SEG# 2K21 NRC-01 Rev: 0

SITE:	**Millstone Power Station**	
PROGRAM:	**Unit 3 ILT**	
COURSE:	**N/A**	
EXAM TITLE:	**NRC SIM EXAM 1**	**EXAM #: 2K21 NRC-01**
Total Time	**90 Minutes**	

Prepared by:	W.M. Forrestt	Signature on file	5/26/2021
	Printed Name	Developer Signature	Date
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	Printed Name	Operations Supervisor Signature	Date
Approved by:	A. Leone	Signature on file	6/14/2021
	Printed Name	Facility Review Signature	Date

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SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/26/21	Original issue.	0

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SECTIONS LISTED IN ORDER

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SECTION 3

EXAM OVERVIEW

Title: **LOCA OUTSIDE CTMT - ISOLABLE**

1. The plant is at 100% power and at the beginning of core life. Control Rods are in manual for auto circuit repair. 'B' Safety Injection Pump is out of service for emergent maintenance.

   Event 1: 'B' DSM Pump trips requiring an 8% downpower. The crew utilizes Annunciator Response Procedure (ARP) guidance to reduce Reactor Power to 3411 MWth. Because Control Rods are in manual, the RO must manually insert rods.

   Event 2: 'C' Steam Generator (SG) pressure fails high. This causes a SG underfeed event as the Master Speed Controller to slows down both Main Feed Pumps and the 'C' Feed Reg Valve (FRV) modulates closed. The RO implements AOP 3581, *Immediate Actions*, and places Master Speed Controller and 'C' FRV in manual. The US transitions to AOP 3571, *Instrument Failure Response*, to restore feed water control to auto and address the failed instrument.

   Event 3: Vital Instrument Bus (VIAC) 3 de-energizes. With Channel 3 selected for control, the Pressurizer Pressure and Level control systems require manual control. Additionally, normal letdown isolates and needs to be restored. The RO implements AOP 3581, *Immediate Actions*, and places Master Pressure Controller and closes the Charging Line Flow Control Valve. The US transitions to AOP 3564, *Loss of One Protective System Channel*, to regain control of plant systems and address the failed instrument channel.

   Event 4: A tin whisker on circuit card causes a spurious 'B' train Safety Injection. An Intersystem LOCA develops in the ESF Building. The RO must manually trip the Reactor using the load center supply breakers **(Critical Task).** From E-0, a transition to ECA-1.2, *LOCA Outside CTMT* is made. The LOCA is isolable **(Critical Task)** and a transition is made to E-1, *Loss of Reactor or Secondary Coolant.*

   Event 5: Only the 'B' train of Safety Injection (SI) initiates. The RO recognizes that the 'A' train of Safety Injection didn't initiate and he / she manually actuates 'A' train of SI.

   Event 6: RPCCW components fail to auto align on the Safety Injection. Manual re-alignment is necessary.

2. Duration of Exam: 90 minutes

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Facility: Millstone 3 Scenario No.: 2K21 NRC-01 Op-Test No.: 2K21

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: IC-91, 100% Power, Beginning of life, Equilibrium Xe

Turnover:
Control Rods are in manual. The 'B' Safety Injection Pump is out of service for emergent maintenance.

Critical Tasks: 1. Manually trip the Reactor from the Control Room 2. Isolate LOCA outside CTMT

Event No.	Malf. No	Event Type*	Event Description
1	FW17B	US C RO R BOP C	'B' Reheater Drain Pump (DSM Pump) Trips requiring an 8% downpower.
2	RX11G	US I,TS BOP I	'C' SG Pressure fails High requiring manual control of the feed station.
3	ED08C	US C,TS RO C BOP C	Vital 120V Instrument Bus 3 de-energizes (VIAC 3) requiring manual control of systems.
4	RP05B SI06B RP09A/B RP10A/B	ALL M	Tin Whisker causes spurious 'B' train Safety Injection. Intersystem LOCA develops. Transition to ECA-1.2, *LOCA Outside CTMT*. LOCA is isolable and a transition is made to E-1, *Loss of Reactor or Secondary Coolant.*
5	RP07B	RO C	The RO recognizes only one train of Safety Injection initiated and manually actuates 'A' train.
6	RP11H	RO C	RPCCW components fail to auto align on the Safety Injection. Manual re-alignment is necessary.

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

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Transient and Event Checklist (used to complete NRC Form ES-301-5)

	US (target)	**RO (target)**	**BOP (target)**
RX	(1)	**1** (1)	N/A
NOR	(*)	(*)	(*)
I/C	**1, 2, 3** (2)	**3, 5, 6** (2)	**1, 2, 3** (2)
MAJ	**4** (1)	**4** (1)	**4** (1)
TS	**2, 3** (2)	N/A	N/A
# of CT's			

* For an Exam Set, the RO's and Instant SRO's are required one Normal evolution. However, reactivity and normal evolutions may be replaced w/ additional I/C manlfunctions on a one-for-one basis.

Note: If an SRO-I additionally serves in the BOP position, one I/C malfunction can be credited toward the 2 I/C malfunctions required for the ATC position.

Simulator Scenario Quality Checklist (used to complete NRC Form ES-301-4)

Target Quantitative Attributes (Per Scenario; See NUREG 1021 Appendix D)	**Actual**
1. Malfunctions after EOP entry (1–2)	2
2. Abnormal events (2–4) (typically before major event)	3
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2) (exclude E-0)	1
5. EOP contingencies requiring substantive actions (≥ 1 per scenario set)	1
6. Pre-identified critical tasks (≥ 2)	2

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Critical Tasks

TASK DESCRIPTION	TASK #	K/A	BASIS OF SELECTION
Manually trip the Reactor from the Control Room	CT-1	EPE 029-EA1.12 (4.1 / 4.0)	Source: Westinghouse PWROG-14043-NP "ERG Rev. 3 Based Critical Tasks"
Isolate LOCA outside CTMT before transition out of ECA-1.2	CT-32	Westinghouse EPE: LOCA Outside CTMT EA1.2 (3.6 / 3.8)	Source: Westinghouse PWROG-14043-NP "ERG Rev. 3 Based Critical Tasks"

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SECTION 4

EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

INPUT SUMMARY						
RESET SIMULATOR TO IC–91						
VERIFY the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MALFUNCTIONS						
FW17B	MSDT PUMP TRIP (P1B)	1				
RX11G	SG PRESS PT 534 FAIL	2				1300#
ED08C	LOSS OF INSTRUMENT BUS VB3	3				
SI06B	RCS TO SI LOCA (ISOLABLE)	4		60 sec		100%
RP09A	REACTOR MANUAL TRIP SWITCH MB4 FAIL					
RP09B	REACTOR MANUAL TRIP SWITCH MB4 FAIL					
RP10A	AUTOMATIC REACTOR TRIP TRAIN ‘A’ FAIL					
RP10B	AUTOMATIC REACTOR TRIP TRAIN ‘B’ FAIL					
RP05B	SAFETY INJECTION TRAIN ‘B’ ACTUATION	4				
RP11H	AUTO ACT FAIL: RPCCW					
RP07A	SI TRAIN ‘A’ AUTO ACTUATE FAIL					
REMOTE FUNCTIONS						
OVERRIDES						

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INPUT SUMMARY						
RESET SIMULATOR TO IC–91						
VERIFY the following functions:						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
❑ COMPLETE Simulator Setup and Readiness Checklist. ❑ SELECT appropriate IC: **IC-91**, 100% power, BOL. ❑ LOAD and RUN applicable Schedule: N/A (loaded into IC-91) ❑ As necessary, VERIFY the following Initial Malfunctions / I/Os / Remote Functions, as specified on previous '**Input Summary**' page. ❑ When the simulator is ready, PLACE to Run and VERIFY the simulator reflects the following Initial Conditions for the scenario and is stable. ❑ As necessary, REMOVE the following Equipment from service and tag accordingly: ▪ **ENSURE PZR PRESS & LVL CONTROL SELECTED TO CHANNEL 3:** ➢ **PZR LVL CNTL Selected to Ch. 3 - 2** ➢ **PZR RECORD Selected to Ch. 3** ➢ **PZR PRESSURE CNTL Selected to Ch. 3 – 4** ➢ **PZR PRESSURE RECORD Selected to Ch. 3** ▪ **'B' SAFETY INJ. PP: (1) Place control switch in PTL (2) Hang tag on CS** ▪ **ROD CONTROL: (1) Place in MAN (2) Hang tag on CS**		N/A
❑ CONDUCT briefing with evaluators.	**PRE-SCENARIO:** ❑ BRIEF the crew initial plant conditions and provide a shift turnover. ❑ IF this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew. ❑ As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.	
		(All) Walk down control boards and conduct shift briefing.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
EVENT 1, 'B' DSM trips requiring an 8% downpower US (C) / RO (R) / BOP (C)		
General Note(s): 1) **'B' DSM Pump trips requiring an 8% downpower.** The crew utilizes Annunciator Response Procedure (ARP) guidance to reduce Reactor Power to 3411 MWth. Because Control Rods are in manual, the RO must manually insert rods. The only actions necessary to mitigate the event (loss of feed & slight overpower event with colder condensate) is to use load limit and downpower. 2) **BOP uses load limit on turbine insert panel.** The BOP should (with US direction) use load limit and downpower slowly to avoid arming / opening the steam dumps (this would worsen feed transient). If the BOP goes too far on the load limit pot, RIL may be reached. A canned reactivity brief, RE-H-01, addresses this event (all control rods).		
T= When directed by the Lead Examiner: **Trigger 1 (FW17B)**	Crew takes the shift.	**BOP announces 'B' DSM Pump has tripped.**
ARP, MB6B 5-8 "MOIST SEP DRN PP AUTO TRIP / OVERCURRENT"		
	Crew discusses downpower. RO inserts rods in manual to maintain RCS temperature in band. BOP uses load limit to reduce Reactor Power.	**(US) 1. If reactor power is greater than 93.4% (3411 MWth), REDUCE reactor power to less than 93.4% (3411 MWth).**
		(BOP) ADJUST feedwater flow to match steam flow.
IF dispatched as PEO, wait 3 minutes and report: From SWGR: "'B' DSM Pump breaker has overcurrent relay flags actuated." From TB: "There is an acrid smell by the 'B' DSM pump." **T= When directed by the Lead Examiner: PROCEED to EVENT 2.**		**(BOP) Check the following and DETERMINE cause of pump trip:**

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	RO references reactivity plan and uses control rods to adjust AFD (& account for Xenon building in).	**(RO)** IF reactor power was reduced, Refer To "Reactor Engineering Curve and Data Book," reactivity plan RE---H---01 for guidance on positioning control rods for AFD control.
EVENT 2, 'C' Steam Generator (SG) pressure fails high US (I, TS) / BOP (I)		
General Note(s): 1) 'C' Steam Generator (SG) pressure fails high. This causes a SG underfeed event as the Master Speed Controller to slows down both Main Feed Pumps and the 'C' Feed Reg Valve (FRV) modulates closed. The RO implements AOP 3581, *Immediate Actions*, and places Master Speed Controller and 'C' FRV in manual. The US transitions to AOP 3571, *Instrument Failure Response*, to restore feed water control to auto and address the failed instrument.		
T= When directed by the Lead Examiner: **TRIGGER 2 (**RX11G to 1300#)	Crew takes the shift.	**(BOP)** Takes Immediate Actions and places Master Speed Controller and 'C' FRV in manual.
		(US) Focus Brief entry into AOP 3581

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
AOP 3581, *Immediate Actions* (Rev 7)		
	BOP takes manual control of the Master Speed Controller (MSC) and the 'C' FRV.	**(BOP) B. 1 CHECK Steam Generator Narrow Range Level - STABLE AT 50%** **RNO:** As necessary, **PERFORM** any of the following to control Feed Pump differential pressure in normal operating band (program: 40 to 175 psid): • As necessary, **SHIFT** affected SG Feedwater Flow Control to **MAN** and **THROTTLE** affected SG Feedwater Flow Control Valve to maintain SG narrow range level stable between 45% and 55%: • **3FWS-FK530 for SG C** • **PLACE** FW PP MASTER SPEED CNTL (3FWS-SK509A) in manual **AND ADJUST** to maintain D/P.
	Main Feed Pump(s) (MFP) are operating properly.	**(BOP) B. 2 Check Main Feedwater Pump Status:** **a. CHECK** Reactor Power - GREATER THAN 50% **b. CHECK** two Main Feedwater Pumps: **c. CHECK ALL** Running Feedwater Pumps- OPERATING PROPERLY
	Suction Pressure is stable.	**(BOP) B. 3 Check Main Feedwater Pump Suction Pressure:**
	If DP is Hi, 3CNM-MOV78 will be throttled open.	**(BOP) B. 4 CHECK COND DEMIN DP HI (MB6A 2-7) - LIT**
		(BOP) B. 6 CHECK Initiating Event - ANY LISTED INSTRUMENT FAILURE • SG Pressure

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(US) B. 7 GO TO AOP 3571, Instrument Failure Response
AOP 3571, Instrument Failure Response (Rev. 17)		
		(US) Enters Attachment H, SG Pressure Channel Failure
		(BOP) H. 1 CHECK Affected SG Pressure Channel Selected As Input To SGWLC (MSS*PI534A)
		(BOP) H. 2 CHECK Affected Steam Generator Feed Regulating Valve Controller In - MAN (3FWS-FK530)
		(BOP) H. 3 CHECK Feedwater Pump A and B Master Speed Control (3FWS-SK509A) In - MAN
		(BOP) H. 4 REFERRING TO ATTACHMENT U, **RESTORE Feed Pump Differential Pressure To Normal Operating Band**
		(BOP) H.5 RESTORE SG NR Level to 50%
		(BOP) H.6 SELECT Unaffected SG Pressure Channel Input By Selecting Alternate Steam Flow Channel (3MSS-FS532C to Ch. 2).
		(BOP) H.7 CHECK Affected SG NR Level – STABLE AT 50%
		(BOP) H.8 PLACE Affected SG Feed Regulating Valve Controller In AUTO (3FWS-FK530)
		(BOP) H.9 CHECK PP A & B MSTR SPEED CNTL (3FWS-SK509A) Input – WITHIN PLUS OR MINUS 15 PSI OF SETPOINT
		(BOP) H.10 PLACE PP A & B MSTR SPEED CNTL (3FWS-SK509A) In – AUTO

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
IF I&C is requested, report that the technicians will be made available asap. Tripping bistables will not be simulated. **T= When directed by the Lead Examiner: PROCEED to EVENT 3.**	**US enters Tech Specs:** **T/S 3.3.2.b** (ESF Actuation Instrumentation) **FU 1.e & FU 4.d, Action 20A,** 72 hr.	**(US) H. 11 Trip Associated Reactor Protection System Bistable(s)**
EVENT 3, Vital Instrument Bus (VIAC) 3 de-energizes US (C, TS) / RO (C) / BOP (C)		
General Note(s): 1) Vital Instrument Bus (VIAC) 3 de-energizes. With Channel 3 selected for control, the Pressurizer Pressure and Level control systems require manual control. Additionally, normal letdown isolates and needs to be restored. The RO implements AOP 3581, *Immediate Actions*, and places Master Pressure Controller and closes the Charging Line Flow Control Valve. The US transitions to AOP 3564, *Loss of One Protective System Channel*, to regain control of plant systems and address the failed instrument channel. 2) Long Term Effects on PZR level: Without operator action, letdown will isolate (based on 22% PZR Lvl interlock being actuated by a loss of VIAC 3). Additionally, the Charging Line Flow Control Valve, 3CHS-FCV121, will modulate open. This will cause PZR level to rise sharply. By taking immediate operator actions to fully close 3CHS*FCV121, PZR level will rise slower at ~ 0.37% per minute. A Rx Trip signal is generated at 89% PZR Level.		
T= When directed by the Lead Examiner: **TRIGGER 3** (ED08C)	While the RO will place the PZR Master Pressure controller in manual, it will have no impact on the PZR heaters (as they are all tripped on the 22% PZR level signal – brought in will VIAC 3 being de-energized).	**(RO)** Takes Immediate Actions to close 3CHS*FCV121 and places the PZR Master Pressure Controller in manual.
		(US) Focus Brief entry into AOP 3581

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
AOP 3581, *Immediate Actions (*Rev 7)		
	RO reports PZR level and Pressure control are affected and places controllers in manual. RO will close 3CHS-FCV121 here or in second immediate action (G.2)).	**(RO) *G. 1 Check Control System Operation** • **CHECK** Rod Control – OPERATING NORMALLY IN AUTO • **CHECK** PZR Level – OPERATING NORMALLY IN AUTO • **CHECK** PZR Pressure – OPERATING NORMALLY IN AUTO • **CHECK** SG Level – OPERATING NORMALLY IN AUTO **RNO:** a. **PLACE** the affected controller(s) in MANUAL. b. **STABILIZE** plant parameters.
	The letdown orifice isolation valves will have auto closed. RO will fully close 3CHS-FCV121.	**(RO) *G. 2 CHECK Charging And Letdown - IN SERVICE** **RNO:** Simultaneously **PERFORM** the following: • **CLOSE** Letdown Orifice Isolation Valves • **CLOSE** Charging Flow Control Valve, (3CHS-FCV121).
	No signs of flashing.	**(RO) G. 3 CHECK NO Flashing In Letdown**
	US transitions to AOP 3564, step 3.	**(US) G.4 GO TO AOP 3564, Loss Of A Protective Channel, step 3.**
AOP 3564, *Loss of One Protective System Channel* (Rev 13)		
If dispatched as **PEO** to investigate VIAC 3 loss, wait **~ 4 minutes** then **REPORT: "**Inverter conditions appear normal, except that amps are 0." (This is indicative that the fuse downstream of the Manual Bypass Switch has blown.)	COPPS is blocked.	**(RO) 3. Check Cold Overpressure Protection System - BLOCKED**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
If **Electrical Maintenance** is requested (via OMOC), **REPORT** the following after **10 minutes**: "The VIAC Supply FUSE is Blown, but it appears that an actual overcurrent condition existed."	RO defeats channel 3 input into control systems.	**(RO) 4. Defeat The Failed Channel Input** **4h.** Using the table below, **ALIGN** switches to the required position • LOOP TEMP CUTOUT- □T (MB4) - LOOP C (pull out) • LOOP TEMP CUTOUT-Tavg (MB4) - LOOP C (pull out) • PZR LEVEL SEL CNTL (MB4) - CHAN 1-2 • PZR PRES SEL CNTL (MB4) - CHAN 1-2
	RO selects alternate recorder channels and returns affected controllers to AUTO.	**(RO)** **4.k SELECT** an unaffected channel for the following recorders: • PZR Level Recorder (Select switch 3RCS-LS459E) • PZR Pressure Recorder (Select switch 3RCS-PS455G) • OP/OT □T Recorder (Select switch 3RCS-TS411E) **4.l RETURN** affected controllers to AUTO
		(RO) 5 CHECK Normal Letdown - IN SERVICE **RNO: a. CLOSE** the Charging Isolation Valve (3CHS*MV8106) **b.** Using GA-13, **ESTABLISH** normal letdown
GA-13, *Establishing NormalCharging and Letdown (Rev. 3)*		

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(RO) 1. Prepare For Restoration **a. CHECK** Letdown Orifice Isolation Valves – CLOSED • 3CHS*AV8149A • 3CHS*AV8149B • 3CHS*AV8149C **b. CHECK** Letdown Containment Isolation Valves – OPEN • 3CHS*CV8160 AND • 3CHS*CV8152 **c. CHECK** the Letdown Isolation Valves – OPEN • 3RCS*LCV459 AND • 3RCS*LCV460 **RNO OPEN valves** **d. CHECK** steps 1.a, 1.b and 1.c - COMPLETED SUCCESSFULLY
	RO places 3CHS-PK131 in MAN at 50% output.	**(RO) 1.e. PLACE** the Letdown Pressure Controller (3CHS-PK131) in MANUAL AND ADJUST to 50% output
	RO places 3CHS-TK130 in MAN at 60% output.	**(RO) 1.f. PLACE** the Letdown Heat Exchanger Outlet Temperature Controller (3CHS-TK130) in MANUAL AND ADJUST to 60% output

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	RO aligns Charging header as directed by RNO 2a. steps.	**(RO) 2. Align For Letdown** **a. CHECK** valves for normal charging header - OPEN: 3CHS*MV8105 AND 3CHS*MV8106 **RNO a.** **IF** aligning Charging **AND** Letdown desired, **THEN**: 1. **CLOSE** Charging Flow Controller Isolation (3CHS*MV8106). 2. **OPEN** Charging Header Isolation (3CHS*MV8105). 3. **PLACE** Charging Flow Controller (3CHS-FK121) in MANUAL **AND ADJUST** to 33% demand position. 4. **PROCEED TO** step 3.
	RO simultaneously establishes Charging and Letdown.	**(RO) 3. Establish Letdown** a. CHECK normal charging flow - ESTABLISHED **RNO a.1** Simultaneously OPEN the following: • Charging Flow Controller Isolation Valve (3CHS*MV8106) • One Letdown Orifice Isolation Valve (3CHS*AV8149B or C): **RNO a.2** PROCEED TO step 3.c.
		(RO) 3.c. ADJUST Letdown Pressure Controller (3CHS-PK131) to maintain 350 psig AND PLACE in AUTO

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(RO) 3.d. ADJUST the Letdown Heat Exchanger Outlet Temperature Controller (3CHS-TK130) to maintain between 70°F and 115°F AND PLACE in AUTO
	RO adjusts 3CHS-FK121 to a minimum value (no less than 35 gpm – to avoid high letdown temp.) to lower PZR level to setpoint.	**(RO) 3.e. ADJUST** charging flow to obtain desired PZR level
	RO waits for process and level to match and places 3CHS-FK121 in AUTO.	**(RO) 4. Check Pressurizer Level** a. CHECK PZR Level – AT DESIRED LEVEL b. CHECK Pzr Level automatic control-AVAILABLE c. PLACE Charging Flow Controller (3CHS-FK121) in AUTO d. CHECK Head Vent Letdown - IN SERVICE **RNO 4d.** GO TO procedure and step in effect.
***Continuing In…* AOP 3564, *Loss of One Protective System Channel* (Rev 13)**		
		(BOP) 6 CHECK VCT Level (Using Computer Point CHS-L112) - CONTROLLING NORMALLY

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
T= When directed by the Lead Examiner: PROCEED to EVENT 4.	**US enters Tech Specs:** • **TS 3.3.1** (RX TRIP INSTRU.) **FU 17b, Action 8,** 1 hr • **TS 3.3.2.b** (ESF Actuation Instrumentation) **FU 7.d, Action 16,** 1 hr • **TS 3.3.2.b** (ESF Actuation Instrumentation) **FU 2.c & FU 3.b.3, Action 17,** 72 hr • **TS 3.3.2.b** (ESF Actuation Instrumentation) **FU 7.e, Action 18,** 7 days • **TS 3.8.3.1.b 2hrs re-energize bus**	**(US) 7. REFER To The Following Technical Specifications** • TS 3.3.1, Reactor Trip System Instrumentation, for Action 8 (FU 17.b) • TS 3.3.2, ESF Actuation System Instrumentation: Action 16 (FU 7.d) Action 17 (FU 2.c and 3.b.3) Action 18 (FU 7.e) • TS 3.8.3.1 and TS 3.8.3.2, Onsite Power Distribution
EVENT 4, tin whisker on circuit card causes a spurious 'B' train Safety Injection US (M) / RO (M) / BOP (M)		
General Note(s): 1) A tin whisker on circuit card causes a spurious 'B' train Safety Injection. An Intersystem LOCA develops in the ESF Building. The RO must manually trip the Reactor using the load center supply breakers **(Critical Task).** From E-0, a transition to ECA-1.2, *LOCA Outside CTMT* is made. The LOCA is isolable **(Critical Task)** and a transition is made to E-1, *Loss of Reactor or Secondary Coolant.* 2) RO must take actions to initiate SI (Event 5) and align RPCCW Components (Event 6). **Event 5:** Only the 'B' train of Safety Injection (SI) initiates. The RO recognizes that the 'A' train of Safety Injection didn't initiate and he / she manually actuates 'A' train of SI. **Event 6:** RPCCW components fail to auto align on the Safety Injection. Manual re-alignment is necessary.		
T= When directed by the Lead Examiner: **TRIGGER 4** (RP05B, SI06B)		The crew recognizes a Safety Injection has been received and the Reactor hasn't tripped.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
E-0, *REACTOR TRIP OR SAFETY INJECTION (Rev. 35)*		
	BOP takes actions to trip the Reactor using load center supply breakers 32B and 32N.	**(RO / BOP) 1 * Check Reactor Trip** • **CHECK** Reactor Trip and Bypass Breakers – OPEN • **CHECK** Rod Bottom lights – LIT • **CHECK** Neutron Flux – DECREASING **RNO: TRIP** the Reactor. **IF** Reactor will **NOT** trip, **THEN**: a. **TRIP** Bus 32B and 32N.
	BOP verifies that the turbine tripped.	**(BOP) 2 * Check Turbine Trip** **a. CHECK** all Turbine Stop Valves - CLOSED
		(BOP) 3 * Check Power To AC Emergency Busses **3a. CHECK** AC Emergency Busses 34C and 34D - BOTH ENERGIZED **3b.** Open Phase Condition (OPC)- **NONE** EXISTS:
	Event 5: The RO recognizes only one train of SI initiated and manually actuates 'A' train.	**(RO) 4 * Check If SI Is Actuated** **4a. CHECK** SAFETY INJECTION ACTUATION annunciators, (MB4D 1-6 or MB2B 5-9) – LIT **4b.** By observation of ESF Group 2 Status Panel lights, **CHECK** both trains of SI – ACTUATED **RNO:** Manually **INITIATE** SI.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Adverse conditions will not be met here.	**(RO) 5. DETERMINE IF ADVERSE CTMT CONDITIONS EXIST** • Ctmt temperature - GREATER THAN 180°F OR • Ctmt radiation - GREATER THAN 10^5 R/ hr **RNO:** DO **NOT** USE ADVERSE CTMT parameters
	Event 6: RO completes verifications using Att. B. and identifies multiple RPCCW components (see below) didn't auto align. RO opens 3CCP*MOV222-229 (CCP to CAR Fan Chill Water Valves). RO must manually isolate CCP non-safety header valves: 3CCP*AOV10A/19A/10B/19B and 3CCP*AOV194A/197A/194B/197B.	**(RO) 6. Using** ATTACHMENT B**, Actuation Signal Verification, CHECK Equipment Alignment** **B.9 CHECK RPCCW To CAR Fan Cooling Valves In Emergency Mode** **B.10 CHECK CIA** **RNO: a. INITIATE** CIA. b. REPOSITION valves
		(BOP) 7. Check AFW Pumps Running **7a**. **CHECK** MD Pumps – RUNNING **7b. CHECK** Turbine-Driven Pump - RUNNING IF NECESSARY
		(BOP) 8. CHECK AFW Valve Alignment - PROPER EMERGENCY ALIGNMENT
	Adequate heat sink exists.	**(US / BOP) 9. Check Adequate Heat Sink**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	BOP uses GA-26 to establish RCS temperature control.	**(BOP) 10. Check RCS Temperature** **10a.** Using GA-26, **DUMP** steam to control No-Load RCS Temperature - AT 557°F **10b. CHECK** RCS Temperature – AT NO-LOAD VALUE:
	Yes breaker 34A1-2 is closed to an energized bus 34A.	**(BOP) 11. Check Power To SBO Diesel Auxiliaries** **11a. CHECK** any SBO Bus Tie Breaker - CLOSED TO AN ENERGIZED BUS • Bus 34A: 34A1-2 • Bus 34B: 34B1-2 • Bus 24E: A505 (Unit 2)
	Yes - all PZR Valves are verified to be in their proper position.	**(BOP) 12. Check PZR Valves** **12a. CHECK** PORVs – CLOSED **12b. CHECK** normal PZR Spray Valves – CLOSED **12c. CHECK** PORV Block Valves - AT LEAST ONE ENERGIZED VALVE OPEN **12d. CHECK** PORV Block Valves - ALL ENERGIZED VALVES OPEN **12e. CHECK** PZR Safety Valves - CLOSED
		(BOP) 13. Check If RCPs Should Be Stopped

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	BOP verifies that SG's are intact.	**(BOP) 14. Check If SG Secondary Boundaries Are Intact** **14a. CHECK** pressure in all SGs: • **NO** SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER • **NO** SG COMPLETELY DEPRESSURIZED
	BOP verifies SG tubes are intact.	**(BOP) 15. Check If SG Tubes Are Intact** **a. CHECK** Steam Generator levels - **NO** SG LEVEL RISING IN AN UNCONTROLLED MANNER b. **CHECK** trend history and alarm status of radiation monitors
		(RO) 16. Check If RCS Is Intact **CHECK** Ctmt radiation using 3CMS*RE22 (pre-trip) – NORMAL **CHECK** Ctmt radiation using radiation monitoring group histogram (CTMT) – NORMAL **CHECK** Ctmt pressure – NORMAL **CHECK** Ctmt recirculation sump level – NORMAL
	RO identifies that the 'A' Train ESF RHR CUB sump alarm is lit. US makes transition to ECA-1.2.	**(RO) 17. Check For RCS Leakage Outside Containment** **a. CHECK** Auxiliary Building and ESF Building Radiation (radiation monitoring group histograms) b. **CHECK** SUMP LEVEL HI lights (MB1) - **NOT** LIT • ESF RHR CUB ('A' TRAIN) **RNO: GO TO** ECA-1.2, LOCA Outside Containment

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
ECA-1.2, *LOCA Outside Containment* (Rev 10)		
		(RO) 1. CHECK Loss Of RCS Inventory Determined To Be - IN THE AUXILIARY BUILDING **RNO: PROCEED TO** Caution prior to step 3.
		(RO) 3. Check Proper Valve Alignment In ESF Building **a. CHECK** RHR Suction Isolation valves – CLOSED (3RHS*MV8701A, B, C & 8702A, B, C) b. **CHECK** RHR Hot Leg Injection valve (3SIL*MV8840) – CLOSED **c. CHECK** SI Pump Hot Leg Injection valves – CLOSED (3SIH*MV8802A & B)
	The US will be given a choice of three valves to cycle in this step (3SIL*MV8809A, 3SIL*MV8809B, or 3SIH*MV8835). Based on '680 gpm indicated SI flow (wouldn't expect any at current RCS pressure), it's expected that the crew chooses the SI header first. It's possible and acceptable, if the crew chooses an alternate valve first.	**(RO) 4. Identify And Isolate Break** **a. PLACE** the following Power Lockout switches to ON (MB2R): • 3SIH*MV8835 (SI Cold Leg Injection Valve) **b. CLOSE** one of the following: • SI Cold Leg Injection Valve (3SIH*MV8835)

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Once 3SIH*MV8835 is closed, the RCS leak will be isolated and RCS pressure will rise. It's possible that P-19 caused the CHG Cold Leg Injection Valves to OPEN and RCS pressure was already rising. If this is the case, computer trends will still show a definite increase in the rate of RCS pressure rise. In either event, the crew will be able to determine the RCS leak is isolated once 3SIH*MV8835 is closed and the US will make the proper transition to E-1 (below) **[Critical Task]**. **EXAMINER NOTE:** This is the last critical task. End session when Lead Examiner is satisfied.	**(RO) 4.c CHECK** RCS leak - ISOLATED **4 d. PLACE** the following Power Lockout switches to OFF (MB2R): • 3SIH*MV8835 (SI Cold Leg Injection Valve)
		(RO) 5. Check RCS Leak - Isolated
Upon direction of Lead Examiner, PLACE Simulator in FREEZE		**(RO) 6. GO TO E-1, Loss of Reactor Or Secondary Coolant**

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SHIFT TURNOVER REPORT		
DATE-TIME	**PREPARED BY**	**SHIFT**
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1	Rx Power:	100 %
Megawatts:	Thermal: 3641 MWTH	PZR Pressure:	2250 psia
	Electric: 1278 MWe	RCS T-AVE:	587 deg F
RCS Leakage:	Identified: 0.015 gpm	Core Burnup:	150 MWD/MTU
	Unidentified: 0.036 gpm	Protected Train/Facility:	A (Orange)
Date/Time:	Today 0015	Intake:	Green

Active Tracking Records and Action Statements

Equipment/Reason

LCO	Action	Date	Time in LCO	Action Requirement	Time Left
'B' Safety Injection Pump OOS to repair oil leak					
3.5.2.b	**a**	**today**	**2 hours**		**70 hours**

OD Compensatory Actions / Temp Logs

Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC

System	Notes
Rod Control	**Control Rods are in manual for repair of auto circuitry. Rod Control functions in Manual.**
Safety Injection	**'B' Safety Injection Pump is RTO to repair an oil leak on the motor.**

CROSS UNIT SYSTEM STATUS

SURVEILLANCES / EVOLUTIONS IN PROGRESS

	I&C has just completed RAKSET 1 testing.

