i>group</i> “INHIBIT BYPASS” pushbutton and CHECK the following: <ul style="list-style-type: none"> • Appropriate <i>group</i> red “INHIBIT BYPASS” button, <i>not</i> lit • Annunciator C---04, window BA---19, “CEA MOTION INHIBIT BYP,” <i>not</i> lit 4.5.11 IF CMI is <i>no</i> longer required to be bypassed, LOG exit of the following in Shift Turnover Log (CMI <i>not</i> bypassed): <ul style="list-style-type: none"> • TSAS 3.1.3.1, ACTION b • TSAS 3.1.3.1, ACTION c • TSAS 3.1.3.6, ACTION d 	Standard: Examinee performs the following: <ol style="list-style-type: none"> 1. Verifies CEA Motion Inhibit Bypass button not lit when released. 2. Inhibit Bypass button is pressed, button is verified not lit and annunciator C-04/BA-19 is verified cleared. 3. US is informed of ability to log out of TSAS: <ul style="list-style-type: none"> • 3.1.3.1, ACTION b • 3.1.3.1, ACTION c • 3.1.3.6, ACTION d 	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: The JPM is complete once CEA #1 has been realigned with the rest of Group 7 and the CMI circuit is no longer bypassed.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-284-S-1

Revision: 0/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	20	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-284-S-1 Revision: 0/1

Initial Conditions: The plant is stable at 100 % power, about to commence a down power to 55%.
The crew has entered AOP 2575, Rapid Downpower, and has completed steps to 3.3, Forcing Pressurizer Sprays.
The BOP is standing by to reduce turbine load.

Initiating Cues: You are the RO.
Insert Group 7 rods 10 steps in accordance with step 3.4 of AOP 2575.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Actuation Tests of Various ESF Components

JPM Number: JPM 243 Revision: 0

Initiated:

David J. Jacobs 07/14/2014
Developer Date

Reviewed:

Doug M. Funk 07/14/2014
Technical Reviewer Date

Approved:

Mike J. Cote 07/17/2014
Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
07/14/2014	New JPM for Audit Exam ILT 2013-2014	0
08/15/2016	Incorporated NRC comments	0/1

JPM WORKSHEET

Facility: **Millstone Unit 2** Examinee: _____

JPM Number: **JPM 243** Revision: **0/1**

Task Title: **Actuation Test ESF Components**

System: Engineered Safety Features Actuation System

Time Critical Task: () YES (X) NO

Validated Time (minutes): 30

Task Number(s): NUTIMS 013-01-002

Applicable To: SRO X STA _____ RO X PEO _____

K/A Number: 013 A4.03 K/A Rating: 4.5 / 4.7

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: At the completion of the JPM the Examinee will have Tested an Engineered Safety Features Actuation System Actuation Module AM518 per SP 2604T “Actuation Tests of Various ESF Components”

Required Materials: SP 2604T “Actuation Tests of Various ESF Components” Section 4.2 AM518
(procedures, equipment, etc.) MP-PROC-OPS-SP 2604T-001

General References: SP 2604T “Actuation Tests of Various ESF Components”
Technical Specifications

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: JPM 243

Revision : 0/1

Initial Conditions: The Plant is operating at 100% power with the following conditions:

- Chilled Water System is in service and aligned per OP 2330C
- Chiller X-169A and X-169B aligned for Standby Operations

Initiating Cues: You are directed to perform a test of Actuation Module AM518.
Perform SP 2604T Section 4.2 for Actuation Module AM518
Record data on SP 2604T-001
All Alarms for this activity will be addressed by the Reactor Operator

Simulator Requirements: 100% IC
Following Overrides for F-54A DC Switchgear Room Fan to OFF:

- CHHS8871_1 --- INSERT NR (Not Red Light)
- CHHS8871_2 --- INSERT G (Green Light Lit)
- 11A1S5 DC SWGR Fan-54A STOP

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM 243 Revision: 0/1

Task Title: Actuation Tests of Various ESF Components

START TIME: _____

STEP # 1	Performance: 1. Refer To OP 2330C, “Chilled Water System,” and ENSURE vital chiller, X-169A is aligned for standby operation AND X-169B is <i>not</i> in operation.	Standard: Examinee reads the NOTE and refers to the initial conditions for the Chilled Water System status.	Critical: Y [] N [X]	Grade S [] U []
	Cue: ALL Alarms will addressed by the Reactor Operator			
	Comments: Normal alignment Chiller X169A and X169B is not normally running “No Red Light” , but in Standby			
STEP # 2	Performance: 2. STOP “F-54A, A DC SWGR RM A/C FAN,” (C-80).	Standard: Examinee locates panel C-80 and the Handswitch for F-54A and places it to OFF and allows it to spring return to AUTO	Critical: Y [X] N []	Grade S [] U []
	Cue: Insert following Override Digital Outputs for F54A fail to Start after the Handswitch for F-54A is placed in STOP <ul style="list-style-type: none">CHHS8871_1 --- INSERT NR (Not Red Light)CHHS8871_2 --- INSERT G (Green Light Lit)11A1S5 DC SWGR Fan-54A STOP			
	Comments: PPC Alarm will come in when the Handswitch for F-54A is place in OFF and PPC Alarm may clear when the Actuation Module is triggered.			

STEP # 3	Performance: 3. Depending on current condition, PERFORM applicable action: <ul style="list-style-type: none"> IF SIAS is <i>not</i> “Blocked” (*PZR pressure greater than or equal to 1,850 psia), CHECK all “1/5” lights or bistable “TRIP” lights <i>not</i> lit for SIAS, CIAS, EBFAS, CSAS, or SG on Facility 1 and Facility 2 ESAS actuation and sensor cabinets. 	Standard: Examinee checks RCS pressure > 1800 psi and SIAS is not Blocked on C01 or ESF Cabinets. Verifies no 1/5 lights lit on ESF actuation modules.	Critical: Y [] N [X]	Grade S [] U []
	Cue:			
	Comments:			
STEP # 4	Performance: 4. PLACE “S-501, TEST PERMISSIVE SWITCH” in “TEST SIAS.” (ESAS actuation cabinet 5)	Standard: Examinee locates S-501 and places in test SIAS	Critical: Y [X] N []	Grade S [] U []
	Cue:			
	Comments:			
STEP # 5	Performance: 5. PLACE “S-502, TEST GROUP SWITCH” in “GROUP 5.” (ESAS actuation cabinet 5)	Standard: Examinee locates S-502 and places in test Group 5	Critical: Y [X] N []	Grade S [] U []
	Cue:			
	Comments:			
STEP # 6	Performance: 6. PLACE “S-102, TRIP TEST” switch, in “CONT PRESS SIAS/CIAS/EBFAS/MSI.” (ESAS Sensor Cabinet ‘A’)	Standard: Examinee locates S-102 and places in Containment Pressure SIAS/CIAS/EBFAS/MSI	Critical: Y [X] N []	Grade S [] U []
	Cue:			
	Comments:			

STEP # 7	Performance: NOTE <i>When the next step is performed, many “1/5” lights illuminate on the actuation modules.</i> 7. PRESS and HOLD “TRIP TEST” button on bistable, BA101. (ESAS Sensor Cabinet ‘A’)	Standard: Examinee locates and <u>Presses</u> and <u>Holds</u> the trip test button on the correct Bistable BA101.	Critical: Y [X] N []	Grade S [] U []
	Cue:			
	Comments: Most Operators will find and place flag on the correct Actuation Module prior to this step so you are not searching for the AM while holding the trip test button.			
STEP # 8	Performance: 8. CHECK <i>lower</i> “1/5” light lit on actuation module, AM518. (ESAS actuation cabinet 5)	Standard:	Critical: Y [] N [X]	Grade S [] U []
	Cue:			
	Comments: There is a difference in 1/5 lights and Trip Test Buttons between the Simulator and the Plant. In the plant the 1/5 lights and Trip Test Buttons are next to each other. The Simulator has the both 1/5 lights above the two Trip Test Buttons. The procedure Steps as written work for both the Simulator and the Plant.			
STEP # 9	Performance: 9. To initiate start signal, PRESS <i>lower</i> “1/5” “TEST” button on actuation module, AM518. (ESAS actuation cabinet 5)	Standard: Examinee presses the Test #2 Button to initiate equipment on AM518	Critical: Y [X] N []	Grade S [] U []
	Cue:			
	Comments: There is a difference in 1/5 lights and Trip Test Buttons between the Simulator and the Plant. In the plant the 1/5 lights and Trip Test Buttons are next to each other. The Simulator has the both 1/5 lights above the two Trip Test Buttons. The procedure Steps as written work for both the Simulator and the Plant.			
STEP # 10	Performance: 10. RELEASE “TRIP TEST” button on bistable BA101. (ESAS Sensor Cabinet ‘A’)	Standard:	Critical: Y [] N [X]	Grade S [] U []
	Cue:			
	Comments:			