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)

Current Rod Height	216	
Xenon Trend	Stable	
Current Boron	1504	
Boron Pot Setting / Blend Ratio	4.27 / 17.1 gpm	
Plant Risk	LERF 1.06 ACT: 1 year	CDF 4.15 ACT: 46.9 days

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REFERENCE MATERIAL		
Session No.: NRC-01		
Reference No.	**Revision**	**# Copies**
ARP's		
MB2A 3-8B, 3-9B, 4-3- 4-8B, 4-9B, 5-3		
MB2B 2-9		
MB3A 4-7		
MB3B 5-10		
MB4A 3-4, 4-1, 4-4, 5-1, 5-3, 5-4, 6-3, 6-4, 6-5		
MB4B 6-2, 6-4, 6-6, 6-8, 5-9		
MB4C 1-1, 2-6, 3-3, 3-4, 3-6, 3-7, 4-5, 4-6, 4-7, 5-4, 5-5, 5-7, 6-6		
MB5A 4-4		
MB5B 1-6, 2-4, 2-6, 3-1, 3-3, 3-4, 3-5, 3-6, 3-7, 4-5, 5-6		
MB6A 1-6, 2-7		
MB6B 3-8B, 5-8		
MB8A 1-7		
OTHER – RO Station		
GA-13	**REV. 3**	**N/A**
		N/A
OTHER– BOP Station		
GA-26	**REV. 3**	
US Desk Procedures		
AOP 3571	**REV. 17**	**N/A**
AOP 3581	**REV. 7**	**N/A**
AOP 3564	**REV. 13**	**N/A**
E-0	**REV. 35**	**N/A**
ECA-1.2	**REV. 10**	**N/A**

SEG#_2K21 NRC-02_ Rev:__0

SITE:	**Millstone Power Station**	
PROGRAM:	**Unit 3 ILT**	
COURSE:	**N/A**	
EXAM TITLE:	**NRC SIM EXAM 2**	**EXAM #: 2K21 NRC-02**
Total Time	**90 Minutes**	

Prepared by:	W. M. Forrestt	Signature on file	5/26/2021
	Printed Name	Developer Signature	Date
Reviewed by:	T. Fisher	Signature on file	5/27/2021
	Printed Name	Technical Review Signature	Date
Approved by:	A. Leone	Signature on file	6/16/2021
	Printed Name	Training Supervisor Signature	Date

SEG# 2K21 NRC-02 Rev : 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/26/21	Original issue.	0

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SECTIONS LISTED IN ORDER

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SECTION 3

EXAM OVERVIEW

Title: **Loss of Heat Sink – Main Feed Pump Recovery**

1. The plant is at 100% power and at the middle of core life. The 'B' Quench Spray Pump is tagged out to repair an oil leak. The 'B' Motor Driven Aux Feedwater Pump is tagged out to repair a pump casing flange leak.

Event 1: Controlling Pressurizer Level Channel fails to an intermediate, low value. The RO responds by taking manual control of 3CHS-FK121. The US enters AOP 3571, *Instrument Failure Response*, to restore Charging flow control to auto and address the failed instrument.

Event 2: Turbine Impulse pressure instrument 3MSS-PT505 fails low. The RO responds to the inward rod motion by placing rods in manual in accordance with AOP-3581, *Immediate Actions*. The US transitions to AOP 3571, *Instrument Failure Response*. The BOP selects the unaffected channel of turbine impulse pressure and places the Steam Dump system in the steam pressure mode.

Event 3: Emergency generation load reduction of 160 MWe requested by ISO – NE. ISO – NE directs the crew to begin an Emergency Load Reduction decreasing unit electrical output by 160 MWe. The crew uses AOP 3575, *Rapid Downpower* to accomplish this down power at 3%/min.

Event 4: 'D' RCP develops Hi Hi vibration levels. The crew validates alarm conditions, trips the reactor, and stops the 'D' RCP.

Event 5: A total loss of auxiliary feedwater flow occurs on the Reactor Trip. From E-0, the crew will transition to FR-H.1, *Loss of Heat Sink*. The crew is successful in establishing a heat sink using the Motor Driven Main Feedwater Pump **(Critical Task).**

Event 6: On the Reactor Trip, the BOP must manually run back the turbine **(Critical Task).**

2. Duration of Exam: 90 minutes

SEG# 2K21 NRC-02 Rev : 0

Facility: Millstone 3 Scenario No.: 2K21 NRC-02 Op-Test No.: 2K21

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: IC-90, 100% Power, Middle of life. Equilibrium Xe

Turnover:

The plant is at 100% power and at middle of life. The 'B' Quench Spray Pump is out of service for emergent maintenance. The 'B' Motor Driven Aux Feedwater Pump is tagged out to repair a pump casing flange leak.

Critical Tasks: 1. Manually trip turbine (CT-13) 3. Establish feed to SG(s) before reach bleed and feed (CT-43)

Event No.	Malf. No	Event Type*	Event Description
1	RX10A	US I,TS RO I	Controlling Pressurizer Level Channel fails to an intermediate, low value.
2	RX16A	US TS, I RO I BOP I	Turbine Impulse pressure 3MSS-PT505 fails low. (AOP 3581, AOP 3571)
3		US R RO R BOP N	ISO – NE requested emergency load reduction of 160 MWe.
4	RC24D RC25D	US C RO C	'D' RCP Vibration Hi Hi requires Reactor trip and stopping 'D' RCP.
5	FW18A FW19 RP08A / B	ALL M	No Aux Feed Water is present on Reactor Trip (loss of heat sink). While in FR-H.1, the crew successfully establishes Main Feed to the SG(s)
6	TC03	BOP C	On the Reactor Trip, the Main Turbine doesn't trip automatically or manually. The BOP manually runs back the Turbine.

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

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Transient and Event Checklist (used to complete NRC Form ES-301-5)

	US (target)	**RO (target)**	**BOP (target)**
RX	**3** (1)	**3** (1)	**N/A**
NOR	(*)	(*)	**3** (*)
I/C	**1, 2, 4** (2)	**1, 2, 4** (2)	**2, 6** (2)
MAJ	**5** (1)	**5** (1)	**5** (1)
TS	**1, 2** (2)	**N/A**	**N/A**

* For an Exam Set, the RO's and Instant SRO's are required one Normal evolution. However, reactivity and normal evolutions may be replaced w/ additional I/C manlfunctions on a one-for-one basis.

Note: If an SRO-I additionally serves in the BOP position, one I/C malfunction can be credited toward the 2 I/C malfunctions required for the ATC position.

Simulator Scenario Quality Checklist (used to complete NRC Form ES-301-4)

Target Quantitative Attributes (Per Scenario; See NUREG 1021 Appendix D)	**Actual**
1. Malfunctions after EOP entry (1–2)	1
2. Abnormal events (2–4) (typically before major event)	3
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2) (exclude E-0)	1
5. EOP contingencies requiring substantive actions (≥ 1 per scenario set)	1
6. Pre-identified critical tasks (≥ 2)	2

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Critical Tasks

TASK DESCRIPTION	TASK #	K/A	BASIS OF SELECTION
Manually trip the main turbine before transition out of E-0.	CT-13	MT/G 045-A3.08 (3.3 / 3.5)	Source: Modified CT-13 in Westinghouse PWROG-14043-NP “ERG Rev. 3 Based Critical Tasks”.
Establish feed to SG(s) before Bleed and Feed entry is required	CT-43	RCS 002-A2.04 (4.3 / 4.6)	Source: Modified CT-13 in Westinghouse PWROG-14043-NP “ERG Rev. 3 Based Critical Tasks”.

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SECTION 4

EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

INPUT SUMMARY						
RESET SIMULATOR TO IC–90						
Ensure the following is loaded into IC-90.						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MALFUNCTIONS						
RX10A	PZR LEVEL LT 459 FAIL	1		2 min		45%
RX16A	P-IMP PT505 FAIL	2		30 sec.		0
MB4C-F08	AMSAC TROUBLE/BYPASS	10	60 sec.			ON
RC24D	RCP D FRAME VIBRATION	4				5
RC25D	RCP D HI SHAFT VIBRATION	4				18
RP08A	MSI TRAIN A AUTO ACTUATE FAIL					
RP08B	MSI TRAIN B AUTO ACTUATE FAIL					
TC03	TURBINE FAILS TO TRIP					
FW18A	MDAFW PUMP TRIP (P1A)					
FW19	TDAFW PUMP TRIP	30	15 sec			
MB4C-A04T	SSPS DOOR A OPEN	11			ON	
MB4C-A03T	SSPS A TROUBLE	11	15 sec		ON	
MB4C-A04T	SSPS DOOR A OPEN	11	30 sec		OFF	
MB4C-A04B	SSPS DOOR B OPEN	11	60 sec		ON	

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INPUT SUMMARY						
RESET SIMULATOR TO IC–90						
Ensure the following is loaded into IC-90.						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MB4C-A03B	SSPS B TROUBLE	11	90 sec		ON	
MB4C-A04B	SSPS DOOR B OPEN	11	2 min		OFF	
REMOTE FUNCTIONS						
RPR44	RPS*RAKLOGA (TRN A 213 CARD)	11				OUT
RPR45	RPS*RAKLOGB (TRN B 213 CARD)	11				OUT
OVERRIDES						

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
❑ COMPLETE Simulator Setup and Readiness Checklist. ❑ SELECT appropriate IC: **IC-90**, 100% power, MOL. ❑ LOAD and RUN applicable Schedule: N/A (loaded into IC-90) ❑ LOAD event file: **N/A** ❑ As necessary, VERIFY the following Initial Malfunctions / I/Os / Remote Functions, as specified on previous '**Input Summary**' page. ❑ When the simulator is ready, PLACE to Run and VERIFY the simulator reflects the following Initial Conditions for the scenario and is stable: ▪ **ENSURE the following simulator alignment:** **1) 'A' Train is Protected** ❑ As necessary, REMOVE the following Equipment from service and tag accordingly: ▪ **3QSS-P3B "B Quench Spray Pp": (1) Place control switch in PTL (2) Hang tag on CS** ▪ **3FWA*P1B " B MDAFW Pp": (1) Place control switch in PTL (2) Hang tag on CS**		N/A

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
❑ CONDUCT briefing with evaluators.	**PRE-SCENARIO:** ❑ BRIEF the crew initial plant conditions and provide a shift turnover. ❑ IF this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew. ❑ As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.	
		(All) Walk down control boards and conduct shift briefing.
EVENT 1, Controlling Pressurizer Level Channel fails to an intermediate, low value. **US (TS, I) / RO (I)**		
General Note(s): 1.) Controlling Pressurizer Level Channel fails to an intermediate, low value. The RO responds by taking manual control of 3CHS-FK121. Because Letdown didn't isolate, this will not require immediate operator actions. The US will use guidance in AOP 3571, *Instrument Failure Response*, to restore Charging flow control to auto and address the failed instrument.		
T= Examiner cue **Trigger 1** (RX10A)	US may direct (or RO recommend) placing 3CHS*FCV121 in manual.	RO identifies deviation in Ch. 1 of PZR level.
		(US) Focus Briefs entry into AOP 3571.
AOP 3571, *Instrument Failure Response (Rev. 17)*		
	RO places 3CHS-FK-121 in manual.	**(RO) CHECK One Of The Following PZR Level Controllers in – MAN** • PZR MASTER LVL CONTROL (3RCS-LK459) OR • CHARGING FLOW CONTROL (3CHS-FK-121)

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	RO selects channel 3 – 2 (CNTRL) and channel 3 for recorder.	**RO) C.2. Defeat the failed channel input.** -Pressurizer Level Select-Control 3RCS-LS459D -Pressurizer Level Select-Record 3RCS-LS459E
		(RO) C.3 MAINTAIN PZR Level - IN NORMAL OPERATING BAND
	Letdown didn't auto isolate.	**(RO) C.4 CHECK Letdown - IN SERVICE**
		(RO) **C.5. CHECK PZR Level -** STABLE AT PROGRAM LEVEL **C.6. Restore** PZR Level Control to - AUTOMATIC a. PLACE PZR Level Controller selected in step C.1 to AUTO:
	Heaters are not tripped.	**(RO) C.7. CHECK Pressurizer Heaters - NOT TRIPPED**
	US enters Tech Spec: • **TS 3.3.1** (RX TRIP INSTRU.) **FU 11, Action 6A,** 72 hrs NOTE: TS 3.3.3.5 & 3.3.3.6 are not entered (alternate channels exist)	**(US) C.8. Trip Associated Reactor Protection System Bistable(s)** a. Using Table C.1, PLACE a check mark in the box above the channel required to be tripped b. **REFER TO** the following **Tech Specs** for required actions • TS 3.3.1, Reactor Trip System Instrumentation • TS 3.3.3.5, Remote Shutdown Instrumentation • TS 3.3.3.6, Accident Monitoring Instrumentation
	RO performs bistable lamp check and reports a Rx trip will NOT occur.	**(RO) C.8c. CHECK** existing bistable status to ensure a Reactor trip will NOT occur when the failed channel is tripped

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Channel indication is not normal.	**(RO) C.8d. CHECK** affected channel indication - NOT NORMAL
Proceed to next event when directed by Lead Examiner	**Examiner Note:** Bistables will not be tripped (will move onto next event)	**(US) C8e. REQUEST I&C** use Table C.1 and ATTACHMENT S to perform the following:
	TRM 7.4.1 is N/A	**(US)** **C8g. CHECK** indicator 3RCS*LI459C – FAILED **C8h. REFER TO TRM** Table 7.4.1, Fire Related Safe Shutdown Components, Reactor Coolant System.
		C.9 REQUEST I&C Perform Corrective Maintenance On Failed Instrument.
EVENT 2, Turbine Impulse pressure instrument (3MSS-PT505) fails low. **US (T/S, I) / RO (I) / BOP (I)**		
General Note(s): 1) Malfunction Details: Control rods automatically insert and the RO should place control rods in manual. (in accordance with AOP-3581, *Immediate Action).* The US will enter AOP 3581, confirm immediate actions are complete and transition to AOP 3571, *Instrument Failure Response*. The crew will select the unaffected channel of turbine impulse pressure, place the Steam Dump system in the steam pressure mode and place rod control back in automatic. AMSAC will be placed in 'Bypass'.		
T= Examiner cue **Trigger 2 (RX16A)**	Crew takes the shift.	**(RO)** Performs immediate operator actions while US maintains oversight
AOP 3581, *Immediate Actions (Rev. 7)*		
		(US) 1. Using Appropriate Attachment, PERFORM Immediate Actions – Attachment A "Uncontrolled Rod Motion"

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(RO) **A.1 Check Turbine Runback In Progress** **a. CHECK** the following: • Main Generator MWE - **NOT** AT EXPECTED VALUE • Main Generator MWE – CHANGING **RNO: PERFORM** the following: **RNO a1. PLACE** Rod SEL switch in MAN. **RNO a2. PROCEED TO** step A.2.
		(RO) **A.2 CHECK Rod Motion - STOPPED**
	BOP determines that Turbine Impulse Pressure (PT505) failed low.	**(BOP)** **A.3 CHECK Initiating Event - INSTRUMENT FAILURE** • Tavg • Nuclear Instrument • Turbine Impulse Pressure
		(US) **A.4 GO TO AOP 3571, Instrument Failure Response**
AOP 3571, *Instrument Failure Response (Rev. 17)*		
	The US should proceed to **Attachment G** for a Turbine Impulse Pressure Channel Failure	**(US)** **1. PROCEED TO** the Appropriate Attachment, AND PERFORM Corrective Actions **Instrument Failure Attachment G** Turbine Impulse Pressure Channel Failure
	Rod Control will already be in manual from the RO's immediate actions.	**(RO)** **G.1 CHECK Control Rods in – MAN**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	BOP places one interlock selector switch to OFF.	**(BOP)** **G.2 Check Steam Dump Operation** **a. CHECK** Steam Dump MODE SEL Switch (3MSS-N07) - TAVG MODE **b. PLACE ONE** Steam Dump **Interlock** Selector **Switch – OFF** • INTLK-TR A (MSS-N05) • INTLK-TR B (MSS-N06)
	BOP selects Channel 2.	**(BOP)** **G.3 SELECT** the unaffected channel on 1st STG STM PRESS CH SEL switch (3MSS-PS505Z) • CHAN 1 (3MSS-PI505) • CHAN 2 (3MSS-PI506)
	MB4D 6-6 “Turbine Load rejection ARM C-7” will not be lit.	**(BOP)** **G.4 CHECK** annunciator TURB LOAD REJECTION ARM C-7 – LIT **G.4 RNO PROCEED TO** step G.6.
		(BOP) **G.6 ADJUST** Steam Pressure Controller setpoint to maintain 1092 psig (pot setting of approximately 8.4)
	BOP selects steam pressure mode.	**(BOP)** **G.7 PLACE** the Steam Dump MODE SEL switch (3MSS-N07) in the STM PRESS mode

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	BOP returns the interlock selector switch to ON.	**(BOP)** **G.8 PLACE** Both Steam Dump Interlock Selector Switches – ON • INTLK-TR A (3MSS*N05) • INTLK-TR B (3MSS*N06)
	Yes, the Turbine HOLD light will not be lit.	**(BOP)** **G.9 CHECK** Main Turbine HOLD light - NOT LIT
	As necessary, RO withdraws control rods to restore RCS temperature and places control switch in auto.	**(RO)** **G.10 CHECK** Tavg - Tref error/deviation - LESS THAN +/-1°F **RNO:** a. Adjust Control Rods to restore b. PROCEED to step G.12 and when Tavg is restored, then place Rod Control SEL switch in AUTO.
	RO places rods in Auto.	**(RO)** **PLACE Rod Control SEL Switch In - AUTO**
T = Requested to bypass AMSAC **INSERT Trigger 10 and REPORT** "AMSAC is in bypass".	OP 3350 section 4.3 has the RO or extra operator go to the AMSAC panel (in adjoining Instrument Rack Room) and place AMSAC switch to bypass.	**(US)** **G.12** Using OP 3350, ATWS Mitigation System Actuation Circuitry, **PLACE** AMSAC in Bypass
	US enters: **TRM 7.2.1** (AMSAC**), action 1**, see action	**(US)** **G.13 REFER TO TRM 7.2, Additional Requirement, AMSAC**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
Once lead evaluator is satisfied that Tech Specs have been addressed, move on to Event 3.	**US enters:** **TS 3.3.1** (RX TRIP INSTRU.) **FU 17.b, Action 8,** 1 hr	**(US)** **G.14** Within one hour, **PERFORM** the following: **a. DETERMINE** (by observation of the associated permissive annunciator windows) if the interlock is in the required state for the existing plant conditions. • RX OR TURBINE **NOT** AT POWER P-7 (MB4D 5-3) • TURBINE **NOT** AT POWER P-13 (MB4D 6-3) **b. REFER** to TS 3.3.1, Action 8
	Channel indication is <u>not</u> normal. The US should proceed to next step.	**(BOP)** **G.15 CHECK** affected channel indication - **<u>NOT</u>** NORMAL
		(US) **G.16 REQUEST** I&C perform corrective maintenance on failed instrument
EVENT 3, 160 MWe Emergency Load Reduction. **US (R) / RO (R) / BOP (N)**		
General Note(s): 1.) <u>Emergency generation load reduction of 160 MWe requested by ISO – NE.</u> ISO – NE directs the crew to begin an Emergency Load Reduction decreasing unit electrical output by 160 MWe. The crew uses AOP 3575, *Rapid Downpower* to accomplish this down power at 3%/min.		

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
T = Examiner Cue **Call US as ISO – NE:** "ISO – NE requests Millstone Unit 3 to perform an Emergency Load Reduction of 160 MWe in the next 25 minutes due to Grid Instabilities. Maintain current VAR loading (100 +/- 50 MVAR)."	Crew will use AOP 3575, Rapid Downpower for this ~ 12% downpower. Likely a canned Rx Plan (RE-H-04) will be used (vice manual boron calculation.	**(US)** Receives phone call, briefs crew, and **enters AOP 3575**
If contacted as OMOC, DIRECT: "Perform load reduction at 3% / min."		**(US)** **Informs OMOC of downpower.**
AOP 3575, Rapid Downpower (Rev 27)		
	Yes	**(RO)** **1. CHECK Rod Control - IN AUTO**
	Yes desired to use Load Set.	**(BOP)** **2. Align EHC Panel** **a. CHECK** Load reduction using Load Set – DESIRED

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Desired reactor power is ~88% (to achieve 160 MWe load reduction). This correlates to a **Load Set Indicated MWe** Setting of approximately 1220 **MWe* (interpolated).**	**(BOP)** **b.** Referring to ATTACHMENT H, **DETERMINE** the Load Set Indicated MWe setting for the applicable: • Desired MWE Unit Output **OR** • Equivalent MWE for the Desired final Reactor Power
	BOP aligns for Load Set.	**(BOP)** **c.** Using ATTACHMENT E, **ALIGN** EHC Panel for Load Set operation
	OMOC recommended 3% per min.	**(US)** **3. Determine Power Reduction Rate (% / min)** (a.) **CHECK** power reduction rate - 3%/min or 5%/min
	RO initiates rapid boration.	**(RO)** 4. **Initiate Rapid Boration** **4a. CHECK** RCS Makeup System in – AUTO **4b. START** ONE Boric Acid Transfer Pump • BA PP A • BA PP B **4c. OPEN** Emergency Boration Valve, (3CHS*MV8104) **4d. CHECK** direct Boric Acid flow (3CHS-FI183A) – INDICATED

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(RO) **4e. OPEN** Charging Line Flow Control Valve, to match indicated boric acid flow (3CHS-FI183A) **4f. RECORD** time boration started **4g. CHECK** Rod Control – AVAILABLE FOR ROD INSERTION
	Yes. RE-H-04 Plan calls for a 2 minute 18 sec. boration (170 gallons of boric acid). If the crew calculates, boration should approximate standard plan.	**(US)** **4h. CHECK** use of Rapid Downpower Summary Sheet (RE-H-17) in the RE Curve and Data Book – DESIRED **4i. REFER TO** the Rapid Downpower Summary Sheet (RE-H-17), **DETERMINE** approximate boration time
		(US) 4j. PROCEED TO step 6 **AND WHEN** boration has been performed for the calculated time, **THEN** using ATTACHMENT G**, STOP** boration

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Rapid boration is in progress. BOP selects 3% minute and adjusts load set to 1220 MWe. Note: In order to control RCS Temperature, the BOP will select 1%/ min when Tavg reaches 4 F higher than Tref.	**(BOP)** **6. Initiate Load Reduction** a. **CHECK** rapid or gravity boration - IN PROGRESS b. **CHECK** Turbine OPERATING MODE – MANUAL c. **CHECK** load reduction- USING LOAD SET d. **SELECT** LOAD RATE LIMIT %/MIN (1%/MIN, 3%/MIN, or 5%/MIN) e. Refer to ATTACHMENT H **AND** Using the LOAD SELECTOR pushbuttons, **ADJUST** LOAD SET to Load Set Indicated MWe setting recorded in step 2.b
		(RO) **6f. ENERGIZE** ALL PZR Heaters **6g. ADJUST** PZR Spray Valves to 50% setpoint ▪ 3RCS-PK 455B ▪ 3RCS-PK 455C
		(RO / BOP) **6h. MAINTAIN** plant parameters values as listed in ATTACHMENT C **OR** as directed by Operations Management
	Yes.	**(US)** **6i. CHECK** power reduction - ISO-NE REQUESTED

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(US) 7. **Check Rod Position Above RIL** a. **CHECK** ROD CONTROL BANKS LIMIT LO-LO, (MB4C 4-9) annunciator – LIT **RNO: PROCEED TO** step 7.k **AND IF** the annunciator is received, **THEN PERFORM** steps 7.b through 7.i.
		(US) **7k. CHECK** ROD CONTROL BANKS LIMIT LO, (MB4C 3-9) annunciator – LIT **RNO: PROCEED TO** step 8 **AND IF** the annunciator is received, **THEN PERFORM** steps 7.l through 7.m.
	Examiner Note: When satisfied with downpower, cue Booth to move onto Event 4.	**(US)** **8. Monitor Downpower** **a. CHECK** the following- REMAINS UNCHANGED • Final desired MWe load • Final desired target power level • Boron injection path **b. PROCEED TO** step 9
		(BOP) **9. Degrade Condenser Backpressure** **a. CHECK** final desired Turbine load (MWe) - LESS THAN 907 MWe **RNO: PROCEED TO** step 12

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(RO / BOP) **13. Monitor Rapid Downpower Parameters**
		(BOP) **14. Check Plant Status** **a. CHECK** - AT FINAL DESIRED MWe LOAD **OR** TARGET POWER LEVEL **RNO: CONTINUE** power reduction to final desired load.
EVENT 4, High Vibrations on 'D' RCP **US (C) / RO (C)**		
General Note(s): 1.) 'D' RCP develops Hi Hi vibration levels. The crew validates alarm conditions, trips the reactor, and stops the 'D' RCP.		
T = Examiner Cue **Trigger 4** RC24D @ 5 mils RC25A @ 18 mils The malfunctions for the RCP vibrations are additive to the existing vibrations. Therefore, the frame will read 6 mils and the shaft will read 22.5 mils.	**RO should provide BOP with turnover prior to going behind boards to check on vibrations.** **PPC NSSS picture for RCP 'D' shows "ALARM" for "VIB ALARMS HI HI"**	**US** enters ARP MB4B 3-7, "RCP D Vibration Hi HI" 1. CHECK reactor coolant pump vibration monitor panel to confirm alarm (MB3R).
	RO reports Frame Vibrations are 5 mils and shaft is 22.5 mils. **US directs ARP actions to Trip the Reactor, Stop 'D' RCP, and enters E-0**	3. IF RCP D shaft vibration is greater than 20 mils OR frame vibration is greater than 5 mils, PERFORM the following: **3.3.1 TRIP reactor** **3.3.1 STOP RCP D** **3.3.1 Go To E-0**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
EVENT 5, Total Loss of Auxiliary Feedwater Flow Occurs on the Reactor Trip **US (M) / RO (M) / BOP (M)**		
General Note(s): 1) No AFW flow will be present on the Reactor Trip: TDAFW Pp trips on overspeed / 'A' MDAFW Pp trips on overcurrent / 'B' MDAFW Pp is tagged out. This condition will require the crew to transition from E-0 to FR-H.1 *Response to Loss of Secondary Heat Sink*. Once in FR-H.1, the crew will be able to feed the SG's using the Motor Driven Main Feed Water Pump **(Critical Task**). 2) After the Reactor Trip, the BOP will identify a main turbine stop and control valve fail to close. The BOP will be successful in tripping the turbine by manually running back the turbine (Turbine Trip p/b is unsuccessful). **(Critical Task).**		
E-0, *REACTOR TRIP OR SAFETY INJECTION (Rev. 35)*		
		(RO) 1 * Check Reactor Trip • **CHECK** Reactor Trip and Bypass Breakers – OPEN • **CHECK** Rod Bottom lights – LIT • **CHECK** Neutron Flux - DECREASING
	Event 6 - Main Turbine Fails to trip BOP is successful at tripping the turbine by running back the turbine **(Critical Task)**	**(BOP) 2 * Check Turbine Trip** **a. CHECK** all Turbine Stop Valves – CLOSED **RNO a. TRIP the Turbine.** • **IF** Turbine will **NOT** trip, **THEN RUNBACK** the Turbine to close the Control Valves.
	Yes.	**(BOP) 3 * Check Power To AC Emergency Busses** **3a. CHECK** AC Emergency Busses 34C and 34D - BOTH ENERGIZED

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	SI was generated by a low steam line pressure signal (Reactor tripped with a failure of the Main Turbine to trip).	**(RO) 4 * Check If SI Is Actuated** **4a. CHECK** SAFETY INJECTION ACTUATION annunciators, (MB4D 1-6 or MB2B 5-9) – LIT **4b.** By observation of ESF Group 2 Status Panel lights, **CHECK** both trains of SI – ACTUATED
	Containment is not adverse.	**(RO) 5. DETERMINE IF ADVERSE CTMT CONDITIONS EXIST** • Ctmt temperature - GREATER THAN 180°F OR • Ctmt radiation - GREATER THAN 10^5 R/ hr **RNO:** DO **NOT** USE ADVERSE CTMT parameters
	RO performs Attachment B.	**(RO) 6. Using** ATTACHMENT B**, Actuation Signal Verification, CHECK Equipment Alignment**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
When called as PEO's (OMOC), acknowledge request to walkdown AFW pumps. Wait 5 minutes, and report: • TDAFW Pp: tripped on overspeed. There appears to be pump damage as the casing is leaking water. • 'A' MDAFW Pp: Swgr report: "Overcurrent trips are in". Field report: "Acrid smell by pump". • 'B' MDAFW Pp: The pump casing is off to repair the pump casing flange leak. It will take ~ 2 hours to restore **BOOTH INSTRUCTOR NOTE:** No Aux Feed Pumps will be given back to the crew. The crew will need to establish feed flow using Main Feed.	No Aux Feed Pumps will be running: • TDAFW Pp trips on overspeed • 'A' MDAFW Pp trips on overcurrent • 'B' MDAFW Pp is tagged out.	**(BOP) 7. Check AFW Pumps Running** **7a**. **CHECK** MD Pumps – RUNNING **RNO: START** pump(s). **7b. CHECK** Turbine-Driven Pump – RUNNING IF NECESSARY **RNO: OPEN** Steam Supply Valves.
		(BOP) 8. CHECK AFW Valve Alignment – PROPER EMERGENCY ALIGNMENT

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	US makes transition to FR-H.1.	**(US / BOP)** **9. Check Adequate Heat Sink** **9a. CHECK** NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) **RNO: PROCEED TO** step 9.d 9d. **CHECK** Total AFW Flow – GREATER THAN 530 gpm **RNO: START** pumps and **ALIGN** valves as necessary. **IF** AFW Flow GREATER THAN 530 gpm **CANNOT** be established, **THEN INITIATE** monitoring of CSF Status Trees and **GO TO** FR-H.1.
FR-H.1, *Response to Loss of Secondary Heat Sink (Rev. 28)*		
		(BOP) **1. Check If Secondary Heat Sink Is Required** **a. CHECK** RCS pressure – GREATER THAN ANY NON-FAULTED SG PRESSURE **b. CHECK** RCS Hot Leg WR temperature – GREATER THAN 350°F c. **CHECK** a secondary heat sink established • WR level in at least one SG – RISING • Core Exit TCs – STABLE OR LOWERING **RNO: PROCEED TO** step 2.
	Yes, 'A' and 'B' Charging pumps are running.	**(BOP)** **2. CHECK Charging Pump Status – AT LEAST ONE RUNNING**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Bleed and Feed conditions are not met.	**(BOP)** **3. Check Bleed and Feed Required** **a. CHECK** WR level in any 3 SGs – LESS THAN 21% (24% ADVERSE CTMT) **RNO: PROCEED TO** Caution prior to step 4.
		(BOP) **4. Establish AFW Flow To At Least One SG** **a. CHECK** SG blowdown isolation: • SG Blowdown Isolation Valves – CLOSED • SG Blowdown Sample Isolation Valves CLOSED **b. CHECK** AFW valve alignment – PROPER EMERGENCY ALIGNMENT **c. CHECK** DWST level – LESS THAN 80,000 gal **RNO: PROCEED TO** step 4.f.
	Both valves are open.	**(BOP)** **4f. CHECK** DWST Suction Valves – OPEN • 3FWA*A0V61A • 3FWA*A0V61B
	PEO's have been dispatched.	**(BOP)** **4g. CHECK** MD AFW pumps – RUNNING **RNO: START** pumps. • **IF** the MD AFW pump(s) do **NOT** start, **THEN RESTORE** power to the pumps (MB or locally).

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	All steam valves are open. Pump has tripped on overspeed.	**(BOP)** **4h. CHECK** TD AFW pump – RUNNING **RNO: OPEN** steam supply valve(s).
		(BOP) **4i. CHECK** total feed flow to SGs GREATER THAN 530 gpm **RNO: PERFORM** the applicable action: **IF NO** AFW flow is indicated, **THEN:** **1.** Using GA-31, locally **RESTORE** AFW flow. **2. PROCEED TO** step 5 and **IF** AFW flow is established prior to step 12, **THEN RETURN TO** step 4i.
	BOP places steam dumps in steam pressure mode.	**(BOP) 5. STOP All RCPs** a. **PLACE** Condenser Steam Dumps in Steam Pressure Mode as follows: 1. **PLACE** SG PRES CNTL (MSS-PK507) in MAN **AND ADJUST** to ZERO OUTPUT. 2. **ADJUST** STM PRES CNTL to pot setting of 8.4. 3. **PLACE** Condenser Steam Dump MODE SEL (MSS-N07) to STM PRESS Mode. 4. **PLACE** SG PRES CNTL (MSS-PK507) in AUTO.
	All RCP's are stopped and spray valves are closed.	**(RO) 5b. STOP** all RCPS 5c. **CLOSE** Normal Spray Valves: • RCP 1 (3RCS-PK455B) • RCP 2 (3RCS-PK455C)

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Yes two Condensate Pumps are running.	**(BOP) 6. Establish Main FW Flow To At Least One SG** **a. CHECK** Condensate Pumps – **AT LEAST ONE RUNNING**
T = when requested **Trigger 11** MB4C-A04T, MB4C-A03T, RPR44, MB4C-A04B, MB4C-A03B, RPR45 **When delays time out report:** "A213 Logic Cards removed."	Crew successfully opens the Feedwater Isolation Valves.	**(RO / BOP) 6b. CHECK** FW Isolation Trip Valves - OPEN RNO: 1. **IF** SI OR P-14 has actuated, **WHEN** SG levels are LESS THAN the P-14 setpoint, **THEN RESET** SI 2. **REMOVE** Universal Logic Card A213 from the following: 3RPS*RAKLOGA & 3RPS*RAKLOGB 3. **WHEN** both A213 Logic Cards are removed, **THEN RESET** FWI at MB2. 4. **RESET** FWI at MB5. 5. **ADJUST** SG Feed Regulating and SG Feed Regulating Bypass Valve Controllers to zero output. 6. **OPEN** the FW Isolation Trip Valves.
	This was done in prior step (RNO 6b5).	**(BOP) 6c. ADJUST** SG Feed Regulating and SG Feed Regulating Bypass Valve Controllers to zero output
		(BOP) 6d. CLOSE the FW Control Isolation Valves: 3FWS-MOV35A, B, C & D
	Yes. Bus 35C is energized.	**(BOP) 6e. CHECK** Bus 35C- ENERGIZED
	BOP starts the MDFW Pump.	**(BOP) 6f. PERFORM** the following to start the MD FW pump: 1. **PLACE** FW pumps P4 Trip Bypass Selector Switch to BYPASS 2. **PLACE** the MD FW Pump Control Switch in STOP 3. **START** the MD FW pump

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(BOP) 6g. CHECK MD FW Pump Startup Valve (3FWS-HIC590) - 50% OPEN
		(BOP) 6h. FEED the SGs using SG Feed Regulating Bypass Valves to restore SG Narrow Range level consistent with preventing excessive RCS cooldown **6i. CHECK** feed flow - ESTABLISHED
		(BOP) 6j. CLOSE each TD FW pump's Discharge Isolation Valve: 3FWS-MOV23B & 23C
		(BOP) 7a. CHECK NR level in at least one SG - GREATER THAN 8% (42% ADVERSE CTMT) **RNO: CHECK** a secondary heat sink established: • WR level in at least one SG- RISING. **AND** • Core Exit TCs – STABLE OR LOWERING.
Upon Lead Examiner's direction, place the simulator in FREEZE.	US will transition back to E-0 (& ultimately ES-1.1).	**(BOP) 7b. GO TO** procedure and step in effect
***** END OF SCENARIO *****		

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SHIFT TURNOVER REPORT

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1	Rx Power:	100 %
Megawatts:	Thermal: 3645 MWTH	PZR Pressure:	2250 psia
	Electric: 1280 MWe	RCS T-AVE:	587 deg F
RCS Leakage:	Identified: 0.015 gpm	Core Burnup:	10000 MWD/MTU
	Unidentified: 0.036 gpm	Protected Train/Facility:	A (Orange)
Date/Time:	Today/ 2000	Intake:	Green

Active Tracking Records and Action Statements

Equipment/Reason

LCO	Action	Date	Time in LCO	Action Requirement	Time Left
3.6.2.1	3QSS*P1B inop	today	2 hours	Restore	70 hours
3.7.1.2a	3FWA*P1B inop	Yesterday	16 hours	Restore	56 hours

OD Compensatory Actions / Temp Logs

Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC

System	Notes
QSS	3QSS*P1B is tagged out to repair an oil leak.
AFW	3FWA*P1B tagged out to repair a pump casing flange leak.

CROSS UNIT SYSTEM STATUS

SURVEILLANCES / EVOLUTIONS IN PROGRESS

3204	Steady State Operation

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)

Current Rod Height	218	
Xenon Trend	Stable	
Current Boron	1117	
Boron Pot Setting / Blend Ratio	3.17 / 12.68 gpm	
Plant Risk	LERF 1.06 ACT: 1 year	CDF 4.15 ACT: 46.9 days

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REFERENCE MATERIAL		
Session No.: NRC-02		
Reference No.	**Revision**	**# Copies**
ARP's		
MB4A 4-1		
MB4B 3-7, 4-7		
MB4C 1-6, 6-5, 6-8		
OTHER – RO Station		
MB4B 3-7, 4-7	**Rev. 11**	
OTHER– BOP Station		
US Desk Procedures		
AOP 3571	**Rev. 17**	
AOP 3575	**Rev. 27**	
AOP 3581	**Rev. 7**	
E-0	**Rev. 35**	
FR-H.1	**Rev. 28**	

SEG# 2K21 NRC-03 Rev ; 0

SITE:	**Millstone Power Station**	
PROGRAM:	**Unit 3 ILT**	
COURSE:	**N/A**	
EXAM TITLE:	**NRC SIM EXAM 3**	**EXAM #: 2K21 NRC-03**
Total Time	**90 Minutes**	

Prepared by:	W. M. Forrestt	Signature on file	5/26/2021
	Printed Name	Developer Signature	Date
Reviewed by:	T. Fisher	Signature on file	5/27/2021
	Printed Name	Technical Review Signature	Date
Approved by:	A. Leone	Signature on file	6/15/2021
	Printed Name	Training Supervisor Signature	Date

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SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/26/21	Original issue.	0

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TABLE OF CONTENTS

SECTIONS LISTED IN ORDER

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SECTION 3

EXAM OVERVIEW

Title: **LOSS OF ALL AC POWER**

1. The crew takes the shift with the plant at 4% power and at the beginning of life. The SBO Diesel is out of service for electrical maintenance on the synch circuit. 3GMC-P1B, 'B' Stator Cooling Pump, is tagged out to repair a suction flange leak.

   Event 1: Power increase to Mode 1. The crew is directed to raise reactor power from 4% to 8% in accordance with step 4.2.12. The US should facilitate a brief of the evolution prior to taking the shift. The MP3 simulator briefing room may be used for this purpose.

   Event 2: 3RSS*P1B "RECIRC SPRAY PUMP B" reported to have motor oil leak. The Unit Supervisor disables 3RSS*P1B and enters appropriate Tech Spec.

   Event 3: 'B' CRDM fan trips: The 'B' CRDM fan trips. The crew responds using ARP actions.

   Event 4: Letdown Pressure Transmitter 3CHS-PT131 fails low. Letdown pressure transmitter 3CHS-PT131 fails low. The letdown pressure control valve will close as a result. The crew should respond using ARP 3353.MB3A 4-6. Letdown pressure control will be reestablished once the controller is placed in Manual.

   Event 5: Steam Generator level transmitter 3FWS-LT539 fails high. Steam generator 'C' water level lowers and the BOP takes manual control of the feed reg bypass valve. The US enters AOP 3571, Instrument Failure Response, to swap to the backup channel, trip bi-stables, and address Tech Specs.

   Event 6: Loss of offsite power with failure of station diesels (ECA-0.0). The crew responds by entering ECA-0.0, *Loss of all AC Power*.

   Event 7: 'A' PORV fails open shortly after manual reactor trip. The RO closes the 'A' PORV while in ECA-0.0 **(Critical Task).** .

   Event 8: 'A' Train Service Water Pumps do not auto start when 'A' EDG is restored. The RO manually starts an 'A' train SW pump to provide EDG cooling **(Critical Task).** Following completion of ECA-0.0, a transition is made to ECA-0.1, *Loss of All AC Power Recovery Without SI Required.*

2. Duration of Exam: 90 minutes

SEG# 2K21 NRC-03 Rev ; 0

Facility: Millstone 3 Scenario No.: 2K21 NRC-03 (Rev 0) Op-Test No.: 2K21
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: IC-94, 4% Power, Beginning of life

Turnover: The plant is at 4% power at the beginning of life. The SBO Diesel is out of service for electrical maintenance on the synch circuit. 3GMC-P1B, 'B' Stator Cooling Pump, is tagged out to repair a suction flange leak.
Critical Tasks: 1. Manually close an open PORV during Station Blackout (CT-22)
2. Manually start SW pump for EDG cooling (CT-25)

Event No.	Malf. No	Event Type*	Event Description
1	–	US N RO R BOP N	Power ascension from 4% to 8% power using OP 3203, *Plant Startup.*
2	–	US TS	3RSS*P1B "RECIRC SPRAY PUMP B" reported to have motor oil leak.
3	CH06B	US C BOP C	The 'B' CRDM fan trips. The crew responds using ARP actions.
4	CV05	US I RO I	Letdown pressure transmitter 3CHS-PT131 fails low. (Annunciator response).
5	RX12I	US I, TS BOP I	'C' steam generator level transmitter 3FWS-LT539 fails high (AOP 3571).
6	EG06A EG07B EDO1	ALL M	Loss of offsite power with failure of station diesels (ECA-0.0).
7	RC07A	US C RO C	'A' PORV fails open shortly after manual reactor trip.
8	ED11D ED11E	US C RO C	'A' Train Service Water Pumps do not auto start when 'A' EDG is restored – manual start necessary.

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

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Transient and Event Checklist (used to complete NRC Form ES-301-5)

	US **(target)**	**RO** **(target)**	**BOP** **(target)**
RX	(1)	**1** (1)	**N/A**
NOR	**1** (*)	(*)	**1** (*)
I/C	**3,4,5,7,8** (2)	**4,7,8** (2)	**3,5** (2)
MAJ	**6** (1)	**6** (1)	**6** (1)
TS	**2,5** (2)	**N/A**	**N/A**

* For an Exam Set, the RO's and Instant SRO's are required one Normal evolution. However, reactivity and normal evolutions may be replaced w/ additional I/C manlfunctions on a one-for-one basis.

Note: If an SRO-I additionally serves in the BOP position, one I/C malfunction can be credited toward the 2 I/C malfunctions required for the ATC position.

Simulator Scenario Quality Checklist (used to complete NRC Form ES-301-4)

Target Quantitative Attributes (Per Scenario; See NUREG 1021 Appendix D)	**Actual**
1. Malfunctions after EOP entry (1–2)	2
2. Abnormal events (2–4) (typically before major event)	4
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2) (exclude E-0)	1
5. EOP contingencies requiring substantive actions (≥ 1 per scenario set)	1
6. Pre-identified critical tasks (≥ 2)	2

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Critical Tasks

TASK DESCRIPTION	TASK #	K/A	BASIS OF SELECTION
Manually close the open PZR PORV (before exiting step 3 of ECA-0.0).	CT-22	EPE 009-EA1.15 (3.9 / 4.1)	Source: Westinghouse PWROG-14043-NP "ERG Rev. 3 Based Critical Tasks" "Closing the PORV under the postulated plant conditions constitutes a task that is essential to safety. The RCS fission-product barrier can be restored to full integrity simply by closing the PORV manually from the control room."
Manually start SW pump for EDG cooling (before exiting step 30 of ECA-0.0)	CT-25	EPE 055-EA1.06 (4.1 / 4.5)	Source: Westinghouse PWROG-14043-NP "ERG Rev. 3 Based Critical Tasks" "Running the EDG without SW cooling leads to a high-temperature condition that can result in EDG failure due to damage caused by engine overheating. Failure to perform the critical task constitutes mis-operation or incorrect crew performance in which the crew does not prevent degraded… emergency power capacity."

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SECTION 4

EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

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INPUT SUMMARY						
1). RESET SIMULATOR TO IC– 94 and ENSURE the following is loaded into the IC:						
A.) following is loaded into IC-94 B.) Trigger 18 description matches loaded EVENT FILE						
ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MALFUNCTIONS						
CH06B	CRDM COOLING FAN TRIP FN2B	2				
CV05	LTDN PRES TRANS FAIL PT131	3				0
RX12I	SG LEVEL LT539 FAIL	4		180 sec.		100
ED01	LOSS OF OFF-SITE POWER	5				ON
EG06A	EDG A FAILS TO START					ON
MB8B-B01	DG A LOCAL PANEL TROUBLE	5	20 sec.			ON
MB8B-C03	DG A NOT RDY FOR AUTO START	5	20 sec.			ON
MB8B-A10	SBO LOSS OF DC CNTL PWR					ON
MB8B-C10	SBO DG PRIMARY LOCKOUT					ON
MB8B-A12	DG B EMERGENCY SHUTDOWN	5	40 sec.			ON
MB1E-F04	DIESEL GEN	5				ON
EG07B	EDG B TRIP	5	40 sec.			

RC07A	PZR PORV PCV455A LEAK	30	10 sec.			80.0
RC07A	PZR PORV PCV455A LEAK	18	1 sec.		3 sec.	80.0
ED11D	D/G A SEQ FAIL 20 SEC					
ED11E	D/G A SEQ FAIL 20.5 SEC					
EG05	SBO DIESEL OUTPUT BKR TRIP					
REMOTE FUNCTIONS						
CVR90	SEAL WATER SPLY ISO(MOV8109A)(LOP ONLY)	6				CLOSE
CVR91	SEAL WATER SPLY ISO(MOV8109B)(LOP ONLY)	6	60 sec.			CLOSE
CVR92	SEAL WATER SPLY ISO(MOV8109C)(LOP ONLY)	6	120 sec.			CLOSE
CVR93	SEAL WATER SPLY ISO(MOV8109D)(LOP ONLY)	6	180 sec.			CLOSE
CVR94	LETDOWN ISO(MOV8100)(LOP ONLY)	6	240 sec.			CLOSE
CCR47	CCP HEADER ISOL (MOV49A) VV (LOP ONLY)	6	300 sec.			0% (CLOSE)
CCR48	CCP HEADER ISOL (MOV49B) VV (LOP ONLY)	6	360 sec.			0% (CLOSE)
EGR09	DIESEL GENERATOR A LOCAL CONTROL	10				LOCAL
EGR17A	EDG A LOCAL RESET PB4	10				RESET

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OVERRIDES						
RCLO0059	3RCS*PCV455A RED PZR PORV CNTL	30	10 sec.			ON
RCLO0059	3RCS*PCV455A RED PZR PORV CNTL	18	1 sec.		3 sec.	OFF
EGLO0036	M08BGSACBBGA GREEN SBO DG OUTPUT BKR LO					OFF

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
❑ COMPLETE Simulator Setup and Readiness Checklist. ❑ SELECT appropriate IC: **IC-94**, 4% power, BOL. **Password: "iagtcas".** ❑ LOAD and RUN applicable Schedule: **N/A (all schedule / events are loaded into IC-94)** ❑ LOAD event file: N/A ❑ As necessary, VERIFY the following Initial Malfunctions / I/Os / Remote Functions, as specified on previous '**Input Summary**' page. ❑ When the simulator is ready, PLACE to Run and VERIFY the simulator reflects the following Initial Conditions for the scenario and is stable: ❑ As necessary, REMOVE the following Equipment from service and tag accordingly: ▪ **SBO Diesel is RTO** for electrical maintenance on the synch circuit **(1) OPEN 34A1-2 and 34B1-2 (2) Hang tag on MB8 SBO output breaker** ▪ Remove **3GMC-P1B**, "B' Stator Cooling Pump", from service **(1) Place CS in PTL (2) Hang tag on CS**		N/A
❑ CONDUCT briefing with evaluators.	**PRE-SCENARIO:** ❑ BRIEF the crew initial plant conditions and provide a shift turnover. ❑ IF this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew. ❑ As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.	
		(All) Walk down control boards and conduct shift briefing.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
EVENT 1, *Plant Startup 4 – 8 % power* **US (N) / RO (R) / BOP (N)**		
General Note(s): (1) **Allow crew to brief this power manipulation before entering the simulator:** OP 3203, *Plant Startup,* is in **progress** and complete up through step 4.2.11, Mode 1 Entry Requirements. All Mode 1 entry requirements have been met. The US should facilitate a brief of the evolution prior to taking the shift. **Because Xenon is building in, ensure the crew is ready prior to placing the simulator in RUN.** (2) Crew direction: The crew is to raise reactor power from 4% to 8% in accordance with step 4.2.12. (3) RCS temperature band: RCS temperature band is 558 – 562 °F and is being maintained by the steam dumps in steam pressure mode. (Reference OP 3203, 2.1.5) (4) Other Parameter bands are found in OP 3203, 3.1.2: Tavg: within 4_F of program, *not* to exceed 589.5_F (Attachment 1, "Temperature vs. Thermal Power") PZR Level: within 5% of program (Attachment 2, "Pressurizer Level vs. TAVG") PZR Press: 2,225 – 2,275 psia SG NR Lvl: 45 – 55%		
OP 3203, *Plant Startup (Rev. 29)*		
	Crew takes the shift. The reactivity plan specifies control rods be used to raise reactor power.	**(US)** **4.2.12** INCREASE reactor power to between 6 and 9% by one of the following: • WITHDRAW control rods at a rate *not* greater than 2 steps/minute • DILUTE RCS boron concentration at a rate *not* greater than 10 to 15 pcm/minute

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Examiner Note: When satisfied with power increase, cue booth to begin Event 2.	**(US)** **4.2.13** PERFORM the following: **a.** LOG MODE change to MODE 1 (POWER OPERATION). **b.** NOTIFY ISO–New England of MODE change.
EVENT 2, 3RSS*P1B "RECIRC SPRAY PUMP B" reported to have motor oil leak US (TS)		
T = Lead Examiner Cue **Contact the control room as Radwaste PEO and report:** "I'm doing rounds and the 3RSS*P1B "RECIRC SPRAY PUMP B" has a large amount of oil under the pump / motor. The motor's upper oil reservoir doesn't indicate a level."	**US** enters **Tech Specs**: **TS 3.6.2.2 , 72 hr.** **NOTE: TS 3.5.2.f does NOT require entry as 'D' RSS Pp is Operable (& complies with the req't of one pump per train).**	**(US)** Enters associated Tech Specs and directs the RO to place the 'B' RSS Pump, 3RSS*P1B, in "Pull To Lock."
EVENT 3, 'B' CRDM Fan trips US (C) / BOP (C)		
T = Lead Examiner Cue **Trigger 2 (CH06B)**		**(BOP)** Acknowledges VP1C annunciator and reports 'B' CRDM fan has tripped
ARP MBVP1C 4-7, Rev. 14		
		(US / BOP) **1.** Enters ARP VP1C 4-7 and directs starting the 'C' CRDM fan.
	N/A	**(US)** **2.** If all CRDM fans fail to start, commence orderly plant shutdown

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	N/A	**(US)** **3.** If one CRDM fan is running, perform the following:
	BOP monitors	**(BOP)** **4.** Monitor the following: CRDM shroud temp (VP1), CTMT temp and pressure
	No Tech Specs will be entered	**(US)** **5.** Refer to Tech Specs for CTMT Pressure and Temp
EVENT 4, *Letdown Pressure Transmitter 3CHS-PT131 fails low* **US (I) / RO (I)**		
General Note(s): (1) Affects of 3CHS-PT131 failure: The input to 3CHS-PCV131, *Letdown Pressure Controller,* will fail low causing letdown pressure control valve to fail closed. As a result, the upstream relief valve 3CHS*RV8117will open and pass flow to the PRT. The elevated relief line temperature will cause MB annunciation and the crew should respond by re-establishing letdown flow.		
T = Lead Examiner Cue **Trigger 3** (CV05 = 0)		**(RO)** Identifies 3CHS-PCV131 has closed. **(US)** **Enters ARP MB3A 4-6, Letdown Relief VV Temp Hi**
ARP MB3A 4-6, Rev. 05		
	RO confirms elevated temperature.	**(RO)** **1.** CHECK 3RCS*TI 125, letdown relief valve temperature (MB3), to confirm alarm.
	RO notes failed controller input (green controller input is reading 0 psig). Output of controller driven to 0% or full closed.	**(RO)** **2.** CHECK 3CHS*PI 131, letdown pressure (MB3), 300 to 350 psig.
	US should direct the RO to control 3CHS*PK131 in MANUAL and adjust L/D flow to match the pre-event value to restore flow, which will also restore pressure to the band.	**(RO)** **3.** IF directed by SM/US, PLACE 3CHS*PK131, letdown pressure controller, in “MANUAL," and MAINTAIN letdown pressure 300 to 350 psig.

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Examiner Note: When satisfied with power increase, cue booth to begin Event 5.	**(RO)** **4.** CHECK 3RCS*TI 125, letdown relief valve temperature (MB3), to check 3CHS*RV8117, letdown relief valve, seated.
EVENT 5, *'C' Steam Generator level transmitter fails high.* **US (I, TS) / BOP (I)**		
General Note(s): (1) Event 5 causes a low 'C' SG level: This failure will cause the 'C' Feedwater Regulating Bypass Valve (FRBV) to modulate close. In response to this, the BOP takes manual control of the 'C' Feed Reg Bypass Valve and restores SG level to 50%.		
T = Lead Examiner Cue **Trigger 4** (RX12I= 100%, 3 min ramp)		**(BOP)** Identifies 'C' SG Level transmitter failing high. **(US)** Directs placing 'C' FRBV in manual and restoring 'C' SG level to 50%. When the BOP has control of 'C' SG level, enters AOP 3571.
AOP 3571, *Instrument Failure Response (Rev. 17)*		
	US Proceeds to Attachment N, Narrow Range SG Level Channel Failure	**(US) 1. PROCEED TO** the Appropriate Attachment, AND PERFORM Corrective Actions
	BOP identifies failure of 3FWS-LT539.	**(BOP)** **N.1 CHECK** Failed NR Level Channel Is Selected As **Input To SG Level Control**
		(BOP) **N.2 CHECK** Affected, In-Service, Steam Generator Feed Controller In – MAN • SG Feed Bypass Level Controller

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
		(BOP) **N.3 THROTTLE** Affected, In-service, SG Feed Flow Valve OR Feed Bypass Level Control Valve To Maintain SG Narrow Range Level – STABLE BETWEEN **45% And 55% (Target 50%)**
	BOP selects Ch. 2.	**(BOP)** **N.4 DEFEAT** Failed Channel Input By Selecting Alternate Channel On Level Selector LVL SEL (SG3) (MB5) 3FWS-LS539C
		(BOP) **N.5 CHECK** Affected SG NR Level - STABLE AT 50%
	BOP places 'C' FRBV in Auto.	**(BOP)** **N.6 PLACE** Affected In-service SG Feed Flow Controller OR Feed Bypass Level **Controller In – AUTO** • STM GEN 3 FW BYP LVL CONT (3FWS-FK570)
		(US) **N.7 Trip** Associated Reactor Protection System Bistable(s) **a.** Using Table N.1, **PLACE** a check mark in the box above the channel required to be tripped

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	US enters Tech Specs: • **TS 3.3.1** (Rx Trip INSTRU) **FU 13, Action 6A** • **TS 3.3.2.b** (ESFAS INSTRU) **FU 5.b & FU 6.c, Action 20A**	**(US)** **N.7b REFER TO** the following Tech Specs for required actions • TS 3.3.1, Reactor Trip System Instrumentation • TS 3.3.2, Engineered Safety Features Actuation System Instrumentation • TS 3.3.3.5, Remote Shutdown Instrumentation • TS 3.3.3.6, Accident Monitoring Instrumentation
At the direction of the Lead Examiner, proceed to the next event.	RO performs bistable lamp check and reports a Rx trip will NOT occur when the bistables are tripped.	**(RO)** **N.7c CHECK** existing bistable status to ensure a Reactor trip will **NOT** occur when the failed channel is tripped.
	BOP determines the channel indication is not normal.	**(BOP)** **N.7d CHECK** affected channel indication - **NOT** NORMAL

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
EVENT 6, *Loss of all ac power (ECA-0.0)* **US (M) / RO (M) / BOP (M)**		
General Note(s): (1) Loss of all AC Power will develop: On the loss of offsite power, all U3 station diesels will not function: • 'A' EDG will not start remotely • 'B' EDG starts and trips 40 seconds later • The SBO Diesel is tagged out of service (2) Overall procedure flowpath: The crew will mitigate the event using E-0 *Rx Trip or Safety Injection*, ECA-0.0 *Loss of all AC Power*, and ultimately transition to ECA-0.1 *Loss of All AC Power - Recovery Without SI Required.* (3) The crew will respond to multiple failures: • **Event 7: 'A' PORV fails open shortly after manual reactor trip.** • **Event 8: 'A' Train Service Water Pumps do not auto start when 'A' EDG is restored – manual start necessary.** (4) **BOOTH INSTRUCTOR NOTE:** Be prepared to monitor for proper event file operation (when RO takes the 'A' PORV to close (have Extreme View up). See page 22 for further information.		
E-0, *Rx Trip or Safety Injection (Rev. 35)*		
T = Lead Examiner Cue **Trigger 5** (ED01, EG06A, EG07B, multiple MB alarms)		Crew recognizes multiple alarms and the loss of all ac power. **RO** notes the Reactor has tripped (flux decreasing) and opens Rx Trip breakers.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Examiner Note: Because the Rx is below P-10 (10% power), there is no automatic reactor trip generated. However, all rods will insert on a loss of power to the rod drive MG sets. The reactor trip breakers will remain open until the RO manually opens these breakers.	**(RO)** **1 * Verify Reactor Trip** • Check Reactor Trip and Bypass Breakers - OPEN • Check Rod Bottom lights - LIT • Check Neutron Flux – DECREASING **RNO:** TRIP the reactor.
	Main Turbine is tripped.	**(BOP)** **2. * Check Turbine Trip** **a. CHECK** all Turbine Stop Valves - CLOSED
	After 40 seconds (from the loss of offsite power), the 'B' EDG trips creating a loss of all AC power.	**(BOP)** **3. * Check Power To AC Emergency Busses** **a. CHECK** AC Emergency Busses 34C and 34D - BOTH ENERGIZED **RNO:** • **ENERGIZE** the affected AC Emergency Buss(es) from associated EDG. • **IF** power **CANNOT** be restored to at least one AC Emergency Bus, **THEN GO TO** ECA-0.0, Loss of All AC Power, step 3. (**OBSERVE** NOTE prior to step 1.)