STEP # 1 1	<p>Performance:</p> <p>11. OBSERVE the following and INITIAL for the “Results” on SP 2604T-001:</p> <ul style="list-style-type: none"> • Actuation module, AM518, red “TRIP” light is lit (ESAS actuation cabinet 5) • “F-54A, A DC SWGR RM A/C FAN,” started (C-80) • “P-122A, VITAL CHILL WTR PP,” started (C-80) • “X-169A, VITAL CHILLER,” red indicating light is lit (C-80) • “CHW-3, CHIL WTR SPLY TO DC SWGR A/C X-84A,” is open (C-80) • “CHW-11, CHIL WTR PPS P-122A/123 SPLY HDRS X-TIE,” is closed (C-80) • “CHW-13, CHILL WATER PUMPS (P122A/P123) RETURN HEADER CROSSTIE,” is closed (C-80) 	<p>Standard:</p> <p>Examinee should locate and observe all the listed equipment running with the exception of F-54A “A DC SWGR RM A/C FAN”</p> <p>Examinee should make a report to the Unit Supervisor of the discrepancy.</p> <p><u>Critical action</u> of this step is that the Examinee recognizes F-54A “A DC SWGR RM A/C FAN” fails to Start.</p> <p>Examinee should also identify the LCO for DC Switchgear Operability.</p>	<p>Critical: Y [X] N []</p>	<p>Grade S [] U []</p>
<p>Cue: As the Unit Supervisor acknowledge the Report from the Examinee.</p>				
<p>Comments: Ask the Examinee for any recommendations regarding the Fan and if any LCO should be entered and any T.S.A.S. required. Examinee should recommend continuing with the procedure to restore cooling to the DC Switch gear Room by Starting the Fan and that the DC Switch gear maybe considered in-operable.</p>				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM 243**

Revision: **0**

Date Performed:

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

As necessary, refer to TIG-04 for additional Pass/Fail criteria.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	30	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM 243 Revision: 0/1

Initial Conditions: The Plant is operating at 100% power with the following conditions:

- Chilled Water System is in service and aligned per OP 2330C
- Chiller X-169A and X-169B aligned for Standby Operations

Initiating Cues: You are directed to perform a test of Actuation Module AM518.
Perform SP 2604T Section 4.2 for Actuation Module AM518
Record data on SP 2604T-001
All Alarms for this activity will be addressed by the Reactor Operator

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Pumping the Containment Sump – Faulted

JPM Number: JPM-211 Revision: 1/1

Initiated:

Robert L. Ciminno, Jr.	03/22/2016
Developer	Date

Reviewed:

David J. Jacobs	07/05/2016
Technical Reviewer	Date

Approved:

Supervisor, Nuclear Training
Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
03/22/2016	Updated to the latest format	1/0
08/15/2016	Incorporated NRC comments	1/1

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: JPM-211 Revision: 1/1

Task Title: Pumping the Containment Sump - Faulted

System: Station Sumps and Drains

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): NUTIMS # 092-01-021

Applicable To: SRO _____ STA _____ RO X PEO _____

K/A Number: 103-K1.02 K/A Rating: 3.9/4.1

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: At the completion of this JPM, the examinee has pumped the containment sump until receipt of the "CTMT NORM SUMP DIS PRESS HI" annunciator and then stop the pump(s) and report the outboard isolation valve failed to close.

Required Materials: OP 2336, Station Sumps and Drains
(procedures, equipment, etc.) ARP 2590E-108, (BB-21) "CTMT NORM SUMP DIS PRESS HI"

General References: OP 2336, Section 4.2, Operation of the Containment Sump

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-211**

Revision : **1/1**

Initial Conditions:

The PPC is not available.
Chemistry requires a CTMT sump sample.

Initiating Cues:

You are directed to pump the Containment sump for chemistry sampling.
I will notify you when Chemistry has obtained the required sample and the sump pumps should then be secured.

Simulator Requirements:

Initialize to any IC with:
Containment sump at > 30%
Malfunction **WD02B** to fail SSP-16.2 open.
Malfunction **WD04** (100%, 20 sec.) to clog the CTMT Sump Strainer.
No SIAS or CIAS in progress
Ensure PPC monitors turned OFF
When directed after JPM step 2 Actions, trigger the malfunction WD04 (100%, 30 sec. ramp).

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-211 Revision: 1/1

Task Title: Pumping the Containment Sump – Faulted

START TIME: _____

STEP # 1	Performance: <u>OP 2336, “Station Sumps and Drains”</u> Section 4.2 CAUTION. 1. CTMT sump should be treated as contaminated liquid. 2. Note the frequency of pumping.	Standard: Examinee obtains a copy of OP 2336, “Station Sumps and Drains”, proceeds to Section 4.2 and reads the Caution.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: As necessary, acknowledge the Chemist has been briefed on the need to treat that sampled liquid as contaminated and you (“US”) are tracking the frequency of pumping the CTMT sump.			
	Comments:			
STEP # 2	Performance: NOTE 1. Sump pumps must be manually stopped. 2. Pumping time > 3 minutes could indicate a clogged strainer basket. 3. Normal full range of pumping CTMT sump raises AWDT 6 – 7%.	Standard: Examinee reads and acknowledges the Note.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If questioned, Rad. Waste PEO has stated the in-service AWDT has sufficient room to receive the entire contents of the CTMT sump.			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-211

Revision: 1/1

Task Title: Pumping the Containment Sump – Faulted

STEP # 3	Performance: 4.2.1 IF desired, START containment sump pump “A” or “B” as follows (C-06): a. PLACE “CTMT SUMP PP A” OR “CTMT SUMP PP B,” control switch(es) to “START.”	Standard: Examinee starts one of the CTMT sump pumps.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Wait until both CTMT isolation valves are full open and sump level begins to decrease, then trigger malfunctions WD02B to fail SSP-16.2 open and WD04 (100%, 20 sec. ramp), “CTMT Sump Filter Clogged”.			
	Comments:			
STEP # 4	Performance: 4.2.1 [START containment sump pump]: b. ENSURE the following open: <ul style="list-style-type: none"> • “CTMT SUMP ISOL INBOARD, SSP-16.1” • “CTMT SUMP ISOL OUTBOARD, SSP-16.2” ENSURE associated sump pump starts.	Standard: Examinee verifies SSP-16.1 and SSP-16.2 open.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 5	Performance: 4.2.1 [START containment sump pump]: c. ENSURE associated sump pump starts.	Standard: Examinee verifies applicable sump pump starts.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-211

Revision: 1/1

Task Title: Pumping the Containment Sump – Faulted

STEP # 6	<p>Performance: Annunciator alarm C06/7 BB-21, “CTMT NORM SUMP DIS PRESS HI” <u>ARP 2590E-108:</u> Corrective Actions: 1. IF alarm is in for greater than one minute OR sump level is not lowering as expected PERFORM the following: 1.1. PLACE P33A, “CTMT SUMP PP A,” and P33B, “CTMT SUMP PP B” switches to “STOP” (C_06).</p>	<p>Standard: Examinee observes annunciator C06/7 BB-21 and takes action to stop the containment sump pump(s). The examinee may take immediate action to stop the pump [<i>when level stops going down</i>] and then refer to the ARP or may refer to the ARP and then stop the pump.</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
Cue:				
Comments: The critical part of this step is to secure the CTMT sump pumps. It is not important that the subsequent steps in the ARP be performed as they do not involve the board operators. However, after taking the action to stop the running sump pump, the examinee should return to OP2336A and complete the step for ensuring the sump isolation valves close. If examinee does not state this, question as to what they are monitoring when the pumps are secured.				
STEP # 7	<p>Performance: 4.2.2 IF desired, STOP containment sump pump “A” or “B” as follows(C---06): a. WHEN CTMT sump level has lowered to 10 percent, PLACE “CTMT SUMP PP A” OR “CTMT SUMP PP B,” control switch(es) to “STOP.” b. ENSURE the following closed: • “CTMT SUMP ISOL INBOARD, SSP-16.1” • “CTMT SUMP ISOL OUTBOARD, SSP-16.2”</p>	<p>Standard: Examinee performs the following: 1. Any running sump pump has been stopped. 2. SSP-16.1 is verified closed by its green light only lit. <u>CRITICAL STEP</u> 3. SSP-16.2 is verified to NOT have closed by its red light only lit and the Examinee attempts to manually closed valve.</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
Cue: Booth Operator insert trigger to Allow the Closure of 2-SSP-16.2				
Comments:				

PERFORMANCE INFORMATION

JPM Number: **JPM-211** Revision: **1/1**

Task Title: **Pumping the Containment Sump – Faulted**

STEP # 8	Performance: Examinee reports the status of SSP-16.2 to the US.	Standard: The failure of SSP-16.2 to close is reported to the US.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: As the US, acknowledge the report and state that the applicable Tech. Spec. required actions will be taken.			
	Comments: After this step is completed, the JPM is considered complete.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-211**

Revision: 1/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number:

JPM-211

Revision:

1/1

Initial Conditions:

The PPC is not available.
Chemistry requires a CTMT sump sample.