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
ECA-0.0, *Loss of all AC Power (Rev.40)* **EVENT 7, *'A' PORV fails open on reactor trip. (US (C) / RO (C))***		
ENSURE TRIGGER 18 activates when 'A' PORV is taken to close **NOTE:** The above event file will remove RC07A / EGLO0036. As a result, the 'A' PORV leak malfunction (RC07A) and over-ride for 'A' PORV red light (RCLO0059) will be removed automatically (when 'A' PORV is taken to close).	RO closes either 3CHS*AV8149B or C. **Critical Task – RO closes** 'A' PORV (which failed open 10 seconds after the Rx Trip)	**(RO)** **3. Check If RCS Is Isolated** **a. CLOSE** letdown orifice isolation valves **b. Check** PZR PORVs --- CLOSED **RNO**--IF PZR pressure is LESS THAN 2350 psia, THEN CLOSE the PORVs.
	RO verifies all valves are closed.	**(RO)** **3c. Check** excess letdown and reactor head vent isolation valves --- CLOSED **3d. CHECK** RCS Sampling Isolation Valves (MB1) - CLOSED:
	SG levels are sat (due to low power trip)	**(BOP)** **4. Check Secondary Heat Sink** **a. CHECK** Intact NR Level - GREATER THAN 8% (42% ADVERSE CTMT) IN AT LEAST ONE SG **b. MAINTAIN** SG NR LEVEL - 8% to 50% **c. PROCEED TO** step 4.g
	BOP verifies DWST level is greater than 80,000 gal.	**4 g CHECK** DWST Level – GREATER THAN 80,000 gal

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
The crew may dispatch PEO's here. PEO report(s) are found on page 25.	'A' EDG will not start remotely. 'B' EDG started and tripped 40 seconds later.	**(BOP)** **5. Restore Power To Any AC Emergency Bus** **a. CHECK** Main Generator Output Breaker – OPEN **b. START** at least one EDG (MB8) **RNO: PROCEED TO** step 6.
When called as Primary Rounds PEO: **(1) Acknowledge** request **(2) INPUT TRIGGER 6** **(3) After Trigger 6 is inputted** (noting time delays), Call CR and **REPORT:** **" ECA-0.0 Step 6 actions are complete".**	RO calls PEO and gives direction to locally isolate RCP seals (iaw Step 6 of ECA-0.0).	**(RO)** **6. Locally Isolate RCP Seals**
	All signals are reset	**(RO)** **7. Block Automatic Loading Of AC Emergency Busses** **7a. RESET** the following, if actuated: SI / CDA / Aux FW Train A (B) for Lo-Lo SG Level
	RO places both 'A' & 'B' Charging Pumps in PTL.	**(RO)** **7b. PLACE** the following components in PULL-TO-LOCK: Charging Pump A, 3CHS*P3A Charging Pump B, 3CHS*P3B

<table>
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<tr><td></td><td>BOP places control switches in PTL.</td><td>(BOP)
7c. Using ATTACHMENT K, POSITION the following in Pull to Lock:
<table><tr><th></th><th>Component</th></tr><tr><td>☐</td><td>3RHS*P1B, RHR Pump B</td></tr><tr><td>☐</td><td>3RHS*P1A, RHR Pump A</td></tr><tr><td>☐</td><td>3SIH*P1B, SI Pump B</td></tr><tr><td>☐</td><td>3SIH*P1A, SI Pump A</td></tr><tr><td>☐</td><td>3RSS*P1D, RSS Pump D</td></tr><tr><td>☐</td><td>3RSS*P1B, RSS Pump B</td></tr><tr><td>☐</td><td>3RSS*P1C, RSS Pump C</td></tr><tr><td>☐</td><td>3RSS*P1A, RSS Pump A</td></tr><tr><td>☐</td><td>3QSS*P3B, QSS Pump B</td></tr><tr><td>☐</td><td>3QSS*P3A, QSS Pump A</td></tr><tr><td>☐</td><td>3CCP*P1A, CCP Pump A</td></tr><tr><td>☐</td><td>3CCP*P1C (A Train), CCP Pump C</td></tr><tr><td>☐</td><td>3CCP*P1C (B Train), CCP Pump C</td></tr><tr><td>☐</td><td>3CCP*P1B, CCP Pump B</td></tr><tr><td>☐</td><td>3SWP*P1B
OR
3SWP*P1D, Train B SW Pump (Follow Pump Preferred)</td></tr><tr><td>☐</td><td>3SWP*P1A
OR
3SWP*P1C, Train A SW Pump (Follow Pump Preferred)</td></tr></table></td></tr>
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7c. CONTINUED….Using ATTACHMENT K, POSITION the following in Pull to Lock:
<table>
<tr><th></th><th>Component</th></tr>
<tr><td>☐</td><td>3FWA*P1A, MDAFW Pump A</td></tr>
<tr><td>☐</td><td>3FWA*P1B, MDAFW Pump B</td></tr>
<tr><td>☐</td><td>3HVK*CHL1A, HVK Chiller A</td></tr>
<tr><td>☐</td><td>3HVC*FN1A, CB Filter Unit A</td></tr>
<tr><td>☐</td><td>3HVR*FN14A/13A, CHG & CCP Pp Fans A</td></tr>
<tr><td>☐</td><td>3HVR*FN6A, AB Filter Unit Fan A</td></tr>
<tr><td>☐</td><td>3HVR*FN12A, SLCRS Fan A</td></tr>
<tr><td>☐</td><td>3HVU-FN1A, CAR Fan A</td></tr>
<tr><td>☐</td><td>3HVU-FN2A, CRDM Cooling Fan A</td></tr>
<tr><td>☐</td><td>3HVK*CHL1B, HVK Chiller B</td></tr>
<tr><td>☐</td><td>3HVC*FN1B, CB Filter Unit B</td></tr>
<tr><td>☐</td><td>3HVR*FN14B/13B, CHG & CCP Pp Fans B</td></tr>
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<tr><td></td><td></td><td>(US)
8. Locally Attempt To Restore AC Power
8a. CHECK Offsite power – AVAILABLE
RNO: PROCEED TO step 8.d AND IF offsite power becomes available, THEN using GA-3, ENERGIZE Emergency Bus 34C or 34D AND WHEN power is restored to any AC Emergency Bus, THEN PROCEED TO step 28.</td></tr>
</table>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
T= 4 minutes after dispatch **Booth Instructor Field Reports:** **'A' Diesel: REPORT** "Annunciator EGPA 2-2 (FAIL TO START) is locked in. There is no apparent cause here (air alignment / pressures are sat) and overspeed is not in. ARP actions are to reset the machine & refer to OP 3346A to Start the EDG". ***NOTE for BOOTH:*** The CR should direct a LOCAL manual START of the EDG (& it will be successful). **Once directed to** Reset and **locally start** the **'A' EDG, Wait 2 minutes and** PERFORM the following: **INSERT Trigger 10** (EGR09, EGR17A) **and REMOVE EG06A** **'B' Diesel: REPORT** "Annunciator EGPB 1-7 (ENGINE OVERSPEED) is locked in. On the overspeed, there was damage to the diesel. The crankcase has a large opening in it and there is oil coming out of the crankcase". ***NOTE for BOOTH:*** The 'B' EDG failure is catastrophic and restoration will not be possible.		**(BOP)** **8d. CHECK** Emergency Diesel Generators - AT LEAST ONE RUNNING **RNO:** **- Using** ATTACHMENT E, locally **START BOTH EDGs.** **- PROCEED TO** step 9 **AND WHEN** EITHER EDG is started, **THEN PERFORM** steps 8.e and 8.f. ----------When 'A' EDG is started---------- 8e. **CHECK** Emergency Bus 34C or 34D – AUTOMATICALLY ENERGIZED 8f. **PROCEED TO** step 28.
If the crew calls OMOC for tagging restoration time frame: **REPORT** "SBO is likely several hours from restoration" ***NOTE for BOOTH:*** The SBO will not be restored.	**Examiner Note:** Once the 'A' Diesel is locally started, the crew should proceed to steps 8.e. and 8.f. (& ultimately to step 28). Steps 9 (& beyond) are provided to allow time for local start of the 'A' EDG.	**(US)** **9. Energize An AC Emergency Bus From The SBO Diesel** **RNO: PROCEED TO** step 10
When called as CONVEX, REPORT "Initial reports are that a fire in Waterford has caused a loss of power to MP Station. The fire is active. There is not yet an estimate on power restoration. ***NOTE for BOOTH:*** Offsite power will not be restored.		**(US)** **10. Check Plant Status** **a.** To restore power to the 345 Kv switchyard, **REQUEST** CONVEX use all possible means, including dispatching personnel as needed

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	Crew does NOT use adverse CTMT parameters.	**(RO)** **10b. DETERMINE** if ADVERSE CTMT parameters should be used: **RNO:** Do **NOT** use ADVERSE CTMT parameters.
When called as Security, REPORT: "All Unit 3 SLCRS Doors are closed".		**(BOP)** **10c. CHECK** SLCRS Doors - CLOSED
When requested as a PEO (or extra operator), **ACKNOWLEDGE** request to perform ECA-0.0, Attachment B. **After 10 minutes, report Att. B complete.**		**(BOP)** **10d.** Using ATTACHMENT B, **PERFORM** actions for the following: - Instrument Rack Room Cabinet Doors - Control Building Pressure Boundary Doors
	BOP isolates Main Steam lines. **Examiner Note**: Up until now, the main steam lines have been passing steam to the condenser (with several trap bypasses failed open on loss of power). As a result of this, the reactor plant has underwent a cooldown. Due to this and the RCS inventory loss (seal return w/out seal injection), a safety injection is likely.	**(BOP)** **11. Isolate Main Steam, Main Feed And SG Blowdown** **a. CLOSE** MSIVs and MSIV Bypass Valves b. **CHECK** FW Isolation Trip Valves – CLOSED c. **CHECK** SG Blowdown Isolation Valves – CLOSED d. **CHECK** SG Blowdown Sample Isolation Valves – CLOSED e. **CHECK** SG Chemical Feed Isolation Valves – CLOSED f. **CLOSE** Main Steam Line Drains upstream of MSIVs and TD AFW Pump
	US determines that power can likely be restored to 34C from the 'A' EDG and he / she proceeds to step 13.	**(US)** **12. Check If Power Can Be Restored To At Least One AC Emergency Bus Within 45 minutes Of The Loss Of AC Power**

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	BOP determines SG's are intact and cooldown / depressurization has stopped following MSIV closure. **Examiner Note:** By this time, it's expected that the crew will have locally started 'A' EDG & completed steps 8e & 8f which direct proceeding to step 28.	**(BOP)** **13. Check SG Secondary Boundaries Intact**
	US determines 34C is energized by 'A' EDG.	**(US)** **28. Check If AC Emergency Power Is Restored** **28a. CHECK** AC Emergency Busses - AT LEAST ONE ENERGIZED FROM OFFSITE OR EDG **28b. PROCEED TO** step 28.n
	MSIV's are already closed.	**(BOP)** **28n. CHECK** MSIVs **AND** MSIV Bypass Valves - CLOSED
	FSG's were not implemented.	**(US)** **28o. CHECK** FSGs - ANY IMPLEMENTED **RNO: PROCEED TO** step 29.
	BOP may use all atmospheric relief valves (diesel driven ias compressor is operating) or MSS-MOV74B or D (powered from 34C).	**(BOP)** **29. Stabilize SG Pressures** **29a.** Using GA-26, **STABILIZE** SG pressure by adjusting the following as applicable: - SG Atmospheric Steam Relief Valves OR - SG Atmospheric Relief Bypass valves

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
	RO resets LOP and checks SWP*AOV39A Open.	**(RO)** **30. Check Service Water System Operation For Each Energized Emergency Bus** **30a. RESET** LOP, if required **30b. CHECK** Diesel Generator Heat Exchanger Sw Outlet Isolation valves – OPEN (3SWP*AOV39A)
EVENT 8, 'A' Train Service Water Pumps do not auto start when 'A' EDG is restored – manual start necessary. **US (C) / RO (C)**		
ED11D & ED11E	A' Train Service Water Pumps do not auto start when 'A' EDG is restored – manual start necessary. **Critical Task – RO starts 3SWP*P1A or 3SWP*P1C**	**(RO)** **30c. CHECK** Service Water Pumps - ONE PER TRAIN RUNNING **RNO: START** one Service Water Pump per train.
	RO places standby 'A' train SW pump in Auto and verifies discharge valve is open for running SW pump. **Examiner Note:** **Exam may be ended here or continued until procedure transition to ECA-0.1.**	**(RO)** **30d. PLACE** Service Water Pumps in PULL-TO-LOCK to AUTO 30e. **CHECK** Service Water Pump Discharge Valves - OPEN FOR RUNNING PUMPS
	RO verifies 3SWP*MOV71A is closed.	**(RO)** **30f. CHECK** TPCCW Heat Exchanger SW Supply Isolation Valves – CLOSED (3SWP*MOV71A)
		(BOP) **31. Perform The Following For Each Energized AC Emergency Bus** **31a. CHECK** the following equipment is energized: - 480 volt Emergency Busses - Battery Chargers

SEG# 2K21 NRC-03 Rev : 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	**EXPECTED RESPONSE**	**PROCEDURE INSTRUCTION**
If called as PEO, Acknowledge request to re-energize Attachment 'A' loads.	The crew likely never de-energized these loads (before 'A' EDG was restored).	**(US)** **31b. REFER** to ATTACHMENT A **AND ENERGIZE** previously de-energized non-essential DC loads **31c. CHECK** DC loads – PREVIOUSLY DE-ENERGIZED USING C OP 200.2, ATTACHMENT 7 **31d.** Using C OP 200.2, Attachment 7, **ENERGIZE** previously de-energized DC loads for energized AC Emergency Bus
If called as PEO, Acknowledge request to re-energize MCC 32-3T.		**(BOP)** **31e. PERFORM** the following to energize MCC 32-3T: **31e.3.** Using GA-1, **ENERGIZE** MCC 32-3T
		31f. CHECK Communications Console - ENERGIZED
	SBO is tagged out and can't be readily restored.	**32. Check Power To SBO Diesel Auxiliaries**
Upon Lead Examiner's direction, Place the simulator in FREEZE.	US transitions to ECA-0.1. **Examiner Note:** **End the exam** once transition is made to ECA-0.1 or at the Lead Examiner's direction.	**(US)** **33. Select Recovery Procedure** **a. CHECK** RCS Subcooling based on Core Exit TCs - GREATER THAN 32°F (115°F ADVERSE CTMT) **b**. **CHECK** PZR level – GREATER THAN 16% (50% ADVERSE CTMT) **c**. **CHECK** SI equipment: **CHECK** Charging Pumps - INJECTION FLOW **NOT** INDICATED **CHECK** SI Pumps – FLOW **NOT** INDICATED **CHECK** RHR Pumps - SI MODE FLOW **NOT** INDICATED **d**. **GO TO** ECA-0.1, Loss of All AC Power Recovery Without SI Required
***** END OF SCENARIO *****		

SEG# 2K21 NRC-03 Rev : 0

SHIFT TURNOVER REPORT

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1	Rx Power:	4 % (NI's)
Megawatts:	Thermal: 150 MWTH	PZR Pressure:	2250 psia
	Electric: 0 MWe	RCS T-AVE:	560 deg F
RCS Leakage:	Identified: 0.015 gpm	Core Burnup:	150 MWD/MTU
	Unidentified: 0.036 gpm	Protected Train/Facility:	**A (Orange)**
Date/Time:	Today 0015	Intake:	**Green**

Active Tracking Records and Action Statements

Equipment/Reason

LCO	Action	Date	Time in LCO	Action Requirement	Time Left

OD Compensatory Actions / Temp Logs

Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC

System	Notes
SBO	The SBO is out of service for electrical maintenance on the synch circuit.
GMC	3GMC-P1B is tagged out to repair a suction flange leak.

CROSS UNIT SYSTEM STATUS

SURVEILLANCES / EVOLUTIONS IN PROGRESS

OP 3203	**Plant Startup, is in progress and complete up through step 4.2.11**, Mode 1 Entry Requirements. All Mode 1 entry requirements have been met. **Continue startup to 8% power. Use Control Rods for power increase.**

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)

Current Rod Height	110	
Xenon Trend	Inc. at 4 pcm / hr	
Current Boron	1977	
Boron Pot Setting / Blend Ratio	5.61 / 22.4 gpm	
Plant Risk	LERF 1.06 ACT: 1 year	CDF 4.15 ACT: 46.9 days

SEG# 2K21 NRC-03 Rev : 0

REFERENCE MATERIAL		
Session No.: NRC-03		
Reference No.	**Revision**	**# Copies**
ARP's		
OP 3353.MB3A	**Rev. 05**	**N/A**
OP 3353 VP1C 4-7	**Rev. 14**	**N/A**
OTHER – RO Station		
OTHER– BOP Station		
US Desk Procedures		
OP 3203	**Rev. 29**	**N/A**
AOP 3581	**Rev. 07**	**N/A**
AOP 3571	**Rev. 17**	**N/A**
E-0	**Rev. 35**	**N/A**
ECA-0.0	**Rev. 40**	**N/A**

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to Degrading Intake Conditions

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Initiated:

W.M. Forrestt (signature on file)	5/26/2021
Developer	Date

Reviewed:

T. Fisher (signature on file)	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/11/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/26/21	Developed from SRO Bank JPM A215 (2K13 NRC SRO A.1.2). Reference revisions were updated with no substantive changes to JPM.	0
	-	

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

System: N/A

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Applicable To: SRO X STA _____ RO _____ PEO _____

K/A Number: 2.1.20 K/A Rating: 4.6 / 4.6

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

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

Task Standards: Reviews SP 3665.2-001, Intake Structure Condition Determination with Vacuum in Condenser, and determines: (1) environmental factors are now RED and (2) actions identified in step 4.7 of OP 3215 are now required.

Required Materials: (procedures, equipment, etc.)
1. Completed OPS form SP 3665.2-001Rev 11, Intake Structure Condition Determination with Vacuum in Condenser (part of JPM Examinee Handout)
2. SP 3665.2 Rev 11, Intake Structure Condition Determination (**handout**)
3. OP 3215 Rev 15, Response to Intake Structure Degraded Conditions **(handout full copy, not marked up)**

General References: N/A

***** 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: 2021 NRC SRO A.1.1 Revision : 0

Initial Conditions: You are the Shift Manager. It is October 15th and the unit is experiencing degrading conditions at the intake structure. The Shift Technical Advisor (STA) is maintaining SP 3665.2, Intake Structure Condition Determination current. The last surveillance was done at 0800 and indicated a plant factor condition of YELLOW, and an environmental factor condition of YELLOW. Plant actions for the yellow conditions are already in progress per OP 3215.

Initiating Cues: At 0900 the following conditions changed:

- PEO's have finished raking trash racks
- Trash rack DP's are now stable at 6.5", 6.0", 2.0", 2.5", 2.0", and 1.5".
- Traveling screen DP's are now stable at 5.0", 5.0", 4.0", 3.5", 2.0", 2.0".
- Wind speed, from 33' Met. Tower data, has increased to a steady 27 mph and from a new direction of 250°, which is verified by the marine forecast.

You directed the STA to conduct a new Intake Structure Condition Determination which was just completed. With the exception of the bulleted items above, all other data on the attached SP 3665.2-001 remained unchanged from the 0800 completed surveillance.

Disposition the completed SP 3665.2-001 surveillance and document required actions, if any.

Simulator Requirements: NONE

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

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

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

START TIME _____

Comments: (1) A copy of 3665.2-001 is marked up with 2 embedded errors (wind correction should be 10 vice 5 and trash rack DP is 3 points vice 6 points). This surveillance form is part of the examinee handout. (2) Provide the examinee with the examinee handout AND a copy of (1) SP 3665.2, Intake Structure Condition Determination (2) OP 3215. (3) Examinee may locate a single error and identify the form is incorrect, requiring correction. If examinee requests STA re-perform Intake Structure Condition Determination, provide the cue: **Document your findings and continue with your review.**		
STEP #1 SP 3665.2 Step 4.3.5	Performance: **REQUEST SM review SP 3665.2-001.** **Review and assess conditions for current Plant Factors.**	Critical: Y ☐ N ☒
	Standard: Examinee reviews the correct portion of the surveillance form which is the 'Per SM/US column' for the denoted plant conditions for each of the plant factors.	Grade: S ☐ U ☐
3665.2-001 Pg 2 -3	Standard: Examinee reviews the plant factor values for Circulating water Pumps and Screens (P1), Screen Wash Pumps (P2), Trash Racks (P3), Trash Rakes (P4), Traveling Screens (P5) and Debris Conveyor (P6**). Determines that P3 "Trash Racks" should be 3 points vice 6 points** (based on only 2 racks equal / above 6 in.	Grade: S ☐ U ☐
	Standard: Examinee reviews the **Plant Factors Section Total** value and determines that a **total value of '6' was erroneously entered, instead of the correct value of '3'.**	Grade: S ☐ U ☐
	Cue:	
	Comments: This change (from 6 to 3 points) will still result in a yellow condition. The examinee missing this step will have no adverse effect. Therefore, this is not a critical step.	

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

STEP #2 3665.2-001 Pg 3 - 4	Performance: **Review and assess conditions for current Environmental Plant Factors.**	
	Standard: Examinee reviews the correct portion of the surveillance form which is the 'Per SM/US column' for the denoted environmental conditions for each of the environmental factors.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee reviews the environmental factor values for Predicted Height of Next High Tide (E1) and Height of Tide in Last 48 Hours (E2), and determines that correct environmental factor values were denoted.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee reviews the environmental factor value for **Wind Direction (E3)** and determines that a **value of '1' was erroneously circled, instead of the correct value of '2'.**	Critical: **Y** ☒ N ☐ Grade: S ☐ U ☐
	Cue:	
	Comments: The new wind direction, as given in the cue, is from 250°. SP 3665.2-001 specifies a Wind Speed factor value of '2' for directions from 120° to 270°.	

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

STEP #3 3665.2-001 Pg 3 - 4	Performance: **Review and assess conditions for current Environmental Plant Factors.**	
	Standard: Examinee reviews the correct portion of the surveillance form which is the 'Per SM/US column' for the denoted environmental conditions for each of the environmental factors.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee reviews the environmental factor values for Wind Speed (E4) and Historical Wind Speed (E5) and determines that correct environmental factor values were denoted.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee reviews the environmental factor value for **Wind Correction (E6)** and determines that **a value of '5' was erroneously entered, instead of the correct value of '10'.**	Critical: **Y** ☒ N ☐ Grade: S ☐ U ☐
	Cue:	
	Comments: Wind Correction (E6) is equal to Wind Speed (E4) plus Historical Wind Speed (E5) times Wind Direction (E3). E6 = E3 x (E4 + E5). Wind Direction (E3) should actually be a factor of '2' as opposed to '1'.	

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

STEP #4 3665.2-001 Pg 3 - 4	Performance: **Review and assess conditions for current Environmental Plant Factors.**	
	Standard: Examinee reviews the correct portion of the surveillance form which is the 'Per SM/US column' for the denoted environmental conditions for each of the environmental factors.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Standard: Examinee reviews the environmental factor values for Predicted Wave Height (E7), Historical Wave Height (E8), Wave Height / Seas Factor (E9), Barometric Pressure (E10), Season (E11), Historical Environmental Factor (E12) and Seaweed Loading (E13) and determines that correct environmental factor values were denoted.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
3665.2-001 Pg 4	Standard: Examinee reviews the **Environmental Factors Section Total** value and determines that a **total value of '21' was erroneously entered, instead of the correct value of '26'.**	Critical: **Y** ☒ N ☐ Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

STEP #5	Performance: **Review and assess conditions for current Environmental Plant Factors.**	
3665.2-001 Pg 3 - 5	Standard: Examinee reviews the correct portion of the surveillance form which is the 'Per SM/US column' for the denoted environmental conditions for each of the environmental factors.	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
3665.2-001 Pg 5	Standard: Examinee recognizes that the Plant Factors Section Total value is ≥ 3, and therefore Plant Factor Condition remains "YELLOW".	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
3665.2-001 Pg 5	Standard: Examinee recognizes that the **Environmental Factors Section Total** value is **> 23 (specifically 26)**, and therefore is an **Environmental Factor Condition of "RED"** *not "YELLOW".*	Critical: **Y** ☒ N ☐ Grade: S ☐ U ☐
	Comments: This is an Environmental Factor Condition change from "YELLOW" to "RED'.	
3665.2-001 Pg 5	Standard: Examinee recognizes that the **Intake Condition Total is NOT > 29** (specifically 29).	Critical: Y ☐ N ☒ Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #6	Performance: **Determine Required Actions**	Critical: Y ☐ N ☒
	Standard: Examinee recognizes that if any action level is exceeded, OP 3215 must be referred to. (SP 3665.2-001 Note 2)	Grade: S ☐ U ☐
	Cue:	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

STEP #7	Performance: (SP 3665.2-001 Note 3)	Critical: Y ☐ N ☒
	Standard: Examinee recognizes that if 'RED' action level is exceeded (environmental total or Intake total), a risk review must be performed. Additionally, per step 4.1.3.e (SP 3665.2) an Environmental Factor > 23 requires notification of WWC.	Grade: S ☐ U ☐
	Cue: **The STA will refer to NF-AA-PRA-370, and PERFORM a risk review.**	
	Comments:	
STEP #8	Performance: Obtain proper procedure.	Critical: Y ☐ N ☒
	Standard: Examinee obtains a copy of OP 3215 and reviews the procedure steps to determine which are applicable with the plant factor condition "RED", OR the environmental factor condition "RED".	Grade: S ☐ U ☐
	Cue:	
	Comments:	
STEP #9 OP 3215 Step 4.4 thru 4.6	Performance: OP 3215, Steps 4.3 and 4.5.	Critical: Y ☐ N ☒
	Standard: Examinee should recognize these steps are already in progress per initial condition.	Grade: S ☐ U ☐
	Cue: OP 3215 step 4.3 and 4.5 are already in progress based on the 0800 surveillance results which indicated both a plant factor condition and an environmental factor condition of "YELLOW", as given in the initial conditions. If questioned by the examinee, provide the following cue: **The actions associated with OP 3215, steps 4.3, 4.5 and 4.6 are already in progress.**	
	Comments:	

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

STEP #10 OP 3215 Step 4.7	Performance: IF environmental factor OR unplanned plant factor condition is "RED," PERFORM the following as appropriate:	Critical: **Y** ☒ N ☐
	Standard: Examinee recognizes that **step 4.7 is applicable for the new environmental conditions.**	Grade: S ☐ U ☐
	Cue:	
	Comments: It is not necessary for the examinee to discuss the specific actions associated with 4.7 steps of OP 3215 – but only identify that these actions apply to an environmental factor condition of "RED." Additional actions in SP 3665.2 or OP 3215 may be identified by the examinee. However, these are actions are not critical.	

TERMINATION CUE: **The evaluation for this JPM is concluded.** **STOP TIME** _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Task Title: Respond to Degrading Intake Conditions

Date Performed: _____

Examinee: _____

For the examinee 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?		☐ Yes ☒ No	
Validated Time (minutes):	**20**	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT (page 1 of 6)

JPM Number: 2021 NRC SRO A.1.1 Revision: 0

Initial Conditions: You are the Shift Manager. It is October 15th and the unit is experiencing degrading conditions at the intake structure. The Shift Technical Advisor (STA) is maintaining SP 3665.2, Intake Structure Condition Determination current. The last surveillance was done at 0800 and indicated a plant factor condition of YELLOW, and an environmental factor condition of YELLOW. Plant actions for the yellow conditions are already in progress per OP 3215.

Initiating Cues: At 0900 the following conditions changed:

- PEO's have finished raking trash racks
- Trash rack DP's are now stable at 6.5", 6.0", 2.0", 2.5", 2.0", and 1.5".
- Traveling screen DP's are now stable at 5.0", 5.0", 4.0", 3.5", 2.0", 2.0".
- Wind speed, from 33' Met. Tower data, has increased to a steady 27 mph and from a new direction of 250°, which is verified by the marine forecast.

You directed the STA to conduct a new Intake Structure Condition Determination which was just completed. With the exception of the bulleted items above, all other data on the attached SP 3665.2-001 remained unchanged from the 0800 completed surveillance.

Disposition the completed SP 3665.2-001 surveillance and document required actions, if any.