Initiating Cues:

You are directed to pump the Containment sump for chemistry sampling.
I will notify you when Chemistry has obtained the required sample and the sump pumps should then be secured.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: EOP 2541 Appendix 23-N Energizing Bus 24E from Unit 3

JPM Number: JPM-285-S-6 Revision: 0/1

Initiated:

<u>Robert L. Cimmino, Jr.</u>	<u>07/12/2016</u>
Developer	Date

Reviewed:

<u>Dave Jacobs</u>	<u>07/12/2016</u>
Technical Reviewer	Date

Approved:

<u>Supervisor, Nuclear Training</u>	<u> </u>
	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
03/17/2016	Created from JPM-158 for the 2016 NRC License Exam	0
08/15/2016	Incorporated NRC comments	0/1

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: JPM-285-S-6 Revision: 0/1

Task Title: EOP 2541 Appendix 23-N Energizing Bus 24E from Unit 3

System: 4,160 Volt AC

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 30

Task Number(s): 062-01-356

Applicable To: SRO _____ STA _____ RO X PEO _____

K/A Number: 062-A2.12 K/A Rating: 3.2/3.6

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: Upon energizing bus 24E from Unit 3, the examinee has recognized a fault exists on bus 24E and then de-energizes the bus.

Required Materials: EOP 2541 Appendix 23,
(procedures, equipment, etc.)

- Attachment 23-N "Energizing 4.16 kV Bus 24E From Unit 3
- Attachment 23-U "3 MVA Electrical Limit on Bus 34A/34B"

General References: EOP 2541 Appendix 23

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-285-S-6**

Revision : **0**

Initial Conditions:

The Unit is currently in EOP 2526 Reactor Trip Recovery and the RSST is degrading.

Unit 3 has given permission to power Bus 24E

Initiating Cues:

You are directed to energize Bus 24E from Unit 3 per EOP 2541 Appendix 23 "Restoring Electrical Power".

Simulator Requirements:

- IC-144 or equivalent NOP/NOT
- EDA-2/2153-24E-2 1106 amps

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-285-S-6 Revision: 0/1

Task Title: EOP 2541 Appendix 23-N Energizing Bus 24E from Unit 3

START TIME: _____

STEP # 1	<p>Performance: <u>EOP 2541, Attachment 23-N</u> Energizing 4.16 kV Bus 24E From Unit 3</p> <p>NOTE: The following may indicate a fault on 4.16 kV Bus 24E:</p> <ul style="list-style-type: none"> Annunciator "4KV BUS 24E/34B TIE BKR A505 TRIP" lit (A-9, C08) Annunciator "4KV BUS 24C/E TIE BKR A305 TRIP" lit (B-10, C08) Annunciator "4KV BUS 24D/E TIE BKR A408 TRIP" lit (D-10, C08) <p>1. CHECK that no fault indications are present for 4.16 kV Bus 24E.</p>	<p>Standard:</p> <p>Examinee reads and acknowledges the Note.</p> <p>Checks that no fault indications are present for 4.16 kV bus 24E by verifying associated annunciators are not lit.</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:			
	Comments:			
STEP # 2	<p>Performance:</p> <p>2. ENSURE 4.16 kV Bus 24E "SPLY VOLTS" voltage is indicated.</p>	<p>Standard:</p> <p>Checks bus 24E voltage indicated. (C-08)</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>	<p>Grade S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-285-S-6

Revision: 0/1

Task Title: EOP 2541 Appendix 23-N Energizing Bus 24E from Unit 3

STEP # 3	Performance: 3. ENSURE ALL of the following load breakers on 4.16 kV Bus 24E are open: <ul style="list-style-type: none"> A502, Service Water Pump B A503, HPSI Pump B A504, RBCCW Pump B 	Standard: Ensures all of the following load breakers on 4.16 kV Bus 24E are open: <ul style="list-style-type: none"> A502, Service Water Pump B A503, RBCCW Pump B A504, HPSI Pump B 	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 4	Performance: 4. ENSURE ALL of the following breakers are open: <ul style="list-style-type: none"> A305, "24C/24E TIE BKR, 24C-2T-2" A408, "24D/24E TIE BKR, 24D-2T-2" 	Standard: <ul style="list-style-type: none"> Opens breaker A305, "24C/24E TIE BKR, 24C-2T-2" by placing switch to trip, green light on, red light off. Not "Critical Step" Verifies breaker A408, "24D/24E TIE BKR, 24D-2T-2" racked down (open), green light off, red light off. 	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Booth Operator INSERT Malfunction EDA-2/2153-24E-2 1106 amps			
	Comments:			
STEP # 5	Performance: 5. REQUEST permission from Unit 3 Shift Manager or Unit Supervisor to energize Unit 2 4.16 kV Bus 24E from Unit 3 4.16 kV Bus 34A/34B.	Standard: Verifies initial Conditions	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: as necessary respond as Unit 3 SM/US; "You have permission to energize Bus 24E from Unit 3, Bus 34B".			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-285-S-6**

Revision: **0/1**

Task Title: **EOP 2541 Appendix 23-N Energizing Bus 24E from Unit 3**

STEP # 6	Performance: NOTE: Due to the "Dead Bus" state of 4.16 kV Bus 24E, the synchroscope will not move. 6. PLACE "SYN SEL SW, 34B-24E-2 (A505)" to "ON" and CHECK "INCOMING" voltage indicated.	Standard: Examinee reads and acknowledges the Note. Places "SYN SEL SW, 34B-24E-2 (A505)" to "ON" and checks "INCOMING" voltage indicated. (C-08).	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: If timed out, acknowledges alarm for "Sync Selector Switch On".			
STEP # 7	Performance: 7. CLOSE A505, "24E/34B TIE BKR, 34B-24E-2".	Standard: Closes A505, "24E/34B TIE BKR,34B-24E-2" by placing to close and releasing after red light on, green light off.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When A505 is closed, trigger the I/O that raises 24E bus amp indication if not already done.			
	Comments: The Examinee may or may not OPEN the BREAKER and may not get to JPM steps #8 it is irrelevant if this step is skipped to address the malfunction.			
STEP # 8	Performance: 8. CHECK voltage indicated on "RUNNING" voltmeter. 9. PLACE "SYN SEL SW, 34B-24E-2 (A505)" to "OFF".	Standard: Checks voltage indicated on "RUNNING" voltmeter (C-08). Places "SYN SEL SW, 34B-24E-2 (A505)" to "OFF".	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-285-S-6

Revision: 0/1

Task Title: EOP 2541 Appendix 23-N Energizing Bus 24E from Unit 3

STEP # 9	Performance: 10. Refer To Attachment 23-U, "3 MVA Electrical Limit on Bus 34A/34B," and ENSURE that 3 MVA is not exceeded as loads are restored to service.	Standard: Examinee notes 24E/34B bus amps (C-08) are above the 3MVA limit and recommends OPENING supply breaker 34B-24E-2 (A505).	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
Cue: If at any time Examinee suggests tripping A505, concur and/or direct.				
Comments: Step #10 is listed only because the Examinee may use it when addressing the indications of a problem with 24E. However, its use is <i>not</i> relevant. The JPM is completed when breaker A505 is manually tripped from C-08.				
STEP # 10	Performance: 11. At the direction of the US, REALIGN as necessary for the applicable facility and PLACE the following pumps in service: <ul style="list-style-type: none"> Service Water Pump B HPSI Pump B RBCCW Pump B 	Standard: Places "B" SW pump in service removes "A" SW pump. Examinee notes 24E/34B bus amps (C-08) are above the 3MVA limit and recommends OPENING supply breaker 34B-24E-2 (A505).	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
Cue: If the Examinee did not trip the 24E supply breaker DIRECT placing "B" Service water pump in service Secure "A"SW pump If at any time Examinee suggests tripping A505, concur and/or direct.				
Comments: The only critical part of this step is opening breaker A505. The JPM is completed when breaker A505 is manually tripped from C-08.				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-285-S-6

Revision: 0/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	30	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: **JPM-285-S-6** Revision: **0/1**

Initial Conditions: The Unit is currently in EOP 2526 Reactor Trip Recovery and the RSST is degrading.
Unit 3 has given permission to power Bus 24E

Initiating Cues: You are directed to energize Bus 24E from Unit 3 per EOP 2541 Appendix 23 “Restoring Electrical Power”.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: AOP 2551 SD from Outside the Control Room C21 PZR LVL

JPM Number: JPM-288-S-2 Revision: 0

Initiated:

<u>David J. Jacobs</u>	<u>04/13/2016</u>
Developer	Date

Reviewed:

<u>Robert L. Cimmino</u>	<u>07/05/2016</u>
Technical Reviewer	Date

Approved:

<u>Supervisor, Nuclear Training</u>	<u> </u>
	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
04-13-2016	New JPM ILT Exam 2016	0

JPM WORKSHEET

Facility: MP Unit 2 Examinee: _____

JPM Number: JPM-288-S-2 Revision: 0

Task Title: AOP 2551 SD from Outside the Control Room C21 PZR LVL

System: 011 Pressurizer Level Control System

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): 000-04-155

Applicable To: SRO X STA _____ RO X PEO _____

K/A Number: 011 A1.01 K/A Rating: 3.2/3.1

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: Operator restores and maintains PZR Pressure 2225-2300 psia and Level 35% to 70% from C-21 "Remote Shutdown Panel with a fault on the Controlling Channel of Pressurizer Level.

Required Materials: MP-PROC-OPS-AOP 2551[r009.03] Shutdown from Outside the Control Room
(procedures, equipment, etc.)

General References: MP-PROC-OPS-AOP 2551[r009.03] Shutdown from Outside the Control Room

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-288-S-2**

Revision : **0**

Initial Conditions:

The Unit was tripped from 100% and the Crew has evacuated the Control Room.

The Unit Supervisor has entered AOP 2551 "Shutdown from Outside the Control Room"

The Shift Manager has Classified the Event.

All steps up to and including 3.10 have been completed.

Initiating Cues:

The Unit Supervisor has directed you to perform Steps 3.11 and 3.12

- Maintain Pressurizer Level 35% to 70%
- Maintain Pressurizer Pressure 2225 psia to 2300 psia

Simulator Requirements:

RCS at NOP/NOT

All Charging Pump H/S in NORM after START

Malfunction for PZR Level RX04A (X Ch.) or RX04B (Y Ch.) to 100% with a 60 second Ramp

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-288-S-2 Revision: 0

Task Title: AOP 2551 SD from Outside the Control Room C21 PZR LVL

START TIME: _____

STEP # 1	Performance: Examinee refers to AOP 2551 Shutdown from outside the Control Room Step 3.11 DETERMINE that RCS Inventory Control acceptance criteria are met by performing ALL of the following: a. CHECK that BOTH of the following conditions exist: <ul style="list-style-type: none">• Pressurizer level is 20 to 80%.• Pressurizer level is trending to 35 to 70%.	Standard: Examinee should review the controllers that are available at C-21 to control PZR level. <ul style="list-style-type: none">• Letdown flow controller HIC-110 manual• Charging Pumps in and out of PTL	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Provide a copy of AOP 2551 to the Examinee to review.			
	Comments:			
STEP # 2	Performance: 3.12 DETERMINE RCS Pressure Control acceptance criteria are met by BOTH of the following: <ul style="list-style-type: none">• CHECK that PZR pressure is 1900 to 2350 psia.• CHECK that PZR pressure is trending to 2225 to 2300 psia.	Standard: Examinee should review the controllers that are available at C-21 to control PZR pressure. <ul style="list-style-type: none">• PZR backup Heaters in or out of PTL• Spray Valves in manual	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-288-S-2

Revision: 0

Task Title: AOP 2551 SD from Outside the Control Room C21 PZR LVL

STEP # 3	Performance: Examinee monitors Pressurizer Level and RCS pressure using the indicators on C-21	Standard: Locates and Monitors PZR level and RCS Pressure on C-21	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Direct the Examinee to maintain PZR level between 35 and 70% And PZR pressure 2225 to 2300 psia When the Examinee is ready inform Booth Operator to insert RX04A or RX04B for the controlling channel of PZR level on a 60 second ramp to 100% level			
	Comments:			
STEP # 4	Performance: Examinee observes the following: <ul style="list-style-type: none"> • PZR Level Slowly rising on the Controlling CH. • PZR Level slowly lowering on the NON Controlling CH. • RCS Pressure slowly rising. (BU HTRS ON) • @4% PZR level above program level all Backup Heaters energizing • IF 2 charging pumps were operating 1 shuts off (BU SIG OFF) • Letdown Flow rising HIC-110 	Standard: Examinee States the following: <ul style="list-style-type: none"> • PZR level and Trend • RCS pressure and Trend Examinee performs the following: <ul style="list-style-type: none"> • Takes manual control of HIC-110 and matches Charging and Letdown Flow. • Takes manual control of Spray valves and Initiates Spray to maintain RCS pressure. OR • Places PZR BU Heaters in PTL to maintain RCS pressure. 	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-288-S-2 Revision: 0

Task Title: AOP 2551 SD from Outside the Control Room C21 PZR LVL

STEP # 5	Performance: Examinee Reports RCS Pressure and PZR level in manual control maintaining the following: <ul style="list-style-type: none">• PZR level 35 to 70%• RCS pressure 2225 to 2300 psia	Standard: Examinee manually controls Pressure and Level with in the procedural guidance.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-288-S-2

Revision: 0

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-288-S-2 Revision: 0

Initial Conditions: The Unit was tripped from 100% and the Crew has evacuated the Control Room.
The Unit Supervisor has entered AOP 2551 “Shutdown from Outside the Control Room”
The Shift Manager has Classified the Event.
All steps up to and including 3.10 have been completed.

Initiating Cues: The Unit Supervisor has directed you to perform Steps 3.11 and 3.12

- Maintain Pressurizer Level 35% to 70%
- Maintain Pressurizer Pressure 2225 psia to 2300 psia

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Evaluate RCP Problem

JPM Number: JPM-011 Revision: 10

Initiated:

Robert L. Cimmino, Jr. 05/03/2016
Developer Date

Reviewed:

David J. Jacobs 07/05/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training
Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
06/27/2003	Updated to reflect changes to OP 2301C and new 1500 psid criteria.	8
05/03/2016	Updated to reflect new format and procedure changes.	9
08/12/2016	Revised to NRC comments change to Upper Oil Reservoir LO LVL	10

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: JPM-011 Revision: 10

Task Title: Evaluate RCP Problem

System: RCP

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 20

Task Number(s): NUTIMS #003-01-033

Applicable To: SRO _____ STA _____ RO X PEO _____

K/A Number: 003/A2.01 K/A Rating: 3.5/3.9

K/A Number: 003/A4.04 K/A Rating: 3.1/3.0

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: At the completion of this JPM, examinee has evaluated “A” RCP indications and reported that the upper lube oil level is lowering with conditions meeting trip criteria for the “A” RCP and the examinee will secure the “A” RCP.

Required Materials: AOP 2586 “RCP Malfunctions”
(procedures, equipment, etc.) ARP 2590B-083 (BA-19)

General References: ARP 2590B-083 (BA-19)
AOP 2586 “RCP Malfunctions”
OP 2272C “Plant Operation in MODE 3 prior to Reactor Startup”

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-011**

Revision : **10**

Initial Conditions:

- IF required allow pre-brief of OP 2272C “Plant Operation in MODE 3 prior to Reactor Startup”
- Plant is in MODE 3
- OP 2272C “Plant Operation in MODE 3 prior to Reactor Startup”

Initiating Cues:

- You are the PPO

Simulator Requirements:

- Normal Operating temperature and pressure MODE 3 (IC-144) or equivalent
- Malfunction “RC12A” 2 minute ramp 75% severity.