Form Approval

Approval Date	Effective Date
02/15/17	03/01/17

Surveillance Form

Generic Information

Form Title	Rev. No.
Intake Structure Condition Determination with Vacuum in Condenser	011

Reference Procedure	Applicable Tech. Spec.	Applicability (Tech. Spec.)	Frequency
SP 3665.2	N/A	N/A	S

Specific Information

Schedule Start Date		AWO Number	Mntc Restoration ☐ Yes ☐ No
Performance MODES With vacuum in Condenser	Prerequisites Completed (Initials) ZL	Precautions Noted (Initials) ZL	
Test Authorized By John Smith		Date Today	Partial Surveillance ☐ Yes ☐ No
Performed By Fred Zinola		Date Today	
Accepted By		Date	Acceptance Criteria Satisfied ☐ Yes ☐ No
Approved By (Department Head or Designee)		Date	

Surveillance Information

Test Equipment Type	QA Number	Cal Due Date
N/A	N/A	N/A

Comments

CR# _____

EXAMINEE HANDOUT (page 3 of 6)

Intake Structure Condition Determination with Vacuum in Condenser

	0700–1000		1900–2200		Per SM/US 0900 (Time)	Per SM/US _____ (Time)
	Current	Predicted	Current	Predicted		
Plant Factors						
P1 Circulating Water Pumps and Screens						
Circulating pumps, and screens operating properly or available for operation	0	0	0	0	0	0
One circulating pump or screen out of service (C, D, E or F)	3	3	3	3	3	3
One circulating pump or screen out of service (A or B)	6	6	6	6	6	6
Two circulating pumps or screens out of service	9	9	9	9	9	9
Three circulating pumps or screens out of service	25	25	25	25	25	25
P2 Screen Wash Pumps						
Two pumps available	0	0	0	0	0	0
One pump out of service	8	8	8	8	8	8
Two pumps out of service	25	25	25	25	25	25
P3 Trash Racks (If 24 Hr look ahead *not* feasible, use current values)						
< 6 inches dp on all racks	0	0	0	0	0	0
≥ 6 inches dp on one rack	1	1	1	1	1	1
≥ 6 inches dp on two racks	3	3	3	3	3	3
≥ 6 inches dp on three racks	6	6	6	6	6	6
≥ 6 inches dp on four or more racks	12	12	12	12	12	12
≥ 10 inches on two or more racks	20	20	20	20	20	20
P4 Trash Rakes						
Two rakes available	0	0	0	0	0	0
One rake out of service	8	8	8	8	8	8
Two rakes out of service	25	25	25	25	25	25
P5 Traveling Screens (If 24 Hr look ahead *not* feasible, use current values)						
< 6 inches dp, in either automatic, Slow 1, or Slow 2	0	0	0	0	0	0
≥ 6 inches dp, with screens in automatic, Slow 1 or Slow 2	6	6	6	6	6	6
≥ 9 inches dp, with screens frequently shifting to Fast 1, or Fast 2 (once per hour over 3 hours)	12	12	12	12	12	12

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Rev. 011
Page 2 of 5

Intake Structure Condition Determination with Vacuum in Condenser

	0700–1000		1900–2200		Per SM/US 0900 (Time)	Per SM/US ____ (Time)
	Current	Predicted	Current	Predicted		
Plant Factors (cont'd)						
P6 Debris Conveyor						
Debris conveyor available or trough hatch open	0	0	0	0	0	0
Debris conveyor out of service	3	3	3	3	3	3
Plant Factors Section Total						
(P1 + P2 + P3 + P4 + P5 + P6)	3				6	
Environmental Factors						
E1 Predicted Height of Next High Tide (local tide charts including storm surge)						
Next high tide is <3.0 feet	0	0	0	0	0	0
Next high tide is ≥3.0 feet but <4 feet	2	2	2	2	2	2
Next high tide is ≥4 feet	4	4	4	4	4	4
E2 Height of Tide in Last 48 Hours (local tide charts including storm surge)						
All high tides <4 feet	0	0	0	0	0	0
Any high tide ≥4 feet	2	2	2	2	2	2
E3 Wind Direction (actual from 33′ MET tower Internet, PPC, OFIS or EDAN)						
From 270° to 120° (>270° or <120°)	1	1	1	1	1	1
From 120° to 270° (≥120° or ≤270°)	2	2	2	2	2	2
E4 Wind Speed (actual from 33′ MET tower Internet, PPC, OFIS or EDAN) (CVAVGWS33 Preferred)						
Sustained speed <10 mph	1	1	1	1	1	1
Sustained speed ≥10 mph but <20 mph	2	2	2	2	2	2
Sustained speed ≥20 mph but <25 mph	3	3	3	3	3	3
Sustained speed ≥25 mph but <30 mph	5	5	5	5	5	5
Sustained speed ≥30 mph or gusts ≥45 mph	7	7	7	7	7	7
E5 Historical Wind Speed (Internet, PPC, OFIS or EDAN) (CVAVGWS33 Preferred)						
Sustained wind <20 mph in last 24 hours or Sustained wind speed has *not* continuously been greater than or equal to 20 mph for any 4 hour period in last 24 hours	0	0	0	0	0	0
Sustained wind ≥20 mph for any continuous 4 hour period in last 24 hours	2	2	2	2	2	2
E6 Wind Correction:						
E3 × (E4+ E5)	3				5	

Intake Structure Condition Determination with Vacuum in Condenser

	0700–1000		1900–2200		Per SM/US 0900 (Time)	Per SM/US ____ (Time)
	Current	Predicted	Current	Predicted		
Environmental Factors (cont'd)						
E7 Predicted Wave Height/Seas next 12 hrs (from internet)						
Wave height ≤ 1 foot	1	1	1	1	1	1
Wave height > 1 foot but < 3 feet	(2)	2	2	2	(2)	2
Wave height ≥ 3 feet but < 5 feet	4	4	4	4	4	4
Wave height ≥ 5 feet	6	6	6	6	6	6
E8 Historical Wave Height/Seas (Past 48 Hrs) (Worst of previous surveillances or current conditions)						
Wave height < 3 1/2 feet in last 48 hours	(1)	1	1	1	(1)	1
Wave height ≥ 3 1/2 feet in last 48 hours	2	2	2	2	2	2
E9 Wave Height/Seas Factor						
E7 x E8	2				2	
E10 Barometric Pressure (internet or local on site if available)						
Pressure > 29.5″ (> 999 mb), steady/rising	1	1	1	1	1	1
Pressure > 29.5″ (> 999 mb), falling	2	2	2	2	2	2
Pressure ≤ 29.5″ (≤ 999 mb), steady/rising	2	2	2	2	2	2
Pressure ≤ 29.5″ (≤ 999 mb), falling	(4)	4	4	4	(4)	4
E11 Season						
July	0	0	0	0	0	0
December, January, or February	2	2	2	2	2	2
March, May 16–31, June, August, or November	4	4	4	4	4	4
April, May 1–15, September or October	(6)	6	6	6	(6)	6
E12 Historical Environmental Factor						
Last environmental factor < 25	(0)	0	0	0	(0)	0
Last environmental factor ≥ 25	4	4	4	4	4	4
E13 Seaweed Loading Carts of Seaweed from trash racks in previous 2 shifts (logs)						
< 10	0	0	0	0	0	0
≥ 10 but ≤ 20	(4)	4	4	4	(4)	4
> 20	6	6	6	6	6	6
Environmental Factors Section Total						
(E1 + E2 + E6 + E9 + E10 + E11+ E12 + E13)	19				21	

SP 3665.2–001
Rev. 011
Page 4 of 5

EXAMINEE HANDOUT (page 6 of 6)

Intake Structure Condition Determination with Vacuum in Condenser

Parameter	Action Level	0700–1000		1900–2200		Per SM/US 0900 (Time)	Per SM/US (Time)
		Current	Predicted	Current	Predicted		
Determination of Factors							
Sustained wind speed from 72 hour weather forecast	Predicted sustained speed > 20 mph (Note 1)	YES				YES	
Plant Factors Section Total (from page 3)	≥ 3 points (Note 2)	3				6	
	> 9 points						
Environmental Factors Section Total (from page 4)	≥ 17 points (Note 2)	19				21	
	> 23 points (Note 3)						
Intake Condition Total (Plant + Environmental)	> 29 points (Note 2 and 3)	22				27	
SM/US Review		2L					

Note 1: If sustained wind speed, over the next 72 hours, is predicted to be greater than 20 MPH, OP 3215, "Response to Intake Structure Degraded Conditions" must be referred to.

Note 2: If any Action Level is exceeded, OP 3215, "Response to Intake Structure Degraded Conditions," must be referred to.

Note 3: If action level is exceeded, Refer To NF–AA–PRA–370, "Probabilistic Risk Assessment Procedures and Methods: PRA Guidance for MRule (a)(4)" and PERFORM a risk review.

SP 3665.2–001
Rev. 011
Page 5 of 5

Student: _____

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Identify a Loss of CTMT Closure and Determine Required Actions

JPM Number: 2021 NRC SRO A.1.2 Revision: 0

Initiated:

W.M. Forrestt (signature on file)	5/7/2021
Developer	Date

Reviewed:

T. Fisher (signature on file)	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/23/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC SRO A.1.2 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/7/21	Issue of Bank JPM A107.	0

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC SRO A.1.2 Revision: 0

Task Title: Identify a Loss of CTMT Closure

System: N/A

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 11

Applicable To: SRO X STA _____ RO _____ PEO _____

K/A Number: 2.1.36 K/A Rating: 4.1

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 have identified a loss of CTMT closure and direct actions to suspend all operations involving movement of irradiated fuel assemblies in the containment.

Required Materials: (procedures, equipment, etc.)
P&ID EM-123E (25212-26923 sht 5 of 7)
P&ID EM-145A (25212-26945 sht 1 of 3)
UNIT 3 TECHNICAL SPECIFICATIONS Rev. 303

General References:
AOP 3565, Loss of Containment Vacuum / Integrity (Rev. 3)
SP 3613F.3, CTMT Boundary During Movement of Fuel within the CTMT Building (Rev. 5 Ch. 2)
OP 3250.12, Establishing CTMT Boundary for Movement of Fuel within the CTMT Building (Rev. 8)
OU-AA-200 Shutdown Risk Management (Rev. 11)
OP 3260A Conduct of Outages (Rev. 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: 2021 NRC SRO A.1.2 Revision : 0

Initial Conditions:

The plant is in MODE 6 with a fuel move (CORE OFFLOAD) in progress.

Containment closure is set with closure plans (administrative controls) established for the following:

- CTMT Equipment Hatch
- CTMT Personnel Hatch
- CTMT Purge Valves

The following plant conditions exist:

- 'A' train of RHR in service in the cooldown mode.
- RHR return temperature 90°F
- 'D' SG secondary side manways are open for inspection with hoses and cables run into the steam generator.

You are the Unit Supervisor on watch in the Control Room.

Initiating Cues:

The Primary Rounds PEO calls to report that workers erecting scaffolding in the Main Steam Valve Building 60' have accidentally broken a low point drain valve off a main steamline drain standpipe, upstream of the #4 MSIV, near 3DTM-LS28D. The PEO reports that 3DTM-V119 (#4 MSIV Upstream Drain Standpipe LS28D Low Point Drain) is no longer attached to the steamline.

You inform the Shift manager.

Determine the impact of the broken pipe on Tech Specs, if any.

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

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

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.2 Revision: 0

Task Title: Identify a Loss of CTMT Closure

START TIME: _____

Comments: If the examinee requests a particular reference, all of the general references are available on DocTop Web.		
Cue: If the examinee questions whether a closure plan exists for the 'D' SG manways, provide the following Cue: **A closure plan is NOT in place for the 'D' SG.**		
S T E P # 1	Performance: Obtain and refer to the appropriate drawings or other documentation to determine that a breach of CTMT closure has occurred.	Critical: Y ☐ N ☒
	Standard: SRO Examinee refers to P&ID EM-123E (Main Steam system) and EM-145A (Turbine Plant Miscellaneous Drains).	Grade: S ☐ U ☐
	Standard: SRO Examinee determines that the 3DTM-V119 drain path is a breach of CTMT closure.	Grade: S ☐ U ☐
	Cue:	
	Comments: Entry into AOP 3565, *Loss of CTMT Vacuum / Integrity* is not required for success in this JPM but may be referenced by the examinee.	

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.2 Revision: 0

Task Title: Identify a Loss of CTMT Closure

S T E P # 2	Performance: Refer To Technical Specification 3.9.4.c for Containment Building Penetrations and DETERMINE Limiting Condition for Operation.	Critical: **Y** ☒ N ☐
	Standard: Refers to T.S. LCO 3.9.4 for Containment Building Penetrations, and enters LCO ACTION statement (ACTION: With the requirements of the above specification not satisfied, immediately suspends all operations involving movement of fuel in the containment building.)	Grade: S ☐ U ☐
	Standard: SRO Examinee directs the Refueling SRO to immediately suspend all operations involving movement of fuel in the containment building.	Grade: S ☐ U ☐
	Cue: If directed to "immediately suspend" all operations involving movement of irradiated fuel assemblies in the containment, **provide examinee with Handout 2**.	
	Comments: Entry into LCO 3.9.4.c ACTION requirement is required for success in this JPM. SRO examinee should state or otherwise indicate recognition of LCO requirement.	

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.1.2 Revision: 0

Task Title: Identify a Loss of CTMT Closure

S T E P # 3	Performance: Correct recognition that Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.	Critical: **Y** ☐ N ☒
	Standard: Examinee recognizes that fuel movement is in progress in CTMT and in transit to the Fuel Building.	Grade: S ☐ U ☐
	Standard: SRO Examinee directs the Refueling SRO to complete both moves and then stop all operations involving CORE ALTERATIONS or movement of fuel in the containment building.	Grade: S ☐ U ☐
	Cue:	
	Comments: Definitions: 1.9 CORE ALTERATIONS shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. **Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.**	

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC SRO A.1.2 Revision: 0

Task Title: Identify a Loss of CTMT Closure and Determine Required Actions

Date Performed: _____

Student: _____

For the examinee 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?		☐ Yes ☒ No	
Validated Time (minutes):	**11**	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT 2

DO NOT provide this handout until cued

Initial Conditions:	• In the Containment a used fuel assembly is over its new core location and is ready to be lowered. • In the Spent Fuel Pool, a used fuel assembly is in transit to its final SFP location.

Initiating Cues:	• The Refueling SRO requests guidance on what to do with the fuel assemblies.

EXAMINEE HANDOUT

JPM Number: 2021 NRC SRO A.1.2 Revision: 0

Initial Conditions: The plant is in MODE 6 with a fuel move (CORE OFFLOAD) in progress.

Containment closure is set with closure plans (administrative controls) established for the following:

- CTMT Equipment Hatch
- CTMT Personnel Hatch
- CTMT Purge Valves

The following plant conditions exist:

- 'A' train of RHR in service in the cooldown mode.
- RHR return temperature 90°F
- 'D' SG secondary side manways are open for inspection with hoses and cables run into the steam generator.

You are the Unit Supervisor on watch in the Control Room.

Initiating Cues: The Primary Rounds PEO calls to report that workers erecting scaffolding in the Main Steam Valve Building 60' have accidentally broken a low point drain valve off a main steamline drain standpipe, upstream of the #4 MSIV, near 3DTM-LS28D. The PEO reports that 3DTM-V119 (#4 MSIV Upstream Drain Standpipe LS28D Low Point Drain) is no longer attached to the steamline.

You inform the Shift manager.

Determine the impact of the broken pipe on Tech Specs, if any.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

JPM Number: 2021 NRC SRO A.2 Revision: 0

Initiated:

W.M. Forrestt (signature on file)	5/26/2021
Developer	Date

Reviewed:

T. Fisher (signature on file)	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/26/2021	Modified bank JPM A051 to include changes to initial conditions, flux readings, final calculated QPTR values, and interpretation of TS actions.	0

JPM WORKSHEET

Facility: MP3 Examinee: _____

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes) 35

Applicable To: SRO X RO _____

K/A Number: GEN 2.2.12 K/A Rating: 3.7 / 4.1

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

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

Task Standards: Successfully identifies and corrects errors in a manual QPTR surveillance in accordance with SP 31012, *Quadrant Power Tilt Ratio* Additionally, determines the QPTR is UNSAT, Technical Specification 3/4.2.4 must be entered .

Required Materials: (procedures, equipment, etc.)

- SP 31012, *Quadrant Power Tilt Ratio*, Rev. 006
- Completed Copy of SP 31012 Attachment 1 (with embedded errors, see NOTE prior to JPM Step for details)
- MP3 Tech Specs
- Calculator

General References: N/A

***** 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: 2021 NRC SRO A.2 Revision : 0

Initial Conditions: The plant was at 100% power when the following sequence of events occurs:

1. Control Rod L13 drops into the core.
2. The crew is carrying out the actions of AOP 3552, *Malfunction of the Rod Drive System*, Attachment B; "Dropped Rod".

Current conditions are as follows:

- The RO has just completed a manual QPTR using SP 31012, *Quadrant Power Tilt Ratio,* Section 4.2, "QPTR by Measurement".
- The PPC is out of service.
- NI channel recalibration is NOT in progress.

Initiating Cues: As the US, you are to review the completed manual QPTR calculation, SP 31012 Attachment 1 QPTR Surveillance, for accuracy and correct any errors.

Simulator Requirements: None.

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

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

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

START TIME: _____

EXAMINER Notes:

1. Provide the examinee the following paperwork ALONG with the EXAMINEE HANDOUT 1 (at end of JPM):

- Unmarked Copy SP 31012, *Quadrant Power Tilt Ratio*, Rev. 006
- Examinee Handout 2 "Completed QPTR Surv. For Review" (see *** NOTE** below).

*** NOTE** on How to create Examinee Handout 2 with embedded errors:

1. Transpose 100% NI Current readings such that the Upper Detector 100% Current is recorded in the space for the lower detector (for all 4 channels)

2. When calculating the 4 channels QPTR, average each channel detector ratio (rather than averaging all 4 upper and lower detector ratios). Use this to calculate QPTR's. The resultant highest QPTR will be Lower Detector N41 at a value of 1.057.

2. Evaluators Guidance on JPM Administration: This JPM is written for a step by step evaluation of the task. It is written as if the examinee were performing/explaining each step separately. **An alternative to this method is to have the examinee review the QPTR calculation, identify the error(s), and then submit a corrected calculation to the examiner.** In order to aid in the administration of this method, an **ANSWER KEY is provided (correctly filled out surveillance form).**

STEP #1 SP 31012	Performance: US reviews completed QPTR Surveillance (Examinee Handout 2)	Standard: Examinee identifies errors (noted above) and reports such to the Examiner.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: When informed of the surveillance error(s), state: "Determine QPTR using Section 4.2, "QPTR by Measurement".			
	Comments: Critical Nature of the step is that the Examinee doesn't accept the surveillance (he / she doesn't have to identify all of the errors to proceed with the JPM).			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

<table>
<tr><td rowspan="3">S T E P
2

SP 31012
Step 4.2.1</td><td>Performance:
RECORD average percent reactor power from NI cabinet meters NMP--NM41F through NMP--NM44F or from the Plant Process Computer Calorimetric (CVRXPO) on Attachment 1.</td><td>Standard:
Averages 4 Power Range drawer readings 99.5%, 97.6%, 100.8% & 68.2% (top of graphics on Examinee Handout pages 2 & 3) and records 91.5% on top of Attachment 1 (beside “Reactor Power).</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td rowspan="3">S T E P
3

SP 31012
Step 4.2.2
NOTE</td><td>Performance:
NOTE: Attachment 2, “100% NI Currents,” is maintained in the “Reactor Engineering Curve and Data Book.”</td><td>Standard:
Examinee reviews the NOTE.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td rowspan="3">S T E P
4

SP 31012
Step
4.2.2.a</td><td>Performance:
RECORD available upper and lower detector readings on Attachment 1.</td><td>Standard:
References Examinee Handout and records the following on Attachment 1:
<table>
<tr><th>Instru.</th><th>Upper Detector Reading</th><th>Lower Detector Reading</th></tr>
<tr><td>N41</td><td>89.5</td><td>91.9</td></tr>
<tr><td>N42</td><td>87.3</td><td>85.8</td></tr>
<tr><td>N43</td><td>93.3</td><td>92.6</td></tr>
<tr><td>N44</td><td>67.2</td><td>60.9</td></tr>
</table></td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

<table>
<tr><td>S T E P
5

SP 31012
Step
4.2.2.b</td><td>Performance:
On Attachment 1, RECORD 100% NI upper and lower currents obtained from Attachment 2.</td><td>Standard:
References Examinee Handout and records the following on Attachment 1:<table><tr><th>Instru.</th><th>Upper 100% Current</th><th>Lower 100% Current</th></tr><tr><td>N41</td><td>78.9</td><td>86.1</td></tr><tr><td>N42</td><td>78.1</td><td>82.4</td></tr><tr><td>N43</td><td>81.4</td><td>85.3</td></tr><tr><td>N44</td><td>83.2</td><td>86.8</td></tr></table></td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments:</td></tr>
<tr><td>S T E P
6

SP 31012
Step
4.2.2.c</td><td>Performance:
RECORD data source and date of Attachment 2 entry in “Remarks” section on Attachment 1.</td><td>Standard:
Locates “Remarks” section on Attachment 1 and records data source (RE Curve and Data Book) and date of Attachment 2 entry.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

<table>
<tr>
<td>S T E P
7

SP 31012
Step
4.2.2.d</td>
<td>Performance:
CALCULATE the detector ratio for each detector by dividing each detector's reading by that detector's 100% current and RECORD on Attachment 1.</td>
<td>Standard:
Examinee divides each detector's reading by that detectors 100% current to determine the detector ratio for the upper and lower detector's of PRNI channels 41 through 44.
Examinee records the detector ratios on Attachment 1.
<table>
<tr><th>Instru.</th><th>Upper Detector Ratio</th><th>Lower Detector Ratio</th></tr>
<tr><td>N41</td><td>1.134</td><td>1.067</td></tr>
<tr><td>N42</td><td>1.118</td><td>1.041</td></tr>
<tr><td>N43</td><td>1.146</td><td>1.086</td></tr>
<tr><td>N44</td><td>0.808</td><td>0.702</td></tr>
</table>
</td>
<td>Critical:
Y ☐ N ☒</td>
<td>Grade
S ☐ U ☐</td>
</tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments: (1) Calculations are required to be made to 3 decimal places per Attachment 1 guidance.</td></tr>
<tr>
<td>S T E P
8

SP 31012
Step
4.2.2.e</td>
<td>Performance:
CALCULATE the average upper and lower ratio and RECORD on Attachment 1.</td>
<td>Standard:
Examinee calculates the average upper and lower detector ratios.

Examinee records the average upper and lower detector ratios on Attachment 1.
<table>
<tr><th></th><th>Upper Detector Ratio</th><th>Lower Detector Ratio</th></tr>
<tr><td>AVG</td><td>1.052</td><td>0.974</td></tr>
</table>
</td>
<td>Critical:
Y ☐ N ☒</td>
<td>Grade
S ☐ U ☐</td>
</tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments: (1) Calculations are required to be made to 3 decimal places per Attachment 1 guidance.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

<table>
<tr>
<td>S T E P
#9

SP 31012
Step 4.2.2.f</td>
<td>Performance:
Using the following equation, CALCULATE power tilt for each detector and RECORD in “QPTR” section of Attachment 1:

Upper QPTR = (Upper Detector Ratio) ÷ (Average Upper Ratio)

Lower QPTR = (Lower Detector Ratio) ÷ (Average Lower Ratio)</td>
<td>Standard:
Examinee determines the power tilt (QPTR) for the upper and lower detectors associated with PRNI channel 41 through 44 by dividing each detectors detector ratio by the average ratio.
Examinee records QPTR values on Attachment 1.
<table>
<tr><th>Instru.</th><th>Upper QPTR</th><th>Lower QPTR</th></tr>
<tr><td>N41</td><td>1.078</td><td>1.095</td></tr>
<tr><td>N42</td><td>1.063</td><td>1.069</td></tr>
<tr><td>N43</td><td>1.089</td><td>1.115</td></tr>
<tr><td>N44</td><td>0.768</td><td>0.721</td></tr>
</table>
</td>
<td>Critical:
Y ☒ N ☐</td>
<td>Grade
S ☐ U ☐</td>
</tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments:</td></tr>
<tr>
<td>S T E P
#10

SP 31012
Step
4.2.2.g</td>
<td>Performance:
RECORD maximum upper and lower QPTR and associated channel on Attachment 1.</td>
<td>Standard:
Examinee records maximum upper and lower detector QPTR and associated channel on Attachment 1.

1.089 for Upper Detector N43
1.115 for Lower Detector N43</td>
<td>Critical:
Y ☒ N ☐</td>
<td>Grade
S ☐ U ☐</td>
</tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

S T E P # 1 1 SP 31012 Step 4.2.3.a	Performance: **CHECK the following acceptance criteria are met:** WHEN above 50% of Rated Thermal Power (RTP), CHECKmaximum QPTR does *not* exceed 1.02.	Standard: Examinee recognizes from calculated average reactor power (JPM step 2) that reactor power is greater than 50%. Examinee recognizes that QPTR IS greater than 1.02 and **RECORDS on Attachment 1 Acceptance Criteria Section: Max QPTR : 1.115** and **UNSAT**.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
S T E P # 1 2 SP 31012 Step 4.2.3.b	Performance: IF QPTR is greater than 1.02 and power is above 50% RTP, NOTIFY Shift Manager that Technical Specification 3/4.2.4, “Quadrant Power Tilt Ratio,” action statement applies.	Standard: Informs the Shift Manager that QPTR is greater than 1.02 and that Technical Specification 3/4.2.4, “Quadrant Power Tilt Ratio,” action statement applies.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Acknowledge the Candidate’s report and state: “Write down any specific actions the crew needs to complete to comply with T/S 3/4.2.4”.			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

S T E P # 1 3 T/S 3/4.2.4	Performance: Per Examiner request, reviews T/S 3/4.2.4 and writes specific actions needed.	Standard: The following actions are needed to comply with T/S 3/4.2.4: • Action b.1: Manual calculations are needed until can exit T/S • Action b.2: Reduce Power to 67% (see Comment below) within 30 minutes. • Action b.3: Verify QPTR is within its limit within 2 hours after exceeding the limit OR reduce power to less than 50% • Action b.4: Identify and correct cause prior to increasing power. Subsequent power ops is allowed provided QPTR is calculated / acceptable every 12 hours.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Action b.2 directs reducing thermal power at least 3% from rated thermal power for each 1% of indicated QPTR in excess of 1. The Examinee may use a QPTR exceedance 11% or round to 12% and multiply by 3%. **Therefore, an acceptable answer is 64% - 67% Power.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC SRO A.2 Revision: 0

Task Title: Review a QPTR Surveillance and Determine Required Tech Spec Actions

Date Performed: _____

Examinee: _____

For the Examinee 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?		☐ Yes ☒ No	
Validated Time (minutes):	**35**	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT 1 (Page 1 of 4)

JPM Number: 2021 NRC SRO A.2 Revision: 0

Initial Conditions: The plant was at 100% power when the following sequence of events occurs:

3. Control Rod L13 drops into the core.
4. The crew is carrying out the actions of AOP 3552, *Malfunction of the Rod Drive System*, Attachment B; "Dropped Rod".

Current conditions are as follows:

- The RO has just completed a manual QPTR using SP 31012, *Quadrant Power Tilt Ratio,* Section 4.2, "QPTR by Measurement".
- The PPC is out of service.
- NI channel recalibration is NOT in progress.

Initiating Cues: As the US, you are to review the completed manual QPTR calculation, SP 31012 Attachment 1 QPTR Surveillance, for accuracy and correct any errors.

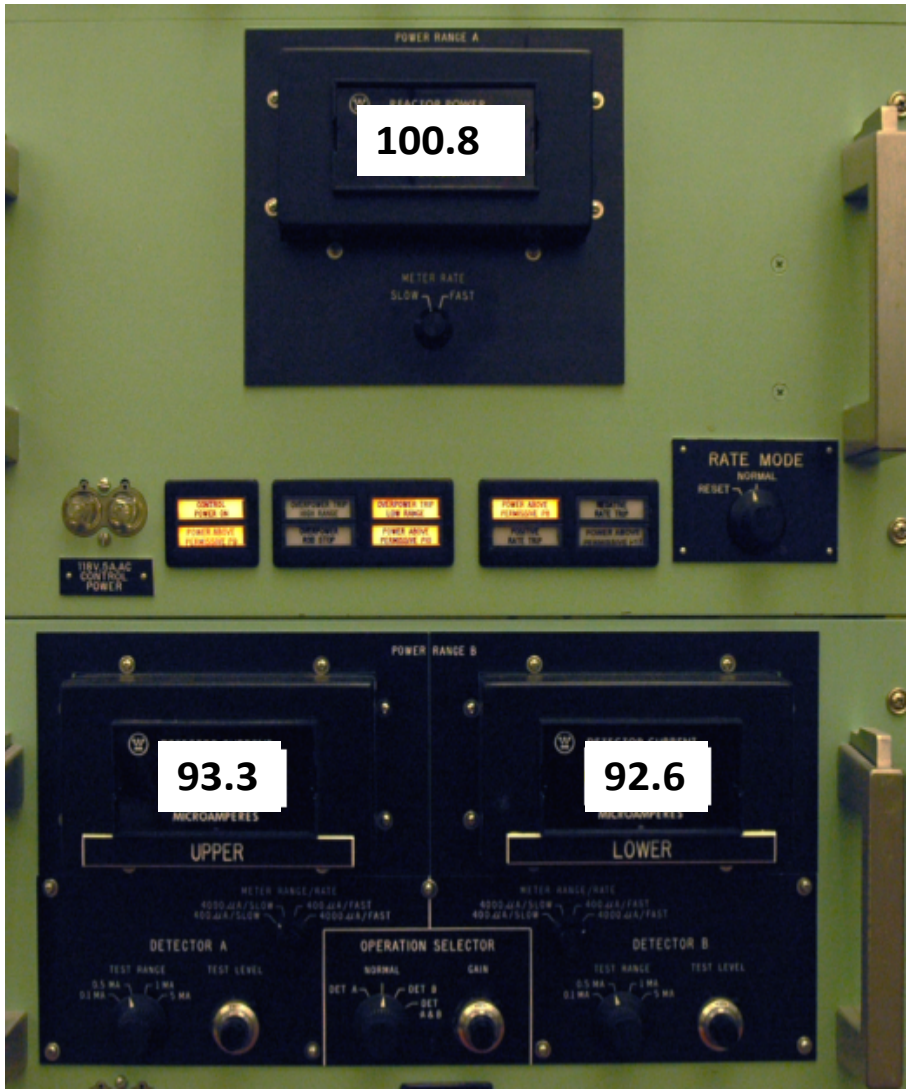
EXAMINEE HANDOUT 1 (Page 2 of 4)

3NMP-NM41F

3NMP-NM42F

EXAMINEE HANDOUT 1 (Page 3 of 4)

3NMP-NM43F



3NMP-NM44F

EXAMINEE HANDOUT 1 (Page 4 of 4)

Attachment 2
100% NI Currents
(Sheet 1 of 1)

Step 4.3.4	Channel 1		Channel 2		Channel 3		Channel 4			
DATE	Upper N−41T	Lower N−41B	Upper N−42T	Lower N−42B	Upper N−43T	Lower N−43B	Upper N−44T	Lower N−44B	ENTERED BY	REACTOR ENGINEER
Today	78.9	86.1	78.1	82.4	81.4	85.3	83.2	86.8	RE#1	RE#2

Level of Use
Reference

STOP THINK ACT REVIEW

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Review Narrative Logs and Determine Required Action(s)

JPM Number: 2K21 NRC SRO A.3 Revision: 0

Initiated:

W. M. Forrestt (signature on file)	5/26/2021
Developer	Date

Reviewed:

T. Fisher (signature on file)	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

A/I & DATE	DESCRIPTION	REV/CHANGE
5/26/21	Original issue of JPM.	0

JPM WORKSHEET

Facility: MP3 Examinee: _____

JPM Number: 2K21 NRC SRO A.3 Revision: 0

Task Title: Review Narrative Logs and Determine Required Action(s)

Time Critical Task: ( ) YES (x) NO

Validated Time (minutes): 20 min.

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

K/A Number: 2.3.11 K/A Rating: 3.8 / 4.3

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

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

Task Standards: Review narrative log and properly determine that DAS-RE50 is inoperable. As a result, log into appropriate REMODCM action.