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking “Y”. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-011 Revision: 10

Task Title: Evaluate RCP Problem

START TIME: _____

STEP # 1	Performance: ARP 2590B-083 Respond to “RCP A UPR OIL RSVR LEVEL LO” annunciator (BB-19 on C-02/3). <u>Automatic Functions</u> 1. None	Standard: Examinee refers to ARP 2590B, BA-19 and reads NO AUTOMATIC FUNCTIONS SETPOINT 60%	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 2	Performance: <u>Corrective Actions</u> CHECK “A” RCP upper reservoir oil level indication and DETERMINE rate of level decrease (C-04R or PPC) (Normal range, 75 to 85%).	Standard: Examinee uses the PPC or the Indications behind C04R switches to determined “A” RCP Upper Oil Reservoir level and notes lowering level.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: It is not necessary for the Examinee to address all alarming annunciators. It is only Critical that the Examinee refer to AOP 2586 and may get there through any one of the alarming annunciators.			
STEP # 3	Performance: 3 IF “A” RCP upper reservoir oil level is lowering, Go To AOP 2586, “RCP Malfunctions.”	Standard: Examinee obtain a copy of and refers to AOP 2586 “RCP Malfunctions.”	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-011

Revision: 10

Task Title: Evaluate RCP Problem

STEP # 4	Performance: <u>AOP 2586, RCP Malfunctions</u> <u>Action/Expected Response</u> NOTE: Foldout page shall be monitored throughout this procedure.	Standard: Examinee transitions to AOP 2586 and performs the following: Examinee opens “foldout page” for monitoring.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 5	Performance: 1. Check RCP Trip Criteria Met.	Standard: Examinee reviews PPC data for Upper Oil Level and acknowledges RCP trip criteria is met or is rapidly approaching the criteria.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 6	Performance: THEN PERFORM the following: a. TRIP Reactor b. TRIP affected RCP c. GO TO EOP 2525, Standard Post Trip Actions.	Standard: Examinee notes Trip Criteria for “A” RCP Upper Oil Reservoir Low Level on the PPC then performs the following: a. Notes the Reactor is already Tripped b. Trips the “A” RCP c. Notes EOP 2525 not required	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: Examinee may finish ANO actions by proceeding to Step 2.c. prior to stating any issues noted with the recorded RCP data.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-011

Revision: 10

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	20	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-011 Revision: 10

Initial Conditions:

- Plant is in MODE 3
- OP 2272C “Plant Operation in MODE 3 prior to Reactor Startup”

Initiating Cues:

- You are the PPO

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to LPSI Pump failure to trip on SRAS Actuation

JPM Number: JPM-230 Revision: 2/1

Initiated:

John W. Riley 08/21/12
Developer Date

Reviewed:

Ken Truesdale 08/22/12
Technical Reviewer Date

Approved:

James V. Grogan 08/23/2012
Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
N/A, 08/04/2008	New JPM with new malfunction for LPSI Pump breaker failed closed alternate path. New malfunction validated on 08/11/2008 with IC-98. PSS.	0
N/A	Revised for new Trex system and selection of new IC #289 for set up.	1
JWR 08/21/2012	Revised JPM to new format. Modified JPM in response to NRC feedback for alternate path JPMs. Added steps in the beginning of JPM to take action to align charging pump suction to the RWST prior to checking SRAS. Per NRC feedback during the 2010 71111.11 inspection a good alternate path JPM has the operator perform actions prior to taking contingency action.	2/0
08/18/2016	Incorporate NRC comments	2/1

JPM WORKSHEET

Facility: MP 2 Examinee: _____

JPM Number: JPM-230 Revision: 2/1

Task Title: Respond to LPSI Pump failure to trip on SRAS Actuation

System: ECCS/ESAS

Time Critical Task: () YES (X) NO

Validated Time (minutes): 15

Task Number(s): NUTIMS #000-05-222

Applicable To: SRO X RO X PEO _____

K/A Number: 013-A4.01 K/A Rating: 4.5/4.8

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: At the completion of this JPM, the examinee has recognized the failure of the LPSI Pump to trip on SRAS and implemented the appropriate contingency measures from EOP-2532, LOCA.

Required Materials: EOP 2532, Loss of Coolant Accident, steps 46 through 48 (Revision 29 change 01)
(procedures, equipment, etc.)

General References: EOP 2532; Loss of Coolant Accident.

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: JPM-230

Revision : 2/1

Initiating Cues: You are the RO perform Steps 46, 47, and 48 “Align Charging pump suction to RWST” Ensure Adequate Suction for SI Pumps” and “SRAS Initiation Criteria”

Initial Conditions:

- The plant experienced a large-break LOCA.
- EOP 2525 was completed and the crew transitioned to EOP 2532.
- BAST levels are lowering and are at approximately 9%.
- SRAS initiation is expected to occur shortly (RWST level at ~ 14% and lowering with full ECCS flow).
- All RCPs are off.

Simulator Requirements: Initialize simulator with the following conditions:

- Reset to IC-289: post-large break LOCA conditions; RWST at ~14% with RWST lowering due to SI flow and BASTs at ~9% and lowering.
- IC-289 inserts malfunction RH14A for the “A” LPSI Pump breaker failure to trip
- Steps of EOP 2532 are complete up to step 46, aligning charging pump suction to the RWST (BAST levels at ~ 9%) with SRAS initiation imminent
- RCPs off
- 2-SI-659/660 are in “OPER”
- CETs are < 345 degrees F
- Rx vessel level < 43%
- Pressurizer level < 20%
- RWST at ~14% (RWST Mass “RHMRWST”)
- BAST levels at ~ 9% (CVLBAT8A, CVLBAT8B)
- SRAS Annunciators C01 C-35 and D-35 not lit.

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking “Y”. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-230 Revision: 2/1

Task Title: Respond to LPSI Pump Failure to Trip on SRAS Actuation

START TIME: _____

STEP # 1	Performance:	Standard:	Critical: Y [X] N []	Grade S [] U []
	46. <u>IF</u> BAST levels are less than 10% <u>OR</u> boration from the BASTs is not required, PERFORM the following:	BAST levels are < 10% and the following actions must be taken to shift the charging pump suction from the BASTs to the RWST.		
	a. OPEN CH-192, RWST isolation.	a. Examinee opens CH-192, RWST isolation. Verifies red light lit and green light not lit.		
	b. ENSURE CH-504, RWST to charging suction is open.	b. Examinee ensures CH-504, RWST to charging suction is open. Verifies red light lit and green light not lit		
	c. STOP BOTH boric acid pumps.	c. Examinee stops both boric acid pumps by taking hand switches to “start” and then to “stop”. Verifies green light lit, red light not lit. Discharge pressure may also be checked to verify pumps are off.		
	Cue:			
	Comments: Pages 38 and 39 of EOP 2532 should be provided to the examinee. Allow the examinee to walk down the boards prior to taking the simulator to run.			

PERFORMANCE INFORMATION

JPM Number: JPM-230 Revision: 2/1
 Task Title: Respond to LPSI Pump Failure to Trip on SRAS Actuation

STEP # 2	Performance:	Standard:	Critical: Y [X] N []	Grade S [] U []
	46. <u>IF</u> BAST levels are less than 10% <u>OR</u> boration from the BASTs is not required, PERFORM the following (Cont):	d. Examinee closes or verifies closed the following valves and verifies their green lights are lit and red lights are not lit:		
	d. ENSURE ALL of the following valves are closed:	<ul style="list-style-type: none"> • CH-514, boric acid isolation. • CH-509, gravity feed isolation from BAST A. • CH-508, gravity feed isolation from BAST B. • CH-501, VCT outlet isolation. • CH-196, VCT makeup bypass. 		
	Cue: The Charging pump suction has been transferred from the BASTs to the RWST.			
	Comments: The examinee should be monitoring the RWST level to be ready to ensure SRAS initiation.			
STEP # 3	Performance:	Standard:	Critical: Y [] N [X]	Grade S [] U []
	47. Check containment sump wide range level rising.	Examinee checks containment sump wide range level rising. Uses level indicator on C101 (L8242)		
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-230 Revision: 2/1
 Task Title: Respond to LPSI Pump Failure to Trip on SRAS Actuation

STEP # 4	Performance:	Standard:	Critical:	Grade
	48. <u>IF</u> break is inside containment <u>AND</u> RWST level is less than or equal to 9%, ENSURE the following:	Examinee identifies SRAS has actuated by SRAS annunciators on C01 (C-35 and D-35).	Y [X] N []	S [] U []
	a. SRAS has actuated. (C01)	Examinee checks that both LPSI pumps have stopped. Examinee should use pump amp meters and red and green hand switch lights to determine status. Examinee identifies that the “B” LPSI pump has stopped and the “A” LPSI pump is still running.	Y [X] N []	S [] U []
	b. BOTH LPSI pumps are stopped.	Examinee takes action to stop the “A” LPSI pump by taking it’s hand switch to start and then to stop. This will not stop the “A” LPSI pump but should be attempted. If stopping the “A” LPSI pump is not attempted it does not constitute a failure of the JPM but should be identified as a weakness.	Y [] N [X]	S [] U []
Cue: At this point, the examinee may dispatch a PEO to open the “A” LPSI Pump breaker locally. Wait 2-3 minutes and report the breaker did not open when attempted locally				
Comments:				

PERFORMANCE INFORMATION

JPM Number: JPM-230 Revision: 2/1
 Task Title: Respond to LPSI Pump Failure to Trip on SRAS Actuation

STEP #5	Performance:	Standard:	Critical:	Grade
	48.b.1 IF LPSI pumps cannot be stopped, PERFORM the following:	Examinee determines that BOTH LPSI pumps are not stopped and goes to contingency action 48.b.1.	Y [] N [X]	S [] U []
	1. CLOSE SI-635, LPSI injection valve.	Examinee closes SI-635, LPSI injection valve. Verifies valve closed by green light lit and red light not lit. Should also verify flow at zero gpm on associated flow meter.	Y [X] N []	S [] U []
	2. ENSURE TWO of the following valves are fully closed and only ONE of the valves is fully open: <ul style="list-style-type: none"> • SI-615, LPSI injection valve • SI-625, LPSI injection valve • SI-645, LPSI injection valve 	Examinee closes TWO of the other three LPSI injection valves. Closes two of the following: SI-615, SI-625, and/or SI-645. Verifies valves closed by green light lit and red light not lit.	Y [X] N []	S [] U []
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: _____ JPM-230 _____

Revision: _____ 2/1 _____

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.
As necessary, refer to TIG-04 for additional Pass/Fail criteria.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-230 Revision: 2/1

Initiating Cues: You are the RO perform Steps 46, 47, and 48 “Align Charging pump suction to RWST” Ensure Adequate Suction for SI Pumps” and “SRAS Initiation Criteria”

Initial Conditions:

- The plant experienced a large-break LOCA.
- EOP 2525 was completed and the crew transitioned to EOP 2532.
- BAST levels are lowering and are at approximately 9%.
- SRAS initiation is expected to occur shortly (RWST level at ~ 14% and lowering with full ECCS flow).
- All RCPs are off.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: EOP 2541 App. 26 EDG Operations Low Oil pressure

JPM Number: JPM-287-C-6 Revision: 0/1

Initiated:

David J. Jacobs 04/29/2016
Developer Date

Reviewed:

Robert L. Cimmino 07/05/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
04/29/2016	New JPM for 2016 NRC ILT Exam	0
08/12/2016	Incorporate NRC comments	0/1

JPM WORKSHEET

Facility: MP Unit 2 Examinee: _____

JPM Number: JPM-287-C-6 Revision: 0/1

Task Title: EOP 2541 App. 26 EDG Operations Low Oil pressure

System: 064 Emergency Diesel Generators

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 25

Task Number(s): 064-010-075

Applicable To: SRO X STA _____ RO X PEO X

K/A Number: A 1.01 K/A Rating: 3.0 / 3.1

Method of Testing: Simulated Performance: X Actual Performance: _____

Location: Classroom: _____ Simulator: _____ In-Plant: X

Task Standards: Monitor EDG during operations during Emergency Conditions, Examinee notes the low lube oil pressures and either recommends or trips the EDG

Simulator Requirements: None

General References: MP-PROC-OPS-EOP 2541-APP26[r001.00] EDG Operations
MP-PROC-OPS-ARP 2591A-002[r001.00] C-38 Alarm Response
MP-PROC-OPS-ARP 2591B-002[r006.00] C-39 Alarm Response

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-287-C-6**

Revision : **0/1**

Initial Conditions:

The Reactor Tripped from 100% power due to a loss of the Grid.
Both Emergency Diesels are running aligned to their respective Buses.
The Crew is performing EOP 2528 Loss of Offsite Power.

Initiating Cues:

You have been directed to perform EOP 2541 Standard Appendix 26
“Emergency Diesel Operation” and locally check diesel operation.

Required Materials:

(procedures, equipment,
etc.)

MP-PROC-OPS-EOP 2541-APP26[r001.00] EDG Operations

MP-PROC-OPS-ARP 2591A-033[r001.04] C-38 Alarm Response

MP-PROC-OPS-ARP 2591B-002[r006.00] C-39 Alarm Response

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking “Y”. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-287-C-6 Revision: 0/1

Task Title: EOP 2541 App. 26 EDG Operations Low Oil pressure

START TIME: _____

STEP # 1	Performance: EOP 2541-APP26 Step #1 OBSERVE EDG alarms. (C-38, C-39)	Standard: Examinee Reviews the Appendix	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Provide Examinee with a copy of EOP 2541-APP26			
	Comments:			
STEP # 2	Performance: EOP 2541-APP26 Step #2 RESET and ACKNOWLEDGE the alarms.	Standard: The Examinee presses the Reset then Acknowledge button on C-38 or C-39 NOTEs that the C-38 / C-39 B-1 “LUBE OIL PRESSURE LOW” Alarm remains lit	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: After the Examinee states that they press the Acknowledge and the Reset Button, Provide feedback that “LUBE OIL PRESSURE LOW” B-1 Alarm remains lit.			
	Comments:			
STEP # 3	Performance: EOP 2541-APP26 Step #3 NOTIFY the Control Room of alarm panel status.	Standard: The Examinee calls the Control Room and reports C-38 or C-39 B-1 “LUBE OIL PRESSURE LOW” Alarm remains lit	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Acknowledges as Control room “Understand Low Lube Oil Pressure Alarm is in, Perform local Alarm Response Panel Procedure”.			
	Comments:			
STEP # 4	Performance: Reviews the Alarm Response for B-1 ARP 2591A/B-002	Standard: Examinee removes and obtains the ARP for the Low Lube Oil Pressure Alarm	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Hand the Examinee a copy of ARP 2591A or B -002 for the corresponding EDG			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-287-C-6 Revision: 0/1

Task Title: EOP 2541 App. 26 EDG Operations Low Oil pressure

STEP # 5	Performance: Reviews the ARP for Set Points, Automatic Functions and Corrective Actions	Standard: Examinee notes the Lube Oil Pressure Setpoints and the Automatic Functions	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 6	Performance: CHECK oil sump level meets one of the following: IF DG is operating, between “ADD OIL” and “FULL” mark on dipstick	Standard: Examinee goes to the north side of the EDG and locates the Dipstick and states they would unscrew counter clockwise and remove the dipstick checking oil level	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Inform the Examinee oil level is half way between the “ADD” and “FULL” mark on the dipstick			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: JPM-287-C-6

Revision: 0/1

Task Title: EOP 2541 App. 26 EDG Operations Low Oil pressure

STEP # 7	<p>Performance:</p> <p>IF DG is operating, OBSERVE the following:</p> <ul style="list-style-type: none"> Pressure indicated on PI-8755/8757 (engine skid) (normally 30 to 40 psig). Upstream and downstream lube oil filter pressure indicated on PI-8759/8760 (normally 62 to 72 psig) Upstream and downstream lube oil strainer pressure indicated on PI-8765/8766 (normally 45 to 60 psig) 	<p>Standard:</p> <p>Examinee goes to the EDG Gage Board northeast side of the EDG and observes PI-8755 / 8757 reads 10 psig.</p> <p>Examinee goes to the front of the EDG skid and turns selector handle for PI-8759 / 8760 to upstream and reads 10 psig and turns selector handle to downstream reads 8 psig</p> <p>Examinee goes to the Southside of the EDG skid and turns selector handle for PI-8765 / 8766 to upstream and reads 10 psig and turns selector handle to downstream reads 8 psig</p>	<p>Critical:</p> <p>Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade</p> <p>S <input type="checkbox"/> U <input type="checkbox"/></p>
<p>Cue:</p> <p>When the Examinee examines the lube oil gages provide the following:</p> <ul style="list-style-type: none"> PI-8755 reads 10 psig PI-8759 reads upstream 10 psig and downstream 8 psig PI-8765 reads upstream 10 psig and downstream 8 psig 				
<p>Comments:</p>				
STEP # 8	<p>Performance:</p> <p>The Examinee NOTEs that pressure indications read less than 10 psig and are less than require for operations.</p>	<p>Standard:</p> <p>Examinee recommends to the Control Room the need to trip the EDG or Manually Trips the EDG by Depressing the Fuel Rack Trip or Tripping or isolating the Fuel Supply.</p>	<p>Critical:</p> <p>Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Grade</p> <p>S <input type="checkbox"/> U <input type="checkbox"/></p>
<p>Cue:</p> <p>Acknowledge Report as Control room and then inform examinee that the EDG Trip and the RPMS are reducing.</p>				
<p>Comments:</p> <p>IF the Examinee attempts to trip the EDG using the Trip Button on C-38 / 39 the EDG does not TRIP, must Trip the EDG from the fuel Rack or isolation of Fuel.</p> <p>If the Examinee Trips the EDG this concludes the JPM or JPM continues step #11 if the Examinee fails to locally trip the EDG.</p>				