Required Materials: (procedures, equipment, etc.) Full cart of reference of material (including Normal Operating Procedures), to include:

1. OP 3353.MB2B-003-09 “RAD HIGH” ARP (rev. 3)
2. AOP 3573, Radiation Monitor Alarm Response (rev. 28)
3. OP 3335D, Radioactive Liquid Waste System (rev. 25)

General References: N/A

***** 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. 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: 2K21 NRC SRO A.3 Revision : 0

Initial Conditions: You are an SRO and have been asked to relieve the on shift US who has fallen ill 4 hours into the shift.

Initiating Cues: Review the attached narrative log entries and identify any situation that needs to be addressed. If action(s) are required to be taken, include the action to be taken.

Record any identified problem(s) below along with proposed action.

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: 2K21 NRC SRO A.3 Revision: 0

Task Title: Review Narrative Logs and Determine Required Action(s)

START TIME: _____

PERFORMANCE **STANDARD**

S T E P # 1	Performance: **First problem:** Reviews narrative log.	Standard: 3SWTP1A, SCREEN WASH PUMP, was not returned to AUTO following debris spray blowdowns for weekly PMs. This is **NOT CRITICAL.**	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: The component positioning problem is not critical as there is no significant plant impact with leaving the 'A' Screen Wash Pump running.			
S T E P # 2	Performance: **Second problem:** Reviews narrative log.	Standard: Identifies that the Rad High alarm on 3LWS-RE70 was not handled properly. Specifically, AOP 3573 should have been entered and the guidance of OP 3335D, Attachment 1 "3LWS-RE70 Alarm Response" should have been implemented. More details follow on JPM Steps #3 thru #5.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: CRITICAL NATURE is that the examinee identifies 'A' Waste Test Tank discharge should be stopped and the guidance of OP 3335D Attachment 1 should be implemented. Specifically, the 'A' WTT should be put on recirc and re-sampled prior to discharge.			

STEP #3 AOP 3573 Att. A	Performance: Using OP 3335D, Attachment 1, 3LWS- RE70 Alarm Response, **PERFORM** action D, Hi Radiation Alarm during DISCHARGE.	Standard: References AOP 3573 and goes to OP 3335D, Attachment 1.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #4 OP 3335D Att. 1	Performance: <u>Hi Radiation Alarm during DISCHARGE</u> 1. PLACE the affected tank on recirc as follows:	Standard: References OP 3335D Attachment 1 and identifies that the crew did NOT place the 'A' WTT on recirc following the high radiation alarm during tank discharge.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #5 OP 3335D Att. 1	Performance: <u>Hi Radiation Alarm during DISCHARGE</u> 2. REQUEST Chemistry sample the affected tank.	Standard: References OP 3335D Attachment 1 and identifies that the crew did NOT re-sample the 'A' WTT (prior to recommencing discharge).	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2K21 NRC SRO A.3 Revision: 0

Date Performed: _____

Student: _____

Evaluator: _____

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.

Time Critical Task? Yes _____ No **X**

Validated Time (minutes): 20 min.

Actual Time to Complete (minutes): _____

Overall Result of JPM: SAT UNSAT

Areas for Improvement / Comments:

STUDENT HANDOUT (page 1 of 3)

JPM Number: 2K21 NRC SRO A.3 Revision: 0

Initial Conditions: You are an SRO and have been asked to relieve the on shift US who has fallen ill 4 hours into the shift.

Initiating Cues: Review the attached narrative log entries and identify any situation that needs to be addressed. If action(s) are required to be taken, include the action to be taken.

Record any identified problem(s) below along with proposed action.

Today 18:00 Assumed the watch as Shift Manager: Protected train: A *PRA: Green *Mode 1 *Rx Pwr 100% *1271 MWe gross *1226 MWe net

* Additional Protected Equipment: NONE

* Time to Spent Fuel Pool to 200°F 80 hrs

* U3 Spent Fuel Pool Temp: 85°F

* Active shutdown LCO action due in 7 days or less: NONE

* Abnormal conditions/Key equipment OOS (Responsible Work Group, ERD):
- 'B' PORV Block valve is closed with 'B' PORV Leakage (MNTC, 3R21): TS 3.4.4 action a has been entered.

Today 18:05 The reactivity plan for the shift developed by the RO estimates 3to 4, 18 gallon dilutions or 40 gallon light blended makeups to maintain reactor power, Tave and VCT level. This plan has been independently reviewed by the STA, and is acceptable. Actual reactivity manipulations for the shift are as follows:[RO]

Today 1820 Risk review meeting complete. The PRA condition is Green, and it is expected to be Green for the shift. Risk significant equipment which is not/will not be available this shift: 'B' PORV. CDF ACT expires greater than 1 year, and LERF ACT expires greater than 1 year. [STA]

Today 19:10 3SWTP1A, SCREEN WASH PUMP, started for debris spray blowdowns - weekly PMs. [BOP]

Today 19:22 Performed 18 gallon dilution of the RCS @ 20 gpm to maintain RCS temperature and power (OP 3304C, Section 4.31). Initial Conditions: Reactor Power = 3646.7 MWth; Tavg = 586.6 °F; Tref = 586.8 °F. [RO]

Today 19:40 3CNSP3B, COMPONENT COOLING WATER MAKEUP PUMP, started to support CPE operations.[BOP]

Today 20:15 Reset Train A and Train B ICC links per OP 3301K, Section 4.5. [RO]

Today 20:34 Completed SP 3665.2-01, Intake Structure Condition Determination with Vacuum in Condenser. [STA]

Actual / Predicted

Plant Factors: 0 (Green) / 0 (Green)

Environmental Factors: 13 (Green) 13 (Green)

Today 20:40 Commenced discharge of 'A' Waste Test Tank per OP 3335D section 4.23.

Today 20:54 Closed CCSV855, ARC cooler A outlet isolation, IAW OP 3330B, section 4.18, to raise CCS pressure due to gradually raising service water temperatures. CCSPI28, Heat Exchanger Discharge Pressure, initial: 107 sig, final 114 psig. Logged in the shift turnover report. [BOP]

Today 21:05 Received annunciator MB2B 3-9 "RAD HI". LWS-RE70 identified as spiking into alarm. Radwaste PEO verified 3LWS-HV77, waste to discharge tunnel stop valve, tripped closed. Radwaste PEO re-started the discharge of 'A' Waste Test Tank. [RO]

Today 21:15 Performed a manual filter step of 3CMS*RE22 per OP 3362, Section 4.15. Entered T/S 3.3.3.1 and T/S 3.4.6.1.

Today 21:40 3CCI*P1A and 3CCI*P1B, SAFETY INJECTION PUMP COOLING PUMPS, started, run for 4 minutes and stopped for Chemistry sampling. [RO]

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Emergency Plan Classification

JPM Number: 2021 NRC SRO A.4 Revision: 0

Initiated:

W.M. Forrestt (signature on file)	4/28/2021
Developer	Date

Reviewed:

T. Fisher (signature on file)	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/28/21	Original issue of JPM.	0

JPM WORKSHEET

Facility: MP3 Examinee: _____

JPM Number: 2021 NRC SRO A.4 Revision: 0

Task Title: Emergency Plan Classification

System: N/A

Time Critical Task: ☒ YES ☐ NO

Validated Time (minutes): 15 (allowable for classification & PAR)

Applicable To: SRO **X** RO _____

K/A : 2.4.41 K/A Rating: 2.9 / 4.6

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

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

Task Standards: Given a set of plant conditions, properly (1) determine the EAL and State Posture Code AND (2) determine the minimum required PAR. Each determination must by made within 15 minutes of cue.

Required Materials:

1. "CR DSEO" Book – containing all of the following references **(Handout)**

1. MP-26-EPI-FAP06-003 Rev. 012, Millstone Unit 3 Emergency Action Levels
2. MP-26-EPI-FAP06 Rev 13, Classification and PARs
3. MP-26-EPI-FAP06-006 Rev. 009, Protective Action Recommendations
4. Millstone Backup Emergency Notification Form (MP-26-EPI-FAP07-001) Rev. 003

2. EAL BASIS Book – containing MP-26-EPA-REF03 Rev. 25, Millstone Unit 3 Emergency Action Level (EAL) Technical Basis Document

3. Blank PAR Form (Handout: MP-26-EPI-FAP06-006) **DO NOT HANDOUT UNTIL EXAMINEE DETERMINES A PAR IS NEEDED.**

General References:

- Status Tree Book

**** 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. 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: 2021 NRC SRO A.4 Revision : 0

Initial Conditions: Initial Conditions are provided with handout page 2 of 2.

Initiating Cues: **Determine the appropriate Emergency Classification.**

A Control Room DSEO Book and EAL Basis Book is being provided.

This JPM is time critical.

Record the Highest required Classification Level and the EAL Identifier Number on the space provided below.

Report to the Examiner when your Classification is made (FOR PROPER TIMING).

CLASSIFICATION LEVEL: _____

EAL #:_____

Simulator Requirements: NONE

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

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

JPM WORKSHEET

JPM Number: 2021 NRC SRO A.4 Revision: 0

Initial Conditions:

Unit 3 is at 100% power. The wind is from 220° at 7 mph.

Time 0:

- A Large Break LOCA occurs.
- Crew enters 35 E-0.

Time 5 Min: Primary Plant parameters noted:

Reactor RCS	
Reactor Power Level	**0% →**
RCS Pressure	**38# →**
Pressurizer Level	**0%**
RVLM's Level (Plenum)	**49% ↘**
Highest CET Temp	**177 ° F ↘**
MWe	**0 →**
Sub-cooling	**81.2 ↗**
Containment	
Pressure	**35 # ↘**
Temperature	**190 ° F ↘**
Sump Level	**2 ft ↗**
Actuation Signals	
Reactor First Out	**OTDeltaT**
Safety Injection	**Yes**
Containment Isolation	**Yes**
CTMT Depress. Act.	**Yes**
Control Building Isolation	**Yes**
Main Steam Isolation	**Yes**

Time 8 Min: The Crew EXITS E-0 and transitions to FR-C.2 based on RVLMS plenum level <19%

Time 20 Min: The following radiation readings sustained for 15 minutes:

RADIATION MONITOR	READING
RMSRE*04A/05A (CTMT)	**400 R/hr →**
HVR*RE10A (VENTILATION VENT)	**2.0E-04 uCi/cc →**
HVR*RE19A (SLCRS)	**4.0E+02 uCi/cc →**
HVQ*RE49 (ESF)	**1.0E-04 uCi/cc →**

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.4 Revision: 0

Task Title: Emergency Plan Classification

START TIME: _____

For timing purposes, both of the following tasks have time limits:

1. 15 minutes to determine Emergency Action Level.
2. 15 minutes after classifying the event to determine minimum required PAR (**Examiner Note:** The initial cue does **not** have the Examinee perform a PAR (as this may lead the Examinee into a GE classification). Once the successful GE classification is made, the examiner will ask for the PAR to be made. This direction is contained in the body of this JPM.

The timing for the EAL determination (item 1 above) will begin ONCE the Control Room DSEO Book and EAL Basis Book is handed to the Examinee (this will be **after** the EXAMINEE HANDOUT is read and understood).

Record the JPM start time above.

S T E P # 1	Performance: Obtain Proper procedure.	Standard: Examinee obtains or requests copy of MP-26-EPI-FAP06-003, MP3 Emergency Action Levels.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: After allowing the examinee to read the initial conditions and initiating cue, pass out the CR DSEO and EAL Basis Books and inform the Examinee that “Timing to complete the Classification has begun.”			
	Comments:			
S T E P # 2 FAP06-003	Performance: Assess the Event	Standard: Examinee assesses conditions and recognizes radiation levels for HVR*RE19A exceed Table R-1 values for GE (3.6E+02 uCi/cc).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.4 Revision: 0

Task Title: Emergency Plan Classification

STEP #3 FAP06-003	Performance: Classify the Event	Standard: Examinee reviews MP-26-EPI-FAP06-003 and determines that the event is classifiable: • GENERAL EMERGENCY • RG1.1 (Reading on any Table R-1 effluent radiation monitor > column "GE" for greater than or equal to 15 min).	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue: **If the Examinee correctly classifies** the event as a **General Emergency,** then CUE the Examinee **"Determine Protective Action Recommendations and record recommendation on page 1 of the Examinee handout."**			
	Comments: 1. Record the Time Classification is Completed: _____ (must be within 15 minutes of JPM start) 2. Record PAR start time _____. NOTE: If the Examinee unsuccessfully declares another action level (ie not GE), then end the JPM. The Examinee will have failed the JPM and a PAR is not necessary.			
STEP #4 FAP06-006	Performance: Refer to Section C, "CR PAR Process Flowchart" and determine the appropriate PAR.	Standard: Examinee proceeds to PAR flow chart (MP-26-EPI-FAP06-006).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Flowchart: **"GE Declared?"** Decision Box	Determines **YES** a General Emergency has been declared and moves to the "Hostile Action" decision box.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Flowchart: **"Hostile Action?"** Decision Box	Reviews the "Hostile Action" decision box, determines **NO** hostile action exists, and moves to the "Rapidly Progressing Severe Incident" decision box.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Flowchart: **"Rapidly Progressing Severe Incident?"** Decision Box	Reviews Table 1 and determines **NO** "Rapidly Progressing Severe Incident" is in progress (Core Exit Thermocouples are NOT greater than 1200°F), and moves to the "> 1 Rem TEDE At or Beyond 5 Miles?" decision box.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐

PERFORMANCE INFORMATION

JPM Number: 2021 NRC SRO A.4 Revision: 0

Task Title: Emergency Plan Classification

	Flowchart: **"> 1 Rem TEDE At or Beyond 5 Miles?"** Decision Box	Reviews the "> 1 Rem TEDE At or Beyond 5 Miles?" decision box, and determines **NO** offsite dose assessment is not complete and moves to the " > 1 Rem TEDE At or Beyond 2 Miles?" decision box.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Flowchart: **" > 1 Rem TEDE At or Beyond 2 Miles?"** Decision Box	Reviews the " > 1 Rem TEDE At or Beyond 2 Miles?" decision box and determines **NO** offsite dose assessment is not complete and moves to the 2 Mile PAR • **EVACUATE 2 Mile Radius – Zones A & G** • **ALL OTHER ZONES Monitor & Prepare**	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Flowchart: "If **projected dose** At or Beyond the Site Boundary shows **>5 Rem Child Thyroid** CDE as indicated by approved dose assessment results related to the GE event , THEN recommend **KI strategies** for the general public" Decision Box	Reviews decision box and Note 2 ("Do not delay initial PAR decision process if dose assessment results from the Chemistry Tech are not available. Until dose assessment is available, it is assumed that TEDE and child values are not exceeded".) and checks "Recommend State **DO NOT** implement KI strategy for the general public" on FAP06-006.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue: If asked, **"Security reports no Hostile Action Impediment."**			
	Comments: **(1) TIMING:** Record the Time PAR is Completed: _____ The PAR is required to be completed within 15 minutes of completing the Classification **(2) CRITICAL PORTION OF PAR:** See attached Answer Key. The only non-critical portion of the PAR Form is the Technical Basis Section (GE / Plant Conditions boxes are Non-Critical).			

The evaluation for this JPM is complete.

STOP TIME: _____

Answer Key – PAR

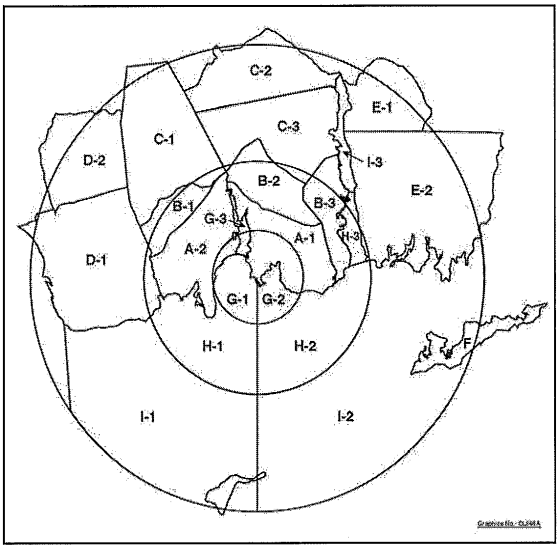
Protective Action Recommendations

Section D: State DEEP PAR Transmittal Form

NOTE
Ensure all previous PARs issued to State have been reviewed and new PAR does not reduce previous PAR.

Millstone Station Protective Action Recommendations
Circle 'E' for Evacuate, 'S' for Shelter, or 'MP' for Monitor and Prepare.

Zone	Community	PAR
(0-2 mi) A	Waterford (A-1)	(E) S MP
	East Lyme (A-2)	(E) S MP
(2-5 mi) B	East Lyme (B-1)	E S (MP)
	Waterford (B-2)	E S (MP)
	New London (B-3)	E S (MP)
(5-10 mi) C	East Lyme (C-1)	E S (MP)
	Montville (C-2)	E S (MP)
	Waterford (C-3)	E S (MP)
D	Old Lyme (D-1)	E S (MP)
	Lyme (D-2)	E S (MP)
E	Ledyard (E-1)	E S (MP)
	Groton City & Town (E-2)	E S (MP)
F	Fishers Island	E S (MP)
N/A	Plum Island	E S (MP)
(0-2 mi OW) G	LIS West (G-1)	(E) MP
	LIS East (G-2)	(E) MP
	Niantic River (G-3)	(E) MP
(2-5 mi OW) H	LIS West (H-1)	E (MP)
	LIS East (H-2)	E (MP)
	Thames River (H-3)	E (MP)
(5-10 mi OW) I	LIS West (I-1)	E (MP)
	LIS East (I-2)	E (MP)
	Thames River (I-3)	E (MP)



Technical Basis (check at least one)

- ☒ GE
- ☐ Projected Dose
- ☐ Wind Shift
- ☒ Plant Conditions
- ☐ Measured Dose
- ☐ Hostile Action

Comments: _____

☐ Recommend State implement KI strategy for the general public.

☒ Recommend State DO NOT implement KI strategy for the general public.

Authorization and Notification

Approved By: _____ Date: _____ Time: _____
DSEO Signature

Transmitted By: _____ Date: _____ Time: _____
DSEO Signature

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC SRO A.4 Revision: 0

Task Title: Emergency Plan Classification

Date Performed: _____

Examinee: _____

For the Examinee 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?		☒ **Yes** ☐ No	
Validated Time (minutes):	15 min Classify*	Actual Time to Complete (mins):	Classify:
	15 min PAR*	Actual Time to Complete (mins):	PAR:
Overall Result of JPM:		☐ SAT ☐ UNSAT	

* 15 minutes is allowable time

Evaluator: _____

Print / Sign

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC SRO A.4 Revision: 0

Initial Conditions: Initial Conditions are provided with handout page 2 of 2.

Initiating Cues: **Determine the appropriate Emergency Classification.**

A Control Room DSEO Book and EAL Basis Book is being provided.

This JPM is time critical.

Record the Highest required Classification Level and the EAL Identifier Number on the space provided below.

Report to the Examiner when your Classification is made (FOR PROPER TIMING).

CLASSIFICATION LEVEL: _____

EAL #:_____

EXAMINEE HANDOUT

JPM Number: 2021 NRC SRO A.4 Revision: 0

Initial Conditions:

Unit 3 is at 100% power. The wind is from 220° at 7 mph.

Time 0:

- A Large Break LOCA occurs.
- Crew enters 35 E-0.

Time 5 Min: Primary Plant parameters noted:

Reactor RCS	
Reactor Power Level	**0% →**
RCS Pressure	**38# →**
Pressurizer Level	**0%**
RVLM's Level (Plenum)	**49% ↘**
Highest CET Temp	**177 ° F ↘**
MWe	**0 →**
Sub-cooling	**81.2 ↗**
Containment	
Pressure	**35 # ↘**
Temperature	**190 ° F ↘**
Sump Level	**2 ft ↗**
Actuation Signals	
Reactor First Out	**OTDeltaT**
Safety Injection	**Yes**
Containment Isolation	**Yes**
CTMT Depress. Act.	**Yes**
Control Building Isolation	**Yes**
Main Steam Isolation	**Yes**

Time 8 Min: The Crew EXITS E-0 and transitions to FR-C.2 based on RVLMS plenum level <19%

Time 20 Min: The following radiation readings sustained for 15 minutes:

RADIATION MONITOR	READING
RMSRE*04A/05A (CTMT)	**400 R/hr →**
HVR*RE10A (VENTILATION VENT)	**2.0E-04 uCi/cc →**
HVR*RE19A (SLCRS)	**4.0E+02 uCi/cc →**
HVQ*RE49 (ESF)	**1.0E-04 uCi/cc →**

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Initiated:

W.M. Forrestt (signature on file)	6/16/2021
Developer	Date

Reviewed:

B. Royce (signature on file)	6/17/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/17/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
6/16/21	Original Issue of JPM	0

JPM WORKSHEET

Facility: Millstone Unit 3 Examinee: _____

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 45

Applicable To: SRO _____ RO X

K/A Number: 2.1.37 K/A Rating: 4.3/4.6

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

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

Task Standards: While using the direction contained in OP 3209B Shutdown Margin, examinee determines that the projected SHUTDOWN MARGIN (24 hrs from now) is inadequate (with Xenon credit).

Required Materials: (procedures, equipment, etc.)

- OP 3209B Shutdown Margin (Rev 011-00) (**Handout** entire procedure)
- Form 3209B-002 (rev 008-02) **(Handout)**
- Cycle 21 RE Curve and Data Book **(Handout)**

General References: Unit 3 Technical Specifications, Technical Requirements

***** 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. 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: 2021 NRC RO A.1.1 Revision : 0

Initial Conditions: The plant was initially operating at 100% steady-state equilibrium power for the previous two months of operation.

Current conditions are as follows:

- Seven hours ago, the plant tripped.
- On the trip, all rods inserted with the exception of one rod. Control rod B-10 failed to insert and remains stuck, fully withdrawn.
- The plant is presently in MODE 3 at 2250 psia and 557 F.
- RCS boron is 1700 ppm based on the latest sample results (10 minutes ago).
- Core Burnup is 10,500 MWD/MTU
- Channel 1 Shutdown Margin Monitor (MMM) had a power supply failure one hour ago. The US entered T.S. 3.3.5.a Action "A".

Initiating Cues: In preparations for a cooldown to Mode 4, the US has directed you to perform a manual SHUTDOWN MARGIN calculation for Mode 4 conditions per OP 3209B, Shutdown Margin.

Simulator Requirements: NONE

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

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

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

START TIME: _____

1. Provide the examinee the following paperwork ALONG with the EXAMINEE HANDOUT:

- OP 3209B Shutdown Margin (Rev 011-00)
- Form 3209B-002 (rev 008-02)
- Cycle 21 RE Curve and Data Book

2. Evaluators Guidance on JPM Administration:

This JPM is written for a step by step evaluation of the task. It is written as if the examinee were performing/explaining each step separately. **An alternative is to have the examinee perform the task and submit the completed form to the examiner.** In order to aid in the administration of this method, an **ANSWER KEY is provided with allowable bands** of performance.

STEP #1 OP 3209B, step 4.2.1	Performance: ENSURE "General Prerequisites" completed.	Standard: Examinee verifies "Test Authorized By" block is signed on FORM 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
		Standard: Reviews OP 3209B Section 3 PRECAUTIONS	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
		Standard: Examinee initials for 'Prerequisites Completed' and 'Precautions Noted' on FORM 3209B-002 cover sheet.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

STEP #2 OP 3209B, step 4.2.2	Performance: RECORD Calculation Date and Calculation Time on OP 3209B-002.	Standard: Records time and date on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #3 OP 3209B, step 4.2.3	Performance: IF determining SHUTDOWN MARGIN for current plant conditions, PERFORM the following in the Current Conditions section on OP 3209B-002:	Standard: Examinee marks N/A to this step.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #4 OP 3209B, step 4.2.4.a	Performance: IF determining SHUTDOWN MARGIN for plant anticipated conditions, PERFORM the following for each MODE to be entered on a separate form in the "Anticipated Conditions" section on OP 3209B---002: a. CIRCLE the anticipated MODE, AND IF applicable, the RCS loops' condition (Refer To Definition 2.3.4).	Standard: Examinee circles **"4"** for the current MODE on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

STEP #5 OP 3209B, step 4.2.4.b	Performance: b. OBTAIN the present core burnup value from the Plant Process Computer and DOCUMENT.	Standard: Enters **"10,500"** MWD/MTU on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: The value for present core burnup was given in initial plant conditions.			
STEP #6 OP 3209B, step 4.2.4.c	Performance: c. PERFORM the following to determine temperature condition: 3) IF MODE 4 or 5 is anticipated, CIRCLE the MODE.	Standard: Examinee circles **"MODE 4"** for the temperature condition on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #7 OP 3209B, step 4.2.4.d	Performance: d. DOCUMENT the most current RCS boron concentration sample results.	Standard: Examinee records 1700 ppm on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #8 OP 3209B, step 4.2.4.e	Performance: f. DOCUMENT the "Date and Time" the boron sample was obtained.	Standard: Examinee enters **"today (10 minutes ago)"** for the boron sample date and time on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

STEP #9 OP 3209B, step 4.2.4.f	Performance: g. CIRCLE the status of the Shutdown Banks (shutdown banks may be withdrawn in MODE 3 only).	Standard: Examinee circles **"Inserted"** for the Shutdown Banks status on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #10 OP 3209B, step 4.2.4.g	Performance: h. DOCUMENT the number of stuck rods indicated by the DRPI System.	Standard: Examinee enters **"one"** for the number of stuck rods on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: The number of stuck rods was given in initial plant conditions.			
STEP #11 OP 3209B, step 4.2.4.h	Performance: i. DOCUMENT "N/A" in the "Current Conditions" section.	Standard: Enters "N/A" in the "Anticipated Conditions" section of OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

STEP #12 OP 3209B, step 4.2.5.a.1	Performance: IF a control rod is known to be stuck, DETERMINE the "Stuck Rod Boron Equivalent" as follows: a. Refer To RE Curve and Data Book, "Boron Worth vs Boron Concentration And Temperature" curve for the appropriate time in core life and PERFORM the following: 1) SELECT the DBW curve based on the condition circled in step 4.2.3.c. or 4.2.4.c. and INDICATE the DBW curve selected on OP 3209B-002: • IF MODE 4 circled, USE the 200_F curve	Standard: The Examinee identifies the correct graph (RE-F-03, MOL) in the RE Curve and Data Book.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #13 OP 3209B, step 4.2.5.a.2	Performance: 2) DETERMINE "Differential Boron Worth" for the RCS boron concentration recorded in step 4.2.3.d. or 4.2.4.d. using the selected curve and DOCUMENT as a negative value on OP 3209B-002.	Standard: Enters **"- 9.05 "** (-9.0 to -9.1) on OP 3209B-002. Number is approximate. Allow for minor curve interpolation error.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: It is acceptable for the examinee to use the corresponding TABLE (RE-F-03, page 2 of 2) associated with the correct Differential Boron Worth curve. Interpolation from the Table results in -9.03. The acceptable range of values is -9.0 to -9.1.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

STEP #14 OP 3209B, step 4.2.5.b	Performance: b. Refer To RE Curve and Data Book "Miscellaneous Core Data," and DETERMINE the "Worst Case Stuck Rod Worth" and DOCUMENT as a negative value on OP 3209B-002.	Standard: Examinee refers to table RE-G-03 and writes **"-1239 pcm"** on OP 3209B-002.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #15 OP 3209B, step 4.2.5.c	Performance: c. CALCULATE the "Boron Equivalent RW" (DIVIDE the "Worst Case Stuck Rod Worth" by the "Differential Boron Worth") and RECORD on OP 3209B-002 as a positive value.	Standard: Examinee divides -1239 by DBW of –9.05 pcm/ppm to determine a Boron Equivalent RW of **136.9 (137) ppm (Allowable band of 136 to 138 ppm).** Records value and positive sign on OPS Form 3209B-002.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Number is approximate. Allow for a slight variation in DBW due to minor curve interpolation error. Low Band = -1239 ÷ -9.1 = 136.1 (136) High Band = -1239 ÷ -9.0 = 137.6 (138)			
STEP #16 OP 3209B, step 4.2.5.d	Performance: d. CALCULATE the "Stuck Rod Boron Equivalent" (MULTIPLY "Boron Equivalent Rod Worth" by the number of known stuck rods) and DOCUMENT on OP 3209B-002.	Standard: Enters "**ONE (1)"** and "**137 ppm"** for a total of **"137"** (Allowable band of **136 to 138 ppm**) for Stuck Rod Boron Equivalent on OPS Form 3209B-002.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

STEP #17 OP 3209B, step 4.2.6	Performance: IF either SMM channel is OPERABLE based on T/S LCO 3.3.5.b.1 or 3.3.5.b.2, PERFORM the following to determine the additional boron requirement:	Standard: Channel 1 is inoperable (no power) and not due to low counts. As a result, T/S LCO 3.3.5a is applicable and not T/S LCO 3.3.5.b. Therefore, this step is N/A.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Step is critical if a value is entered. No value should be entered.			
STEP #18 OP 3209B, step 4.2.7.a	Performance: Refer To RE Curve and Data Book, “Shutdown Margin" curves and DETERMINE the required xenon free boron concentration as follows: a. SELECT the “Shutdown Margin" curve based on MODE AND RCS loop operating condition for which the calculation is being performed.	Standard: The Examinee identifies the correct graph (RE-B-03) in the RE Curve and Data Book (Shutdown Margin – MODE 4 Loops Filled).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #19 OP 3209B, step 4.2.7.b	Performance: b. INDICATE the SHUTDOWN MARGIN curve selected on Refer To OP 3209B-002: • MODE 4 --- Loops Filled	Standard: Examinee selects and indicates “**MODE 4 --- Loops Filled**” on OP 3209B-002. (Curve RE-B-03)	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

STEP #20 OP 3209B, step 4.2.7.c	Performance: c. IF MODE 3 curve selected, LOCATE the intersection of core burnup and the curve representing the temperature and shutdown bank condition recorded in step 4.2.3 or 4.2.4 and DETERMINE the required xenon free boron concentration.	Standard: Examinee determines this step is N/A.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #21 OP 3209B, step 4.2.7.d	Performance: d. IF a MODE 4 or 5 curve selected, using the applicable curve DETERMINE the required xenon free boron concentration.	Standard: Examinee writes "**1900 ppm"** (1875 - 1925 ppm) on OP 3209B-002 for required xenon free boron concentration.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #22 OP 3209B, step 4.2.7.e	Performance: e. RECORD the "Required Xenon Free Boron Concentration" on OP 3209B-002.	Standard: Examinee writes "**1900 ppm"** (1875 - 1925 ppm) on OP 3209B-002 for required xenon free boron concentration.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: The acceptable range of values is 1875 - 1925 ppm.			
STEP #23 OP 3209B, step 4.2.8	Performance: ADD the following values and DOCUMENT as "Total Required Xe Free C_B" on OP 3209B-002: • Required Xe Free C_B • Stuck Rod Boron Equivalent • SMM Additional Boron	Standard: Examinee adds the values, 1900 ppm + 137 ppm + 0 ppm, to determine a value of total required Xe free C_B, of 2037 ppm. Records "**2037 ppm"** (Allowable band of 2011 ppm to 2063 ppm) on OPS Form 3209B-002.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

	Cue:			
	Comments: Low Band = 1875 + 136 + 0 = 2011 ppm High Band 1925 + 138 + 0 = 2063 ppm			
STEP #24 OP 3209B, step 4.2.9	Performance: SUBTRACT "Total Required Xe Free C_B" from actual RCS Boron Concentration and RECORD value and sign (±) on OP 3209B-002.	Standard: Examinee subtracts 2037 ppm from 1700 ppm to yield -337 ppm. Examinee records "**-337 ppm"** (Allowable band of -311 ppm to -362 ppm) on OP 3209B-002.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Calculation of value is critical not recording of data. Low Band = 1700 – 2011 = (-)311 ppm High Band = 1700 – 2063 = (-)363 ppm			
STEP #25 OP 3209B, step 4.2.10	Performance: IF RCS boron concentration is less than the total required Xe free boron concentration for current plant condition, PERFORM one of the following: • IF time after shutdown is less than 72 hours AND in MODE 3, using Section 4.3 PERFORM xenon correction. • Refer To AOP 3566, "Immediate Boration," and PERFORM immediate boration and ESTABLISH actual boron concentration greater than total required boron concentration.	Standard: Examinee marks step N/A.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

STEP #26 OP 3209B, step 4.2.11	Performance: IF RCS boron concentration is less than total required Xe free boron concentration for the anticipated plant condition, PERFORM one of the following: • IF time after shutdown is less than 72 hours AND MODE 3 is anticipated, using Section 4.3, PERFORM xenon correction. • Refer To OP 3304C, "Primary Makeup and Chemical Addition," and BORATE the RCS to greater than required Xe free boron concentration for the anticipated plant condition prior to establishing anticipated plant condition.	Standard: Examinee identifies that the crew must borate the RCS to greater than required Xe free boron concentration for the anticipated plant condition prior to establishing anticipated plant condition.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #27 OP 3209B, step 4.2.12	Performance: PERFORM the following: a. Person performing calculation SIGN in the "Performed By" block on the OP 3209B---002. b. REQUEST Unit Supervisor review calculations, COMPARE with STA's independent calculations and SIGN OP 3209B---002.	Standard:	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

The evaluation for this JPM is complete

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Task Title: Perform a Mode 4 Shutdown Margin Calculation with an Inoperable Shutdown Margin Monitor

Date Performed: _____

Examinee: _____

For the applicant 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?		☐ Yes ☒ No	
Validated Time (minutes):	45	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC RO A.1.1 Revision: 0

Initial Conditions: The plant was initially operating at 100% steady-state equilibrium power for the previous two months of operation.

Current conditions are as follows:

- Seven hours ago, the plant tripped.
- On the trip, all rods inserted with the exception of one rod. Control rod B-10 failed to insert and remains stuck, fully withdrawn.
- The plant is presently in MODE 3 at 2250 psia and 557 F.
- RCS boron is 1700 ppm based on the latest sample results (10 minutes ago).
- Core Burnup is 10,500 MWD/MTU

Channel 1 Shutdown Margin Monitor (MMM) had a power supply failure one hour ago. The US entered T.S. 3.3.5.a Action "A".

Initiating Cues: In preparations for a cooldown to Mode 4, the US has directed you to perform a manual SHUTDOWN MARGIN calculation for Mode 4 conditions per OP 3209B, Shutdown Margin.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

JPM Number: 2021 NRC RO A.2 Revision: 0

Initiated:

W.M. Forrestt (signature on file)	5/26/2021
Developer	Date

Reviewed:

T. Fisher (signature on file)	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/1/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/26/2021	Modified bank JPM A051 to include changes to initial conditions, flux readings, and final calculated QPTR values.	0

JPM WORKSHEET

Facility: MP3 Examinee: _____

JPM Number: 2021 NRC RO A.2 Revision: 0

Task Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes) 30

Applicable To: SRO _____ RO X

K/A Number: GEN 2.2.12 K/A Rating: 3.7 / 4.1

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

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

Task Standards: Successfully completes a manual QPTR surveillance in accordance with SP 31012, *Quadrant Power Tilt Ratio*, and determines the QPTR is UNSAT and Technical Specification 3/4.2.4 must be entered.

Required Materials: (procedures, equipment, etc.)

- SP 31012, *Quadrant Power Tilt Ratio*, Rev. 006
- MP3 Tech Specs
- Calculator

General References: N/A

***** 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: 2021 NRC RO A.2 Revision : 0

Initial Conditions: The plant was at 100% power when the following sequence of events occurs:

1. Control Rod L13 drops into the core.
2. The crew is carrying out the actions of AOP 3552, *Malfunction of the Rod Drive System*, Attachment B; "Dropped Rod".

Current conditions are as follows:

- The crew is at step 2.b of Attachment B "Determine QPTR".
- The PPC is out of service.
- NI channel recalibration is NOT in progress.

Initiating Cues: The US directs you to determine QPTR using SP 31012, *Quadrant Power Tilt Ratio,* Section 4.2, "QPTR By Measurement".

Simulator Requirements: None.

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

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

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.2 Revision: 0

Task Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

START TIME: _____

Evaluators Note:				
S T E P # 1 SP 31012 Step 2.1	Performance: VERIFY Precautions	Standard: Reviews SP 31012, Section 3 PRECAUTIONS. Initials for ' 'Precautions Noted' on Attachment 1 Cover Sheet.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
S T E P # 2 SP 31012 Step 4.2.1	Performance: RECORD average percent reactor power from NI cabinet meters NMP--NM41F through NMP--NM44F or from the Plant Process Computer Calorimetric (CVRXPO) on Attachment 1.	Standard: Averages 4 Power Range drawer readings 99.5%, 97.6%, 100.8% & 68.2% (top of graphics on Examinee Handout pages 2 & 3) and **records 91.5% on top of Attachment 1** (beside "Reactor Power).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
S T E P # 3 SP 31012 Step 4.2.2 NOTE	Performance: **NOTE:** Attachment 2, "100% NI Currents," is maintained in the "Reactor Engineering Curve and Data Book."	Standard: Examineereviews the NOTE.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.2 Revision: 0

Task Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

<table>
<tr><td></td><td colspan="4"></td></tr>
<tr><td>S T E P
4

SP 31012
Step
4.2.2.a</td><td>Performance:
RECORD available upper and lower detector readings on Attachment 1.</td><td>Standard:
References Examinee Handout and records the following on Attachment 1:
<table><tr><th>Instru.</th><th>Upper Detector Reading</th><th>Lower Detector Reading</th></tr><tr><td>N41</td><td>89.5</td><td>91.9</td></tr><tr><td>N42</td><td>87.3</td><td>85.8</td></tr><tr><td>N43</td><td>93.3</td><td>92.6</td></tr><tr><td>N44</td><td>67.2</td><td>60.9</td></tr></table></td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments:</td></tr>
<tr><td>S T E P
5

SP 31012
Step
4.2.2.b</td><td>Performance:
On Attachment 1, RECORD 100% NI upper and lower currents obtained from Attachment 2.</td><td>Standard:
References Examinee Handout and records the following on Attachment 1:
<table><tr><th>Instru.</th><th>Upper 100% Current</th><th>Lower 100% Current</th></tr><tr><td>N41</td><td>78.9</td><td>86.1</td></tr><tr><td>N42</td><td>78.1</td><td>82.4</td></tr><tr><td>N43</td><td>81.4</td><td>85.3</td></tr><tr><td>N44</td><td>83.2</td><td>86.8</td></tr></table></td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.2 Revision: 0

Task Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

<table>
<tr><td rowspan="3">S T E P
6

SP 31012
Step
4.2.2.c</td><td>Performance:
RECORD data source and date of Attachment 2 entry in “Remarks” section on Attachment 1.</td><td>Standard:
Locates “Remarks” section on Attachment 1 and records data source (RE Curve and Data Book) and date of Attachment 2 entry.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td rowspan="3">S T E P
7

SP 31012
Step
4.2.2.d</td><td>Performance:
CALCULATE the detector ratio for each detector by dividing each detector’s reading by that detector’s 100% current and RECORD on Attachment 1.</td><td>Standard:
Examinee divides each detector’s reading by that detectors 100% current to determine the detector ratio for the upper and lower detector’s of PRNI channels 41 through 44. Examinee records the detector ratios on Attachment 1.
<table>
<tr><th>Instru.</th><th>Upper Detector Ratio</th><th>Lower Detector Ratio</th></tr>
<tr><td>N41</td><td>1.134</td><td>1.067</td></tr>
<tr><td>N42</td><td>1.118</td><td>1.041</td></tr>
<tr><td>N43</td><td>1.146</td><td>1.086</td></tr>
<tr><td>N44</td><td>0.808</td><td>0.702</td></tr>
</table></td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments: (1) Calculations are required to be made to 3 decimal places per Attachment 1 guidance.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.2 Revision: 0

Task Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

<table>
<tr><td>S T E P
8

SP 31012
Step
4.2.2.e</td><td>Performance:
CALCULATE the average upper and lower ratio and RECORD on Attachment 1.</td><td>Standard:
Examinee calculates the average upper and lower detector ratios.

Examinee records the average upper and lower detector ratios on Attachment 1.
<table><tr><th></th><th>Upper Detector Ratio</th><th>Lower Detector Ratio</th></tr><tr><td>AVG</td><td>1.052</td><td>0.974</td></tr></table></td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments: (1) Calculations are required to be made to 3 decimal places per Attachment 1 guidance.</td></tr>
<tr><td>S T E P
9

SP 31012
Step 4.2.2.f</td><td>Performance:
Using the following equation, CALCULATE power tilt for each detector and RECORD in “QPTR” section of Attachment 1:

Upper QPTR = (Upper Detector Ratio) ÷ (Average Upper Ratio)

Lower QPTR = (Lower Detector Ratio) ÷ (Average Lower Ratio)</td><td>Standard:
Examinee determines the power tilt (QPTR) for the upper and lower detectors associated with PRNI channel 41 through 44 by dividing each detectors detector ratio by the average ratio.
Examinee records QPTR values on Attachment 1.
<table><tr><th>Instru.</th><th>Upper QPTR</th><th>Lower QPTR</th></tr><tr><td>N41</td><td>1.078</td><td>1.095</td></tr><tr><td>N42</td><td>1.063</td><td>1.069</td></tr><tr><td>N43</td><td>1.089</td><td>1.115</td></tr><tr><td>N44</td><td>0.768</td><td>0.721</td></tr></table></td><td>Critical:
Y ☒ N ☐</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td></td><td colspan="4">Cue:</td></tr>
<tr><td></td><td colspan="4">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.2 Revision: 0

Task Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

STEP #10 SP 31012 Step 4.2.2.g	Performance: RECORD maximum upper and lower QPTR and associated channel on Attachment 1.	Standard: Examinee records maximum upper and lower detector QPTR and associated channel on Attachment 1. **1.089 for Upper Detector N43** **1.115 for Lower Detector N43**	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #11 SP 31012 Step 4.2.3.a	Performance: **CHECK the following acceptance criteria are met:** WHEN above 50% of Rated Thermal Power (RTP), CHECKmaximum QPTR does *not* exceed 1.02.	Standard: Examinee recognizes from calculated average reactor power (JPM step 2) that reactor power is greater than 50%. Examinee recognizes that QPTR IS greater than 1.02 and **RECORDS on Attachment 1 Acceptance Criteria Section: Max QPTR : 1.115** and **UNSAT**.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.2 Revision: 0

Task Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

STEP #12 SP 31012 Step 4.2.3.b	Performance: IF QPTR is greater than 1.02 and power is above 50% RTP, NOTIFY Shift Manager that Technical Specification 3/4.2.4, "Quadrant Power Tilt Ratio," action statement applies.	Standard: Examinee informs the US that QPTR is greater than 1.02 and that Technical Specification 3/4.2.4, "Quadrant Power Tilt Ratio," action statement applies.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Acknowledge the Candidate's report and reply that the US is referring to T/S 3/4.2.4.			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC RO A.2 Revision: 0

Task Title: Perform a Manual Quadrant Power Tilt Ratio (QPTR) Surveillance

Date Performed: _____

Examinee: _____

For the Examinee 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?		☐ Yes ☒ No	
Validated Time (minutes):	**30**	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT (Page 1 of 4)

JPM Number: 2021 NRC RO A.2 Revision: 0

Initial Conditions: The plant was at 100% power when the following sequence of events occurs:

3. Control Rod L13 drops into the core.
4. The crew is carrying out the actions of AOP 3552, *Malfunction of the Rod Drive System*, Attachment B; "Dropped Rod".

Current conditions are as follows:

- The crew is at step 2.b of Attachment B "Determine QPTR".
- The PPC is out of service.
- NI channel recalibration is NOT in progress.

Initiating Cues: The US directs you to determine QPTR using SP 31012, *Quadrant Power Tilt Ratio,* Section 4.2, "QPTR By Measurement".

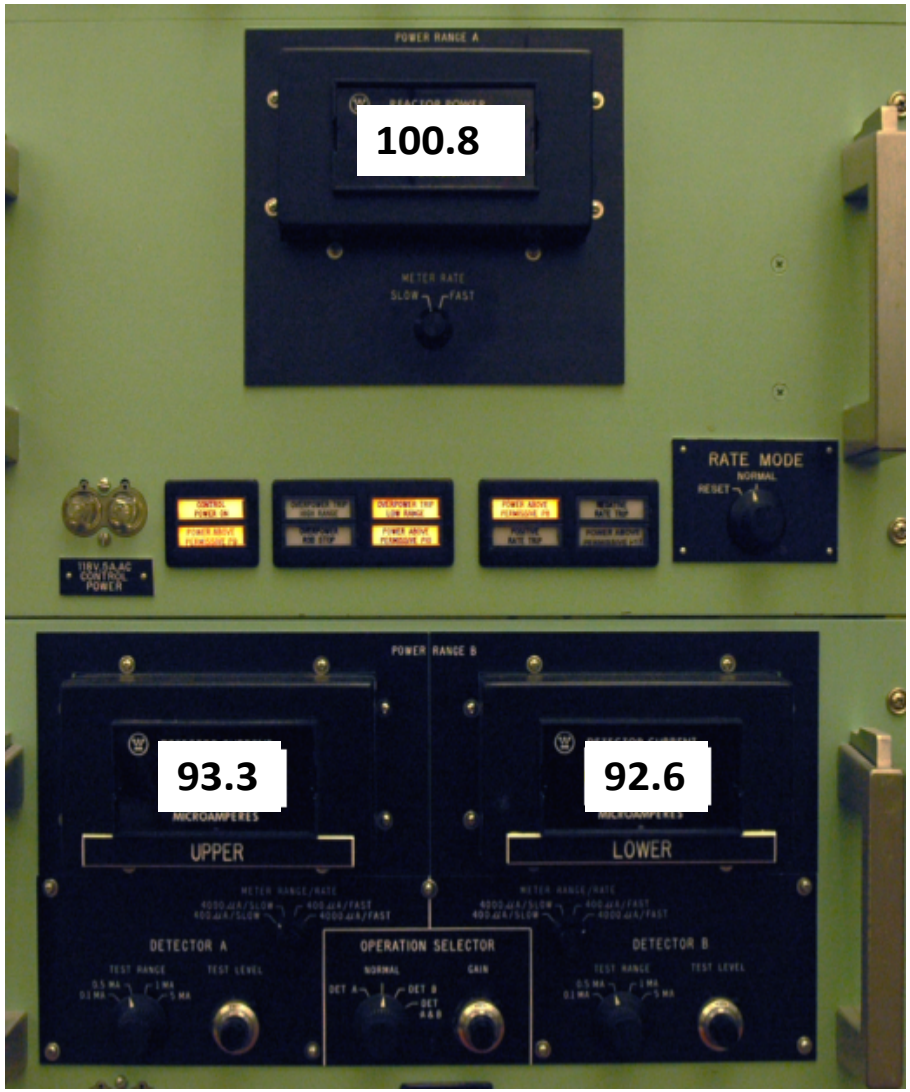
EXAMINEE HANDOUT (Page 2 of 4)

3NMP-NM41F

3NMP-NM42F

EXAMINEE HANDOUT (Page 3 of 4)

3NMP-NM43F



3NMP-NM44F

EXAMINEE HANDOUT (Page 4 of 4)

Attachment 2
100% NI Currents
(Sheet 1 of 1)

Step 4.3.4	Channel 1		Channel 2		Channel 3		Channel 4			
DATE	Upper N−41T	Lower N−41B	Upper N−42T	Lower N−42B	Upper N−43T	Lower N−43B	Upper N−44T	Lower N−44B	ENTERED BY	REACTOR ENGINEER
Today	78.9	86.1	78.1	82.4	81.4	85.3	83.2	86.8	RE#1	RE#2

Level of Use
Reference

STOP THINK ACT REVIEW

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: PERFORM INDEPENDENT VERIFICATION OF DRMS WORK STATION DATABASE

JPM Number: 2021 NRC RO A.3 Revision: 0

Initiated:

W.M. Forrestt (signature on file)	4/21/2021
Developer	Date

Reviewed:

T. Fisher (signature on file)	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/21/2021	Randomly selected previous JPM (2019 NRC RO A.3). On page 3, updated revision number to the following references (no resultant changes to JPM): • OP 3250.62 Rev. 20 • IC 3408A09-001 Rev.45	0

JPM WORKSHEET

Facility: MP3 Examinee: _____

JPM Number: 2021 NRC RO A.3 Revision: 0

Task Title: Perform Independent Verification Of DRMS Work Station Database

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes) 15

Applicable To: SRO _____ RO X

K/A Number: GEN 2.3.15 K/A Rating: 2.9 / 3.1

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

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

Task Standards: While using the guidance of OP 3250.62, correctly identifies the two embedded errors in simulated DRMS display.

Required Materials: (procedures, equipment, etc.)

- OP 3250.62, Removal and Restoration of Radiation Monitors (Rev 20-00) Page 21, step 4.2.28 **(Handout)**
- Create 3-ring binder with IC 3408A09-001, Check-off List for Maintenance of Radiation Monitor Data Base (Rev 45-00**) (Handout)**
- Create 3-ring binder with the following:
  - Completed OP 3362-001, Radiation Monitor Setpoint Change Checklist Forms for CMS22, CCP31, and DAS50 **(Handout)**
  - Completed OP 3362-002, Radiation Monitor Setpoint Log Review Sheet **(Handout)**

General References:

- OP 3250.62, Removal and Restoration of Radiation Monitors (Rev 20-00)
- OP 3362-001, Radiation Monitor Setpoint Change Checklist (Rev 2-03)
- OP 3362-002, Radiation Monitor Setpoint Log Review Sheet (Rev 2-01)
- IC 3408A09, Maintenance of Radiation Monitor Data Base (Rev 6-00)
- IC 3408A09-001, Check-off List for Maintenance of Radiation Monitor Data Base (Rev 45-00)

***** 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: 2021 NRC RO A.3 Revision : 0

Initial Conditions: 3CCP-RE31, Reactor Plant Component Cooling Water monitor, is being restored to service after maintenance. OP 3250.62, Removal and Restoration of Radiation Monitors, is being performed to restore the radiation monitor.

Initiating Cues: The Unit Supervisor directs you to perform the Independent Verification of the Control Room DRMS Work Station Database display for 3CCP-RE31per step 4.2.28 of OP 3250.62.

Report when 3CCP-RE31 is ready to restore to service.

Simulator Requirements: None.

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

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

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.3 Revision: 0

Task Title: Perform Independent Verification Of DRMS Work Station Database

START TIME: _____

Evaluators Note:
Provide handout material to the examinee. This includes OP 3250.62 step 4.2.28 and the two 3-ring binders.

STEP #1 **OP 3250.62 Step 4.2.28**	Performance: Reviews OP 3362-001, "Radiation Monitor Setpoint Change Checklist".	Standard: Determines that 3RMS*CCP31 has a setpoint change.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: CCP31-1 has a lower Alert and Alarm setpoint due to lower background. (Alarm 8.88 E-07 µc/ML and Alert 4.44 E-07 µc/ML)			
STEP #2 **OP 3250.62 Step 4.2.28**	Performance: Reviews OP 3362-002, "Radiation Monitor Setpoint Log Review Sheet"	Standard: Determines that 3RMS*CCP31 has a setpoint change.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Examinee should identify the following inconsistency: The Alert setpoint is set too high at 6.68E-07 µc/ML (on simulation of DRMS Screen – Attachment 1). The required value should be 4.44 E-07 µc/ML (as identified on temp set point change paperwork OP 3362-001 & -002). NOTE: The Alarm setpoint is correct (on Attachment 1 - simulated DRMS Screen) due to temp set point change paperwork OP 3362-001 & -002. The required Alarm setpoint is 8.88 E-07 µc/ML and this is displayed on Attachment 1.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.3 Revision: 0

Task Title: Perform Independent Verification Of DRMS Work Station Database

STEP #3 **OP 3250.62 Step 4.2.28**	Performance: Reviews IC 3408A09-001, "Check-off List for Maintenance of Radiation Monitor Data Base"	Standard: Determines Control Room DRMS Work Station Database for 3RMS*CCP31 is not consistent with IC 3408A09-001 expectations.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Examinee should identify the following inconsistency: The Low Sample Flow is set too high at 5.00E+00 GPM (on simulation of DRMS Screen – Attachment 1). The required value should be 5.00 E-01 gpm (as identified on IC 3408A09-001 "LOW FLOW TRIP POINT").			
STEP #4	Performance: Reports both inconsistencies to the Unit Supervisor.	Standard: Reports that 3RMS*CCP31 is not ready to be restored to service. Provides details of inconsistencies.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC RO A.3 Revision: 0

Task Title: Perform Independent Verification Of DRMS Work Station Database

Date Performed: _____

Examinee: _____

For the Examinee 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?		☐ Yes ☒ No	
Validated Time (minutes):	**15**	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC RO A.3 Revision: 0

Initial Conditions: 3CCP-RE31, Reactor Plant Component Cooling Water monitor, is being restored to service after maintenance. OP 3250.62, Removal and Restoration of Radiation Monitors, is being performed to restore the radiation monitor.

Initiating Cues: The Unit Supervisor directs you to perform the Independent Verification of the Control Room DRMS Work Station Database display for 3CCP-RE31per step 4.2.28 of OP 3250.62.

Report when 3CCP-RE31 is ready to restore to service.

Attachment 1

Health | Loop Status: 1 2 3 4 5 6 7 8 | DRMS Database | Alarm | Rad Alert | Rad High | Trouble | Sim MASTER: DRMS_A

Monitor #	Monitor Name	Area Monitored	Loop #	Drop #	Monitor Class	Channel Number	Channel Type
51	CCP31	CCP FLUID	4	11	NON-IE	1 of 1	LIQUID

ONLINE
REACHABLE
NO ALARM

Levels:	Current Radiation	**2.15E-07** µC/ML	1 Minute Average =	**2.10E-07** µC/ML	1 Hour Average =	2.47E-07 µC/ML
			10 Minute Average	**2.10E-07** µC/ML	1 Day Average =	2.10E-07 µC/ML
	10 Minute Average Sample Flow	**0.00E+00** GPM	10 Minute Average Process Flow =	**5.93E+01** GPM		
	Current Temperature	**7.50E+01** ºF	Current Pressure =	**1.47E+01** PSI		
Trip Setpoints:	High Level =	**8.88E-07** µC/ML	High Pressure =	**1.50E+02** PSI	High Temperature =	1.40E+02 ºF
	Alert Level =	**6.68E-07** µC/ML	Low Pressure =	**0.00E+00** PSI	Low Temperature =	4.00E+01 ºF
	Rate Increase =	**1.00E+10** µC/ML/SEC	Low Sample Flow =	**5.00E+00** GPM		
Conversion Factor:	Radiation Level =	**1.47E-08** µC/ML/CPM	Sample Flow =	**1.00E+00** GPM	Process Flow =	**0.00E+00** GPM
Purge:	Duration =	**60** SECS				
Check Source:	Expected =	**2.50E-06** µC/ML	Response =	**6.00E-06** µC/ML	Activation Period =	**9999** MINS
Background Check:	Last Check =	**0 day**	Level =	**0.00E+00** µC/ML		

Level Alarms		Equipment Failure Alarms		Condition Alarms		Activities	
High Level	= NO	Aux Equipment	= NO	In Local Mode	= NO	Purge / Back Flush	= NO
Alert Level	= NO	Check Source	= NO	Alarms Relays Off	= NO	Filter Step	= N/A
Rate Increase	= NO	Filter Step	= N/A	Detector Saturated	= NO	Check Source On	= NO
High Pressure	= NO	Out of Paper	= N/A	High Conductivity	= N/A	Pumps On	= N/A
Low Pressure	= NO	High Voltage	= NO	Background Level Δ	= NORMAL	Auto – Test On	= N/A
High Temperature	= NO	Detector	= NO	Annunciator	= ENABLED	Active Mode	= YES
Low Temperature	= NO						
High Flow	= NO						
Low Flow	= NO						

Update Data | Database Maintenance | Request Monitor Trend | R*Time Trend | Enable/Disable Auto Retry | View Another Monitor | REQ/CMD Statuses

« Loop Overview | Floor Plan | Status Grid | Steam Generator Tube Rupture | Message Summary | Groups »

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Perform Manual Status Trees and Prioritize Response

JPM Number: 2021 NRC RO A.4 Revision: 0

Initiated:

W. M. Forrestt (signature on file)	4/7/2021
Developer	Date

Reviewed:

T. Fisher (signature on file)	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone (signature on file)	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/7/2021	Original issue for 2K21 NRC Exam.	0

JPM WORKSHEET

Facility: Millstone Unit 3 Examinee: _____

JPM Number: 2021 NRC RO A.1.4 Revision: 0

Task Title: Perform Manual Status Trees and Prioritize Response

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes) 8

Applicable To: SRO _____ RO X

K/A Number: Gen 2.4.4 K/A Rating: 4.5 / 4.7

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

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

Task Standards: Performs manual trees in accordance with requirements of OP 3272 *EOP / AOP User's Guide* and determines that the only ORANGE OR RED Status Trees are: Subcriticality is ORANGE and Heat Sink is RED. Furthermore, REPORTS priority is to go to FR-H.1 FIRST followed by FR-S.1.