PERFORMANCE INFORMATION

JPM Number: JPM-287-C-6

Revision: 0/1

Task Title: EOP 2541 App. 26 EDG Operations Low Oil pressure

STEP #9	Performance: Visually INSPECT system for oil leakage or broken oil lines.	Standard: Examinee walks around the EDG looking for oil leaks.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: No Oil Leaking			
	Comments: Reason for the Low Lube Oil pressure is the Engine Driven Oil Pump shaft sheared.			
STEP #10	Performance: WHEN alarming condition is clear, PRESS "ALARM RESET" button (engine skid).	Standard: Examinee attempts to reset alarms on C-38 / C-39	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Alarms do not reset			
	Comments:			
STEP #11	Performance: SUBMIT CR.	Standard: Examinee state they would submit a CR	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP #12	Performance: Refer To Technical Specification LCOs, 3.8.1.1 and 3.8.1.2, and DETERMINE applicability.	Standard: States that the EDG is NOT OPERABLE	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-287-C-6

Revision: 0/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	25	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	If the Emergency Diesel was started due to a loss of normal power signal, how many lube oil low pressure switches must actuate to trip the diesel?
<u>Answer #1:</u>	If an emergency start signal is present, two of three pressure switches must actuate to trip diesel. ARP 2591A-002 / ARP 2591B-002 “Automatic Functions”
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	When the diesel engine is running what supplies lube oil pressure?
<u>Answer #2:</u>	Engine driven lube oil pump
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-287-C-6 Revision: 0/1

Initial Conditions:

The Reactor Tripped from 100% power due to a loss of the Grid.
Both Emergency Diesels are running aligned to their respective Buses.
The Crew is performing EOP 2528 Loss of Offsite Power.

Initiating Cues:

You have been directed to perform EOP 2541 Standard Appendix 26
“Emergency Diesel Operation” and locally check diesel operation.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Placing CAR RBCCW Valve In Manual Local Operation

JPM Number: JPM-245 Revision: 1/1

Initiated:

Robert L. Cimmino, Jr. 05/04/2016
Developer Date

Reviewed:

David J. Jacobs 07/05/2016
Technical Reviewer Date

Approved:

Supervisor, Nuclear Training Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
05/04/2016	Updated to latest template and procedure revision	1/0
08/11/2016	Incorporate NRC changes	1/1

JPM WORKSHEET

Facility: MP2 Examinee: _____

JPM Number: JPM-245 Revision: 1/1

Task Title: Placing CAR RBCCW Valve In Manual Local Operation.

System: RBCCW

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): NUTIMS # 000-04-104

Applicable To: SRO X STA _____ RO X PEO X

K/A Number: 022/A4.04 K/A Rating: 3.1/3.2

Method of Testing: Simulated Performance: X Actual Performance: _____

Location: Classroom: _____ Simulator: _____ In-Plant: X

Task Standards: At the completion of this JPM, the examinee will have simulated placing an RBCCW valve in manual local operation, and open.

Required Materials: OP 2330A, RBCCW System
(procedures, equipment, etc.)

General References: OP 2330A, Section 4.9

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-245**

Revision : **1/1**

Initial Conditions:

- The plant is in MODE 5.
- “C” CAR Cooler has developed a leak inside Containment.
- The Control Room has attempted to isolate the “C” CAR cooler by closing the inlet and outlet RB valves.
- 2-RB-28.1C “C” CAR COOLER INLET ISOLATION” remains OPEN

Initiating Cues:

- The US has directed you to place 2-RB-28.1C in manual local control and close 2-RB-28.1C “C” CAR COOLER INLET ISOLATION” IAW OP 2330A Section 4.9 “Manual Operation of RBCCW CAR Cooler Valves.”

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking “Y”. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-245

Revision: 1/1

Task Title: Placing CAR RBCCW Valve In Manual Local Ops.

START TIME: _____

STEP # 1	Performance: 4.9.1 PERFORM the following to place any valve in “MANUAL”: a. Using Attachment 3, PERFORM applicable actions for the valve to be placed in manual.	Standard: Examinee obtains procedure OP 2330A Attachment 3	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 2	Performance: Attachment 3 3.1 DOCUMENT valve number and function on top of Attachment. 3.2 IF CAR cooler valve is to be repositioned, ENSURE adequate RBCCW header margin available. 3.3 ENSURE CAR cooler valve, open.	Standard: 1. Records valve number and function on Attachment 3. 2. Examinee determines that repositioning the valve will not have an effect on RBCCW flow with the outlet valves closed. (initial conditions) 3. Examinee either uses Initial Conditions or locates the valve to determine position.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments: 2-RB-28.1C located Aux Building -5 FT East Penetration Room, to locally determine position requires checking the handwheel position in relation to the valve lever arm groove. For example if the handwheel position indicates OPEN and the valve lever arm grooves are aligned then the handwheel position indications are the same as the current valve position.			

PERFORMANCE INFORMATION

JPM Number: JPM-245

Revision: 1/1

Task Title: Placing CAR RBCCW Valve In Manual Local Ops.

STEP # 3	Performance: 3.4 IF in MODE 1, 2, 3, or 4 LOG entry into the following: 3.4.1 TSAS 3.6.3.1 3.4.2 TRM 3.6.3.1 3.5 IF in MODE 1, 2, or 3 (greater than or equal to 1,750 psia), AND valve to be positioned is a CAR cooler inlet valve or a CAR cooler emergency outlet valve, LOG ENTRY in TSAS 3.6.2.1.	Standard: Examinee determines TS and TRM not applicable. Initial Conditions plant is in MODE 5	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:			
	Comments:			
STEP # 4	Performance: 3.6 CLOSE instrument air isolation to air operator.	Standard: Examinee locates instrument air isolation near south wall and rotates handwheel in the clockwise direction.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Valve is at a hard stop			
	Comments:			
STEP # 5	Performance: 3.7 Refer to Table 5 and determine applicable fuseblock.	Standard: Examinee refers to Table 5 and identifies that fuse “CFN” on C-01R .	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Examiner states that the fuse has been removed by Control Room personnel, and that the sound of air release is heard, and the valve is moving to the open position.			
	Comments: The fuse block is located <i>inside</i> the main control boards, which have very limited access while at power.			

PERFORMANCE INFORMATION

JPM Number: **JPM-245**

Revision: **1/1**

Task Title: Placing CAR RBCCW Valve In Manual Local Ops.

STEP # 6	Performance: 3.8 Loosen Allen head screw on lever arm of “air cylinder” operating shaft.	Standard: Examinee indicates that he would use the attached Allen wrench to loosen the screw.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Examiner states that the Allen screw is loose.			
	Comments:			
STEP # 7	Performance: 3.9 REMOVE fuseblock for valve being placed in “MANUAL” (C-01R).	Standard: Examinees states they would call the Control Room to remove Fuse Block “CFN”	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Respond as the Control Room “Fuse Block CFN is removed from C01R”			
	Comments:			
STEP # 8	Performance: 3.10 Operate the manual handwheel to align the manual operator shaft to valve stem for the lever arm insertion.	Standard: Examinee states that he would move the manual handwheel to align the shaft.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Examiner states that the shafts are now aligned.			
	Comments:			
STEP # 9	Performance: 3.11 Loosen Allen screw on lever arm of “Manual” operating shaft and Engage arm.	Standard: Examinee states that he must access the area under the valve and loosen the allen screw. He then would engage the lever arm for the manual operator.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Examiner states that the lever arm is engaged.			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-245**

Revision: **1/1**

Task Title: Placing CAR RBCCW Valve In Manual Local Ops.

STEP # 1 0	Performance: 3.12 Tighten the Allen screw for the manual lever arm.	Standard: Examinee states that he would turn Allen screw to tighten the lever arm for the manual handwheel.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Examiner states that the Allen screw is tight.			
	Comments:			
STEP # 1 1	Performance: 3.13 To prevent inadvertent engagement of lever arm and air operating shaft, PERFORM the following: 3.13.1 DISENGAGE lever arm from air cylinder shaft and HOLD in “DISENGAGED” position. 3.13.2 ROTATE Allen head screw <i>clockwise</i> until it maintains lever arm in “DISENGAGED” position. 3.13.3 RELEASE lever arm. 3.13.4 OPERATE handwheel to position valve as directed by SM or US.	Standard: Examinee states that he would move the lever arm out of the way and that he may need to move the manual handwheel to relieve the tension on the arm to allow this. Also states that he would then tighten the Allen screw (clockwise) to prevent the movement of the lever arm. OPERATES VALVE in the REVERSE direction to close valve (COUNTER CLOCKWISE)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Examiner states that the lever arm is disengaged and Allen screw is tight.			
	Comments: After this step is completed, the JPM is considered complete			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-245

Revision: 1/1

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
JPM Question Portion Overall [<i>NLO only</i>]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	
<u>Answer #1:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	
<u>Answer #2:</u>	
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number: JPM-245 Revision: 1/1

Initial Conditions:

- The plant is in MODE 5.
- “C” CAR Cooler has developed a leak inside Containment.
- The Control Room has attempted to isolate the “C” CAR cooler by closing the inlet and outlet RB valves.
- 2-RB-28.1C “C” CAR COOLER INLET ISOLATION” remains OPEN

Initiating Cues:

- The US has directed you to place 2-RB-28.1C in manual local control and close 2-RB-28.1C “C” CAR COOLER INLET ISOLATION” IAW OP 2330A Section 4.9 “Manual Operation of RBCCW CAR Cooler Valves.”

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: EOP 2541 Appendix 34 Turbine Building Sump Alignment

JPM Number: JPM-265 Revision: 0/2

Initiated:

<u>David J. Jacobs</u>	<u>02/14/2012</u>
Developer	Date

Reviewed:

<u>Joseph M. Amarello</u>	<u>02/14/2012</u>
Technical Reviewer	Date

Approved:

<u>Mike J. Cote</u>	<u>02/24/2012</u>
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
06/26/2014 djg	Updated to new format	0/1
06/26/2016 djg	Incorporated NRC comments	0/2

JPM WORKSHEET

Facility: **Millstone Unit 2** Examinee: _____

JPM Number: **JPM-265** Revision: 0/2

Task Title: EOP 2541 Appendix 34 Turbine Building Sump Alignment

System: 2336 Station Sumps and Drains

Time Critical Task: () YES (X) NO

Validated Time (minutes): 15

Task Number(s): NUTIMS 092-01-006

Applicable To: SRO X STA _____ RO X PEO _____

K/A Number: 2.3.11 K/A Rating: 3.8 / 4.3

Method of Testing: Simulated Performance: X Actual Performance: _____

Location: Classroom: _____ Simulator: _____ In-Plant: X

Task Standards: At the completion of this JPM, the examinee has simulated realigning Turbine Building Sumps to CPF.

Required Materials: (procedures, equipment, etc.)

- MP-PROC-OPS-EOP 2541-APP34 Turbine Building Sump Alignment

General References:

- MP-PROC-OPS-EOP 2541-APP34 REV. 000

***** READ TO THE EXAMINEE *****

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: JPM-265

Revision : 0/2

Initial Conditions:

- The Unit has been Manually Tripped due to a Steam Generator Tube Rupture approximately 1 hour ago.
- All Turbine building sumps were placed in off per AOP 2569 Steam Generator Tube Leak.

Initiating Cues:

- The Balance of Plant Operator has directed you to perform EOP 2541 Appendix 34 and pump the Turbine Building East Condenser pit sump to the on service CPF TK-10 or 11.

Simulator Requirements: N/A

***** NOTES TO TASK PERFORMANCE EVALUATOR *****

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: JPM-265 Revision: 0/2

Task Title: EOP 2541 Appendix 34 Turbine Building Sump Alignment

START TIME: _____

STEP # 1	Performance: 1. ENSURE BOTH of the following for the in-service CPF tank: (TK-10 or TK-11) <ul style="list-style-type: none"> Adequate tank volume exists to receive influent. The tank is not being discharged 	Standard: The examinee Verifies the following: <ul style="list-style-type: none"> TK-10 or TK-11 levels on panel "2CND-PNLCDX". Verifies no Discharge Placard for the TK in service to receive TB Sump effluent. 	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: IF REQUIRED inform examinee "ON SERVICE TANK HAS ADEQUATE VOLUME"			
	Comments: Indication for TK-10 and TK-11 on "CPF Condensate Demineralizer Waste Treating Panel", 2CND-PNLCDX and the on service TK is denoted by the switch positions of the INLET VALVES to the TK			
STEP # 2	Performance: 2. UNLOCK and OPEN ONE of the following valves to the in-service CPF tank: <ul style="list-style-type: none"> "AR-81A, CONDENSER PIT SUMP TO TK 10"(CPF) "AR-81B, CONDENSER PIT SUMP TO TK 11" (CPF) 	Standard: Examinee states they would UNLOCK and OPEN either <ul style="list-style-type: none"> "AR-81A, CONDENSER PIT SUMP TO TK 10"(CPF) "AR-81B, CONDENSER PIT SUMP TO TK 11" (CPF) by unlocking and rotating the handwheel in the counter clockwise direction for the on service TK.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Grade S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Valve Stem rising the Valve is at a hard stop			
	Comments: Located by Acid and Caustic Tanks lower level CPF entry into the area is allowed when no chemical handling is in progress			

STEP # 3	Performance: 3. PLACE ALL of the following Turbine Building Sump Pump handswitches in "STOP": <ul style="list-style-type: none"> • Condenser Pit A, "P73A" (West) • Condenser Pit A, "P73B" (West) • Condenser Pit B, "P39A" (East) • Condenser Pit B, "P39B" (East) • Motor Driven Auxiliary SGFP Room, "P125" • Turbine Driven Auxiliary SGFP Room, "P72A" • Turbine Driven Auxiliary SGFP Room, "P72B" 	Standard: Examinee refers to the initial conditions and states that Handswitches are OFF.	Critical: Y [] N [X]	Grade S [] U []
	Cue: Switch is in OFF and Green Light lit for applicable pumps			
	Comments:			
STEP # 4	Performance: 4. CLOSE "SS-25, CONDENSER PIT AND AFW SUMPS TO OIL SEPARATOR #2". (Northeast corner of condenser)	Standard: Examinee locates SS-25, and closes by rotating handwheel in clockwise direction using the chain operator.	Critical: Y [X] N []	Grade S [] U []
	Cue: Valve is at a hard stop.			
	Comments: Located Northeast corner of condenser in the Turbine Building overhead			
STEP # 5	Performance: 5. OPEN "AR-80, TURBINE BUILDING SUMPS TO CPF TK 10/11". (Northeast corner of condenser)	Standard: Examinee locates AR-80, and opens by rotating handwheel in counter clockwise direction using the chain operator.	Critical: Y [X] N []	Grade S [] U []
	Cue: Valve is at a hard stop.			
	Comments: Located Northeast corner of condenser in the Turbine Building overhead			

STEP # 6	Performance: 6. PERFORM the following to align Turbine Building Sumps for automatic operation: a. OBTAIN approval to operate the Turbine Building Sump Pumps in automatic.	Standard: Examinee refers to the initial conditions and states that they turn the switch for the East Condenser pit sump pumps (P39A/B) to Start or Automatic.	Critical: Y [X] N []	Grade S [] U []
	Cue: Select pump Light turns RED, discharge pressure indicated and sump level is lowering			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: JPM-265

Revision: 0/2

Date Performed: _____

Student: _____

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.
As necessary, refer to TIG-04 for additional Pass/Fail criteria.

EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	
Operator Fundamentals:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	
JPM Question Portion Overall [<i>NLO only</i>]:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input type="checkbox"/> N/A	
Attached Question #1		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	
Attached Question #2		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

JPM QUESTIONS

<u>Question #1:</u>	What would be the Major consequence if the Turbine Building Sumps were to over flow and fill the Condenser Pit? Ref. CWS-00-C.R9Chg1
<u>Answer #1:</u>	Circulating Water pumps would trip causing a Reactor Trip if water level exceeded 10” inches above the Floor of the Condenser Pit
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

<u>Question #2:</u>	What guidelines are used to minimize water inputs to the Condenser pit sumps during a Steam Generator Tube Leak event in progress? Ref. AOP 2569 Steam Generator Tube Leak Step 4.4
<u>Answer #2:</u>	a. ENSURE the SJAE after cooler drains are aligned to the condenser. b. AVOID the use of mechanical vacuum pumps. c. AVOID draining any tanks or lines to the condenser pit sumps.
<u>Examinee Response:</u>	
<u>Grade:</u>	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

STUDENT HANDOUT

JPM Number:

JPM-265

Revision:

0/2

Initiating Cues:

- The Balance of Plant Operator has directed you to perform EOP 2541 Appendix 34 and pump the Turbine Building East Condenser pit sump to the on service CPF TK-10 or 11.

Initial Conditions:

- The Unit has been Manually Tripped due to a Steam Generator Tube Rupture approximately 1 hour ago.
- All Turbine building sumps were placed in off per AOP 2569 Steam Generator Tube Leak.