Required Materials: (procedures, equipment, etc.) CSF Status Tree Book

General References: None

***** 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: 2021 NRC RO A.1.4 Revision: 0

Initial Conditions: The following events have occurred over the last ten minutes:

- The plant was operating normally at 100% power when a Steam Line Break occurred.
- Several Control Rods didn't insert on the Reactor Trip.
- The Plant Process Computer has failed.
- The crew is transitioning to E-2, *Faulted Steam Generator Isolation*

Initiating Cues: The US has directed you to:

(1) Perform Manual Status Trees and then

(2) REPORT and PRIORITIZE Response of any Status Trees that are NOT Green or Yellow

Simulator Requirements:

(1) RESET to IC 104 (password: "iagtcas") or generate IC iaw instructions below
(2) TURN OFF ALL COMPUTER SCREENS
(3) HANG YCT on 'A' MDAFW PP & ENSURE IN PTL
(4) LEAVE SIM IN FREEZE (for duration of JPM)

OR generate IC by INSERTING the following:

- FW19 (TDAFW PUMP TRIP)
- MS02A (MS LN RUPTURE 'A' SG) TO 5E006
- MS02D (MS LN RUPTURE 'D' SG) TO 5E006
- RD0407 (STUCK ROD D14)
- RD0309 (DROPPED ROD M2) TO 188 STEPS
- RD0310 (DROPPED ROD H12) TO 36 STEPS
- PCR01 (PPC R*TIME) TO STOP
- FWAO0032 (S/G C AUX FEED FLOW) TO 240 GPM
- FWAO0030 (S/G B AUX FEED FLOW) TO 237 GPM
- NIAO0009 (IR A S/U RATE) TO 1.5 AMPS
- NIAO0012 (IR B S/U RATE) TO 1.6 AMPS

*** * * * NOTES TO 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: 2021 NRC RO A.1.4 Revision: 0

Task Title: Perform Manual Status Trees and Prioritize Response

START TIME: _____

S T E P # 1 E O P F - 0 . 1	Performance: **<u>On SUBCRITICALITY Status Tree:</u>** Power Range **Less than 5%**	Standard: On MB4, observes PR meters are downscale low.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Intermediate range SUR - Positive	On MB4, observes IR meters (NMI-NI35D & NMI-NI36D) are POSITVE (reading 1.5 & 1.6 dpm). Determines ORANGE PATH exists with FR-S.1 entry conditions met.		
	Cue:			
	Comments: Critical nature of this step is that the Examinee determines an **ORANGE path** exists and FR-S.1 entry is met. This should be communicated by the Examinee following completion of all Status Tree Checks.			
S T E P # 2 E O P F - 0 . 2	Performance: **<u>On CORE COOLING Status Tree:</u>** Core exit TCs – **Less than 1200 F**	Standard: On 'A' & 'B' ICC Cabinets, determines CET's are less than 1200 F (highest displayed CET is 459 F).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	RCS subcooling based on core exit TCs – Greater than 32 F (115 F adverse)	On 'A' & 'B' ICC Cabinets, determines RCS subcooling is 135 F.		
	Cue:			
	Comments: (1) Examinee will monitor for adverse CTMT conditions and determine that CTMT is not adverse. Adverse CTMT is declared when either: (a) CTMT temp exceeds 180 F OR (b) CTMT radiation levels exceed 10 E5 R / hr (RMS*RE04A / 05A). (2) Examinee determines Core Cooling Status Tree is a **GREEN path.**			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.4 Revision: 0

Task Title: Perform Manual Status Trees and Prioritize Response

STEP #3 EOP F-0.3	Performance: **<u>On HEAT SINK Status Tree:</u>** NR level in all SGs – **Less than 8%** (42%)	Standard: On MB5, determines that all SG levels are less than 8% Narrow Range (all are offscale low in NR).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Total FW flow to SGs – **Less then 530 gpm**	On MB5, determines that total AFW flow is less than 530 gpm ('B' & 'C' SG AFW flow equals 490 gpm). Determines RED path exists with FR-H.1 entry conditions met.		
	Cue:			
	Comments: Critical nature of this step is that the Examinee determines an **RED path** exists and FR-H.1 entry is met.			
STEP #4 EOP F-0.4	Performance: **<u>On INTEGRITY Status Tree:</u>** Temperature decrease in any cold leg – **Greater than 100 F** in the last **60 minutes**	Standard: Based on following: - Initial Cue -10 minutes ago were at 100% power – Tcold 557 - Cold Legs are at 445 F (RCS TR413B & 433B) Determines that the cooldown is greater than 100 F in last 60 minutes	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	All RCS pressure – cold leg temperature points – **TO Right of LIMIT A**	Determines all cold temps are to the right of limit A curve (lowest CL temp is 445F)		
	All RCS cold leg temperatures **Greater than 260 F**	Determines all cold temps are greater than 260 F (lowest CL temp is 445F)		
	All RCS cold leg temperatures **Greater than 260 F**	Determines all cold temps are greater than 290 F (lowest CL temp is 445F)		
	Cue:			
	Comments: Examinee determines Integrity Status Tree is a **GREEN path.**			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.4 Revision: 0

Task Title: Perform Manual Status Trees and Prioritize Response

STEP #5 EOP F-0.5	Performance: **<u>On CONTAINMENT Status Tree:</u>** Containment pressure – **Less than 60 psia**	Standard: On MB2, determines Containment pressure is ~14 psia.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Containment pressure – **Less than 23 psia**	On MB2, determines Containment pressure is ~14 psia.		
	Containment sump level – **Less than 15.75 ft**	On MB2, determines Containment sump level is offscale low (RSS*LI22A & B).		
	Containment radiation – **Less than 10 R/hr**	Determines Containment radiation is offscale low (RMS*RE04A & 05A).		
	Cue:			
	Comments: Examinee determines Containment Status Tree is a **GREEN path.**			
STEP #6 EOP F-0.6	Performance: **<u>On INVENTORY Status Tree:</u>** PZR level - **Less than 89%**	Standard: On MB4, determines PZR level is 43% (RCS-LI459A, 460A, 461 or RCS-LR459).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	PZR level – **Greater than 22%**	On MB4, determines PZR level is 43% (RCS-LI459A, 460A, 461 or RCS-LR459).		
	RVLMS indicates **upper head – at 100%**	On 'A' & 'B' ICC Cabinets, determines RVLMS indicates 100%.		
	Cue:			
	Comments: Examinee determines Containment Status Tree is a **GREEN path.**			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC RO A.1.4 Revision: 0

Task Title: Perform Manual Status Trees and Prioritize Response

STEP #7 Initial CUE	Performance: **REPORT and PRIORITIZE** Response of any **Status Trees** that are NOT Green or Yellow	Standard: Reports that the only status trees that are NOT green or yellow are: -**Subcriticality is ORANGE** -**Heat Sink is RED** **Reports priority is to go to FR-H.1 FIRST followed by FR-S.1.**	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Per OP 3272 *EOP / AOP User's Guide*: "Status trees are addressed according to two separate priority schemes where the first scheme (color) takes priority over the second (sequence). After addressing the highest priority path, the next RED or ORANGE condition is addressed."			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC RO A.1.4 Revision: 0

Task Title: Perform Manual Status Trees and Prioritize Response

Date Performed: _____

Examinee: _____

For the applicant 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?		☐ Yes ☒ No	
Validated Time (minutes):	8	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC RO A.1.4 Revision: 0

Initial Conditions: The following events have occurred over the last ten minutes:

- The plant was operating normally at 100% power when a Steam Line Break occurred.
- Several Control Rods didn't insert on the Reactor Trip.
- The Plant Process Computer has failed.
- The crew is transitioning to E-2, *Faulted Steam Generator Isolation*

Initiating Cues: The US has directed you to:

(1) Perform Manual Status Trees and then

(2) REPORT and PRIORITIZE Response of any Status Trees that are NOT Green or Yellow

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to a Mode 4 LOCA

JPM Number: 2021 NRC S.1 Revision: 0

Initiated:

W.M. Forrestt – Signature on File	5/26/2021
Developer	Date

Reviewed:

T. Fisher – Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone – Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC S.1 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/26/21	Original Issue for 2K21 NRC Exam.	0

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC S.1 Revision: 0

Task Title: Respond to a Mode 4 LOCA

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☒ YES ☐ NO

Validated Time (minutes) 15

Applicable To: SRO X RO X

K/A Number: EPE-009-EA1.04 K/A Rating: 3.7 / 3.5

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

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

Task Standards: Successfully implements EOP 3508 to increase pressurizer level (step 1) and manually isolate containment (step 3).

Required Materials: (procedures, equipment, etc.) EOP 3508, Rev. 002

General References: None

***** 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: 2021 NRC S.1 Revision : 0

Initial Conditions: The plant is in Mode 4 and is being shutdown for a Refueling Outage.

The following events have occured:

- A RCS leak developed inside Containment.
- The crew entered AOP 3555 *Reactor Coolant System Leak* and was unable to raise Pressurizer level.
- Moments ago the crew stopped the 'B' RCP and transitioned to EOP 3508 *Shutdown LOCA*.

Initiating Cues: Carry out actions of EOP 3508 *Shutdown LOCA* starting at Step 1.

The annunciators are in Master Silence.

Another Control Room Operator is responsible for Foldout Page criteria.

There are no personnel in Containment.

Simulator Requirements:

RESET TO IC-93 (Password: "iagtcas")

– OR --

1. Reset to IC-26
2. INSERT **RP11K** (CIA fails to actuate)
3. INSERT **RPDI0066 & RPDI0067** to 'NSILATE'
3. INSERT **RC03A** at 65 lbm / sec (LOCA)
4. Carry out actions of AOP 3555 (up thru EOP 3508 transition step 6b RNO)
5. Verify PZR Level is lowering slightly

(Approximate Simulator setup time is 15 minutes.)

*** * * * 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: 2021 NRC S.1 Revision: 0

Task Title: Respond to a Mode 4 LOCA

START TIME: _____

STEP #1 3508 Step1a	Performance: **CHECK** Charging Pumps – ONLY ONE RUNNING	Standard: On MB3, observes that only the 'B' Charging Pump is running (red light ON, green light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #2 3508 Step1b	Performance: **CHECK** Charging Pump suction aligned to RWST: 1. 3CHS*LCV112D OR 3CHS*LCV112E – OPEN	Standard: Observes both 3CHS*LCV112D & 3CHS*LCV112E are OPEN (red light ON, green light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Performance: **2. CHECK** Charging Pump suction aligned to RWST: 3CHS*LCV112B OR 3CHS*LCV112C – CLOSED	Standard: Observes both 3CHS*LCV112B & 3CHS*LCV112C are CLOSED (green light ON, red light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #3 3508 Step1c	Performance: **OPEN** Cold Leg Injection Isolation Valves: • 3SIH*MV8801A • 3SIH*MV8801B	Standard: Depresses OPEN pushbutton on 3SIH*MV8801A & 3SIH*MV8801B and observes valve(s) opening (red light ON, green light OFF).	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Must open one valve to meet critical step (valves are in parallel).			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.1 Revision: 0

Task Title: Respond to a Mode 4 LOCA

STEP #4 3508 Step1d	Performance: **CLOSE** Charging Line Isolation Valves: • 3CHS*MV8105 • 3CHS*MV8106	Standard: Depresses CLOSE pushbutton on 3CHS*MV8105 & 3CHS*MV8106 and observes valve(s) closing (green light ON, red light OFF).	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Must close one valve to meet critical step (valves in series).			
STEP #5 3508 Step1e	Performance: **CLOSE** Charging pump miniflow valves: • 3CHS*MV8111A • 3CHS*MV8111B • 3CHS*MV8111C • 3CHS*MV8110	Standard: Depresses CLOSE pushbutton on: • 3CHS* MV8111A • 3CHS* MV8111A • 3CHS* MV8111A • 3CHS*MV8110 And observes valves close (green light ON, red light OFF).	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: 3CHS*MV8111A, B, C are in series with 3CHS*MV81110. Must close one of these valves to isolate flow and meet critical step.			
STEP #6 3508 Step1f	Performance: **OPEN** CHS to RWST Mini Flow Isolation Valves for the running Train Charging Pump: Train B: • 3CHS*MV8511B • 3CHS*MV8512A	Standard: Depresses OPEN pushbutton on 3CHS*MV8511A & 3CHS*MV8512B and observes valve(s) opening (red light ON, green light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: Establishing miniflow isn't critical for the event in progress.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.1 Revision: 0

Task Title: Respond to a Mode 4 LOCA

STEP #7 3508 Step2a	Performance: **CHECK** personnel - IN CONTAINMENT RNO: **PROCEED TO** step 3	Standard: Based on the initiating cue, proceeds to Step 3.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: If asked, state: “There are no personnel in Containment”.			
	Comments: Based on initiating cue, there are no personnel in Containment.			
STEP #8 3508 Step3a	Performance: **ACTUATE** CIA	Standard: Depresses CIA pushbutton and observes MB2B 5-8 annunciator “CIA” illuminates.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #9 3508 Step3b	Performance: **CHECK** ESF Group 2, columns 2 through 10 - LIT	Standard: Observes that some lights in Group 2 columns 2 through 10 are not lit. Proceeds to RNO.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: This begins the ALT PATH portion of the JPM.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.1 Revision: 0

Task Title: Respond to a Mode 4 LOCA

STEP #10 3508 Step3b RNO	Performance: **IF** ESF Group 2, columns 2 through 10 are **NOT** lit, **THEN REFER** to ATTACHMENT B **AND POSITION** valves to establish at least minimum safety function. **SEE ATTACHMENT 'B' ON FOLLOWING PAGES**	Standard: Proceeds to Attachment B (see next three pages) and repositions valves per the attachment (all valves to be closed with the exception of CDS / CCP cross-connect valves at the bottom of page 2). For valves to be closed, depresses the Close pushbutton(s) and observes valves close (green light ON, red light OFF). For valves to be opened, depresses the Open pushbutton(s) and observes valves open (red light ON, green light OFF).	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: 1.) The examinee should attempt to re-position all valves on Attachment 'B'. However, only one valve per block is needed to meet minimum safety function (& meet the critical nature of this step). Some penetrations only have single valve isolation. In these penetrations there is only one valve in a block and it must be closed to meet minimum safety function.			

TERMINATION CUE: **The evaluation for this JPM is concluded.**

STOP TIME: _____

(PROCTOR COPY)

ATTACHMENT B
Containment Isolation Phase A Valves
(Page 1 of 3)

NOTE: Components are listed in a box with associated path isolation valve (where available)

Table 1

	Main Board 1 (Vertical)			
	Component	**Description**	**Position**	**Train**
☐	3SSP*CTV7	PASS Isolation	Closed	A
☐	3SSP*CTV8	PASS Isolation	Closed	A
☐ ☐	3SSR*CTV26 3SSR*CTV27	Rx Hot Leg Rx Hot Leg	Closed Closed	A B
☐ ☐	3SSR*CTV29 3SSR*CTV30	Rx Cold Leg Rx Cold Leg	Closed Closed	A B
☐ ☐	3SSR*CTV20 3SSR*CTV21	PZR Vapor PZR Vapor	Closed Closed	A B
☐ ☐	3SSR*CV8026 3SSR*CV8025	PRT Gas PRT Gas	Closed Closed	A B
☐ ☐	3SSR*CTV32 3SSR*CTV33	SI Accumulator SI Accumulator	Closed Closed	A B
☐ ☐	3IAS*PV15 3IAS*MOV72	Instrument Air Instrument Air	Closed Closed	A B
☐ ☐	3GSN*CTV105 3GSN*CV8033	Nitrogen to PRT Nitrogen to PRT	Closed Closed	A B
☐ ☐	3CMS*CTV20 3CMS*CTV21	Ctmt Atmospheric Monitor Ctmt Atmospheric Monitor	Closed Closed	A B
☐ ☐	3CMS*CTV23 3CMS*MOV24	Ctmt Atmospheric Monitor Ctmt Atmospheric Monitor	Closed Closed	A B
☐ ☐	3VRS*CTV20 3VRS*CTV21	Gas Vent Gas Vent	Closed Closed	A B
☐ ☐	3DGS*CTV24 3DGS*CTV25	Reactor Plant Drains Gaseous Reactor Plant Drains Gaseous	Closed Closed	A B
☐ ☐	3DAS*CTV24 3DAS*CTV25	Reactor Plant Drains Aerated Reactor Plant Drains Aerated	Closed Closed	A B
☐ ☐	3PGS*CV8046 3PGS*CV8028	Primary Water Primary Water	Closed Closed	A B

ATTACHMENT B
Containment Isolation Phase A Valves

	Main Board 1 (Vertical)			
	Component	**Description**	**Position**	**Train**
☐ ☐	3FPW*CTV48 3FPW*CTV49	Fire Water Fire Water	Closed Closed	A B
☐ ☐	3CVS*CTV20A 3CVS*CTV21A	Ctmt Vacuum Pump Ctmt Vacuum Pump	Closed Closed	A B
☐ ☐	3CVS*CTV20B 3CVS*CTV21B	Ctmt Vacuum Pump Ctmt Vacuum Pump	Closed Closed	A B

	Main Board 1 (Horizontal)			
	Component	**Description**	**Position**	**Train**
☐ ☐	3CDS*CTV38A 3CDS*CTV91A	Train A Supply Train A Supply	Closed Closed	A B
☐ ☐	3CDS*CTV38B 3CDS*CTV91B	Train B Supply Train B Supply	Closed Closed	A B
☐ ☐	3CDS*CTV39A 3CDS*CTV40A	Train A Return Train A Return	Closed Closed	A B
☐ ☐	3CDS*CTV39B 3CDS*CTV40B	Train B Return Train B Return	Closed Closed	A B
☐	3CDS*AOV45C/46C	Coil 1A (Train A)	Closed	A
☐	3CDS*AOV45B/46B	Coil 1B (Train B)	Closed	B
☐ ☐	3CCP*AOV10A/19A 3CCP*AOV197A/194A	Train A Supply / Return Isol Train A Supply / Return Isol	Closed Closed	A B
☐ ☐	3CCP*AOV10B/19B 3CCP*AOV197B/194B	Train B Supply / Return Isol Train B Supply / Return Isol	Closed Closed	B A
☐	3CCP*MV223/225	CDS/CCP Train A cross-connect	OPEN	A
☐	3CCP*MV222/224	CDS/CCP Train A cross-connect	OPEN	A
☐	3CCP*MV226/228	CDS/CCP Train B cross-connect	OPEN	B
☐	3CCP*MV227/229	CDS/CCP Train B cross-connect	OPEN	B

ATTACHMENT B
Containment Isolation Phase A Valves
(Page 3 of 3)

	Main Board 2 (Horizontal)			
	Component	**Description**	**Position**	**Train**
☐	3SIH*CV8823	Cold Legs	Closed	A
☐	3SIH*CV8824	1/3 Hot Legs	Closed	A
☐	3SIH*CV8881	2/4 Hot Legs	Closed	A
☐	3SIH*CV8843	Chg Cold Legs	Closed	A
☐	3SIH*CV8888	SI Accumulator Master Fill	Closed	B
☐ ☐	3SIH*CV8964 3SIH*CV8871	SI Test Header SI Test Header	Closed Closed	B A
☐	3SIL*CV8890A	1/2 Cold Legs	Closed	A
☐	3SIL*CV8890B	3/4 Cold Legs	Closed	A
☐	3SIL*CV8825	2/4 Hot Legs	Closed	A
☐ ☐	3SIL*CV8968 3SIL*CV8880	Nitrogen Supply Nitrogen Supply	Closed Closed	A B

	Main Board 3 (Horizontal)			
	Component	**Description**	**Position**	**Train**
☐ ☐	3CHS*MV8100 3CHS*MV8112	RCP Seal Isolation RCP Seal Isolation	Closed Closed	B A
☐ ☐	3CHS*CV8160 3CHS*CV8152	Letdown Hdr Isolation Letdown Hdr Isolation	Closed Closed	A B

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC S.1 Revision: 0

Task Title: Respond to a Mode 4 LOCA

Date Performed: _____

Examinee: _____

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?		☐ Yes ☒ No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC S.1 Revision: 0

Initial Conditions: The plant is in Mode 4 and is being shutdown for a Refueling Outage.

The following events have occured:

- A RCS leak developed inside Containment.
- The crew entered AOP 3555 *Reactor Coolant System Leak* and was unable to raise Pressurizer level.
- Moments ago the crew stopped the 'B' RCP and transitioned to EOP 3508 *Shutdown LOCA*.

Initiating Cues: Carry out actions of EOP 3508 *Shutdown LOCA* starting at Step 1.

The annunciators are in Master Silence.

Another Control Room Operator is responsible for Foldout Page criteria.

There are no personnel in Containment.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Pressurizer Pressure Control Following Reactor Trip

JPM Number: 2021 NRC S.2 Revision: 0

Initiated:

W.M. Forrestt – Signature on File	4/5/2021
Developer	Date

Reviewed:

T. Fisher – Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone – Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC S.2 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/5/21	Developed from bank JPM S050A.	0

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC S.2 Revision: 0

Task Title: Pressurizer Pressure Control Following Reactor Trip

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☒ YES ☐ NO

Validated Time (minutes) 4

Applicable To: SRO X RO X

K/A Number: APE-027-AA1.01 K/A Rating: 4.0 / 3.9

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

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

Task Standards: Successfully stops RCP's 1 and 2 in accordance with ES-0.1 *Reactor Trip Response*, Step 5.

Required Materials: (procedures, equipment, etc.) EOP 35 ES-0.1 Rev. 030

General References: None

***** 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: 2021 NRC S.2 Revision : **0**

Initial Conditions:

An inadvertent reactor trip occurred.

The crew completed the actions of E-0, *Reactor Trip or Safety Injection*, and ES-0.1, *Reactor Trip Response*, through ES-0.1, step 4.

Initiating Cues:

The US directs you to check pressurizer pressure control using step 5 of ES-0.1, *Reactor Trip Response*.

You are responsible for acknowledging alarms on MB4, only.

Simulator Requirements:

***** WARNING *****

Due to the transient nature of this JPM, do NOT place the simulator in "RUN" until the examinee is ready to take the shift.

1. Reset to IC-95 (Password: "iagtcas")
2. Place the simulator in "RUN" and verify RCS pressure is >2050 psia and decreasing. Place the simulator in **"FREEZE."**
3. **After the examinee has received the initiating cues and initial conditions, place the simulator in "RUN."**

OR

1. Reset to IC-18, 100% steady state power or equivalent IC.
2. Insert malfunctions RP02A and RP02B - reactor trip.
3. Place the simulator in "RUN." Allow the reactor trip to occur, throttle back AFW flow to approximately 150 gpm per SG.
4. Allow RCS temperature and pressure to stabilize to the point that PZR heaters cycle off.
5. Acknowledge/reset alarms and place the simulator in "Freeze."
6. Insert malfunction RX06A, pressurizer spray valve PCV-455B auto control failure, at 50% severity.
7. INSERT override RXDI0011, 3RCS-PK455B PZR Spray Vv Cntl 3RCS*PK455B, to AUTO (keeps AUTO selected and prevents selecting MANUAL control), or under Simulator diagrams (left screen):
8. RX Sheet 13, component 3RCS-PK455B, select "auto" to "ON"

*** * * * 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: 2021 NRC S.2 Revision: 0

Task Title: Pressurizer Pressure Control Following Reactor Trip

START TIME: _____

STEP #1 ES-0.1 Step 5a	Performance: **CHECK** PZR pressure - GREATER THAN 1890 psia	Standard: Checks pressurizer pressure greater than 1890 psia by observing pressure indication on MB4 meters or the PPC 3RCS-PI455A 3RCS-PI456A 3RCS-PI457 3RCS-PI458 OR Recorder PR455.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #2 ES-0.1 Step 5b	Performance: CHECK PZR pressure - STABLE AT OR TRENDING TO 2250 psia	Standard: Notes that PZR pressure using indications listed in JPM Step 1. Observes Pzr pressure is less than 2250 psia and lowering. Proceeds to Step 5.b.RNO.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.2 Revision: 0

Task Title: Pressurizer Pressure Control Following Reactor Trip

STEP #3 ES-0.1 Step 5b RNO	Performance: **PERFORM** the applicable action: • **IF** PZR pressure is LESS THAN 2250 psia, **THEN PROCEED TO** step 5.d. • **IF** PZR pressure is GREATER THAN 2250 psia, **THEN PROCEED TO** step 5.h.	Standard: Proceeds to step 5d.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #4 ES-0.1 Step 5d	Performance: **CHECK** PZR PORVs - CLOSED	Standard: Verifies PZR PORV valves closed by observing indicating lights as green ON, red OFF.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: The examinee may also check PORV outlet temp (RCS-TI463) as approximately 110°F and PRT parameters as confirmatory indications.			
STEP #5 ES-0.1 Step 5e	Performance: **CHECK** PZR Spray Valves - CLOSED	Standard: Identifies that loop #1 PZR spray valve, RCS*PCV455B is OPEN, based on Red light lit on MB4 Controller. Proceeds to Step 5.e.RNO.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: This begins the ALT PATH portion of the JPM.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.2 Revision: 0

Task Title: Pressurizer Pressure Control Following Reactor Trip

STEP #6 ES-0.1 Step 5e RNO	Performance: **CLOSE** Spray Valves. • **IF** any Spray Valve **CANNOT** be closed, **THEN STOP** RCPs 1 and 2.	Standard: Depresses the "manual" pushbutton on controller RCS*PCV455B on MB4. Observes the controller will not shift to "MANUAL" ("auto" light stays lit and the "MANUAL" light does not illuminate). **Continues in RNO and stops RCS-P1A and RCS-P1B.**	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: (1) Critical nature of this step is that the examinee stops RCS-P1A and RCS-P1B. (2) The examinee may depress the "UP ARROW" and/or "DOWN ARROW" pushbuttons to confirm the controller did not shift to "manual." Additionally, the examinee may place the Master Pressure Controller (3RCS*PCV455A) in "MANUAL". Neither of these efforts will be successful.			
STEP #7 ES-0.1 Step 5f	Performance: **CHECK** PZR Heaters - ENERGIZED	Standard: Verifies heater groups 3RCS*H1A, *H1B, -H1C, -H1D and -H1E are on by observing the indicating lights as green OFF, red ON.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #8 ES-0.1 Step 5g	Performance: PROCEED TO step 6	Standard: Reads step to proceed to step 6.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

TERMINATION CUE: **The evaluation for this JPM is concluded.**

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC S.2 Revision: 0

Task Title: Pressurizer Pressure Control Following Reactor Trip

Date Performed: _____

Examinee: _____

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?		☐ Yes ☒ No	
Validated Time (minutes):	4	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC S.2 Revision: 0

Initial Conditions: An inadvertent Reactor Trip occurred.

The crew completed the actions of E-0, *Reactor Trip or Safety Injection*, and ES-0.1, *Reactor Trip Response*, through ES-0.1, step 4.

Initiating Cues: The US directs you to check pressurizer pressure control using step 5 of ES-0.1, *Reactor Trip Response*.

You are responsible for acknowledging alarms on MB4, only.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Start 'B' RCP Post-Accident using GA-6

JPM Number: 2021 NRC S.3 Revision: 0

Initiated:

W.M. Forrestt – Signature on File	5/26/2021
Developer	Date

Reviewed:

T. Fisher – Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone – Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC S.3 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/5/21	New Simulator JPM written for 2021 NRC Exam.	0

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☒ YES ☐ NO

Validated Time (minutes) 13

Applicable To: SRO X RO X

K/A Number: 003 RCPS A4.06 K/A Rating: 2.9 / 2.9

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

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

Task Standards: Successfully starts the 'A' RCP in accordance with GA-6 *Starting Reactor Coolant Pump*.

Required Materials: (procedures, equipment, etc.) EOP 35 GA-6 *Starting Reactor Coolant Pump* (Rev. 4)

General References: None

***** 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: 2021 NRC S.3 Revision : 0

Initial Conditions: With the plant at 100%, the following events occurred:

- A Reactor Coolant System leak developed causing Safety Injection.
- The crew entered E-0 and stopped all RCP's (per foldout page).
- The crew has isolated the RCS leak and transitioned to ES-1.1 *SI Termination*.

Initiating Cues: The US directs you to start 'B' RCP using GA-6 *Starting Reactor Coolant Pump.*

In preparation for a RCS cooldown, the 'B' RCP overcurrent trip switches (43PP and 43PB) have been placed in the COLD position.

The annunciators are in Master Silence.

Simulator Requirements:

***** NOTE *****

(1) Due to the transient nature of this JPM, do NOT place the simulator in "RUN" until the examinee is ready to take the shift.

(2) Ensure RCP trend screen doesn't have any tiles on top (move to side of monitor), as this causes instrument names to become shortened / incomplete.

RESET TO IC-96 (Password: "iagtcas") **– OR--**

1. Reset to IC 13 (or equal 100% power)
2. Insert malfunction RC06A to 1E6 lbm / hr.
3. After reactor trips, stop all RCP's (when RCS pressure is < 1500 psia)
4. When RCS Pressure lowers to 1400 psia, remove RC06A
5. Carry out actions in E-0 (up to transition to ES-1.1) (include closing MSIV's)
6. Carry out actions in ES-1.1 (thru step 18 only) (JPM set-up simulates the US pulling up GA-6 a few steps, thereby requiring the examinee to open 3CHS*MV8110 and 3CHS*MV8110)
7. Place RCR23 thru 26 ('B' RCP overcurrent trips) in COLD
8. Fail 'B' RCP lower & mid seals (CV13B & CV14B to 100%)

**Approximate Simulator setup time is 30 minutes

*** * * * 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: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

START TIME: _____

STEP #1 GA-6 Step 1a.	Performance: Using ATTACHMENT A, CHECK RCS pressure - GREATER THAN MINIMUM REQUIRED	Standard: Verifies RCS pressure is greater than Attachment A requirements by observing pressure indication on MB4 meters (RCS-P455A, 45A, 457, 458) or recorder (RCS PR455).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #2 GA-6 Step 1b	Performance: CHECK RPCCW pumps – AT LEAST ONE RUNNING	Standard: Checks MB1 and observes that both 3CCP*P1A and 3CCP*P1B are running (red light ON, green light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #3 GA-6 Step 1c	Performance: CHECK 6.9 kV power for selected RCP - AVAILABLE	Standard: On MB8, observes that BUS 35B VOLTS reads approximately 6.9kV	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

STEP #4 GA-6 Step 1d	Performance: CHECK Switchyard voltage - GREATER THAN OR EQUAL TO 345kV	Standard: On MB8, observes that Switchyard voltage reads approximately 345kV (using analogue or digital indication, "345 KV SWYD KV")	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #5 GA-6 Step 1e	Performance: CHECK RCS cooldown – IN PROGRESS OR PLANNED	Standard: From initial cue (or as cued below), determines a cooldown is planned and continues in left hand column.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: If asked as the US, "Yes a cooldown is planned."			
	Comments:			
STEP #6 GA-6 Step 1f	Performance: Using CO key #7, locally PLACE eight RCP overcurrent trip switches (43PP and 43PB) in the COLD position	Standard: From initial cue (or as cued below), determines the 'B' RCP overcurrent trip switches have been placed in the COLD position.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: If asked as the US, "The 'B' RCP overcurrent trip switches (43PP and 43PB) have been placed in the COLD position."			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

STEP #7 GA-6 Step 1g	Performance: CHECK RCP Seal Return Isolation Valves - OPEN • 3CHS*MV8112 AND • 3CHS*MV8100	Standard: On MB3, observes both 3CHS*MV8100 and 3CHS*MV8112 are closed (green light ON, red light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #8 GA-6 Step 1g RNO	Performance: OPEN valves	Standard: Depresses open push button for both 3CHS*MV8100 and 3CHS*MV8112. Observes valves are now open (red light ON, green light OFF).	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #9 GA-6 Step 1h	Performance: CHECK normal PZR spray valves - CLOSED	Standard: On MB4, observes both PZR spray valves (RCS*PCV455B and RCS*PCV455C) are closed (darkened position indication window(s) & controller output is downscale low).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

STEP #10 GA-6 Step 1i	Performance: CHECK CIA AND CIB - RESET	Standard: On MB2B, observes darkened annunciator windows • MB2B 5-8 "CIA" • MB2B 5-6 "CIB" Determines CIA and CIB are Reset.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #11 GA-6 Step 2	Performance: CHECK Starting RCP B - DESIRED	Standard: Based on initiating cue, determines it's desired to start 'B' RCP.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: If asked, "Yes, it's desired to start 'B' RCP."			
	Comments:			
STEP #12 GA-6 Step 3a	Performance: CHECK RCP B Seal Supply Isolation (3CHS*MV8109B) - OPEN	Standard: On MB3, observes that 3CHS*MV8109B is open (red light ON, green light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

STEP #13 GA-6 Step 3b	Performance: CHECK RCP B Seal Leakoff Isolation (3CHS-AV8141B) - OPEN	Standard: On MB3, observes that 3CHS-AV8141B is open (red light ON, green light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #14 GA-6 Step 3c& RNO	Performance: VERIFY RCP B seal injection - BETWEEN 8 to 13 gpm	Standard: On 'B' RCP Seal Injection Meter (CHS-FI144A), observes seal injection flow reads ~14.5 gpm. Proceeds to RNO.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Performance: **ADJUST** 3CHS-HC182 to obtain seal injection flow- BETWEEN 8 to 13 gpm.	Standard: Throttles closed 3CHS-HC182 until 'B' RCP seal injection reads 8 to 13 gpm.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #15 GA-6 Step 3d	Performance: CHECK differential pressure across each seal stage - GREATER THAN OR EQUAL TO 25 psid. • CPBLOWSTGDP • CPBMIDSTGDP • CPBUPRSTGDP	Standard: Uses PPC screen "RCS-2" and observes that CPBMIDSTGDP reads ~14.8 psid. Proceeds to RNO and goes to Step 11.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue: If examinee notifies the Unit Supervisor, acknowledge report and state "continue with the guidance in GA-6".			
	Comments: (1) Critical nature of the step is that the Examinee determines that 'B' RCP should not be started (given it's RCP Seal issue). (2) This begins the ALT PATH portion of the JPM.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

STEP #16 GA-6 Step 11a	Performance: **CHECK** any recently started RCP - TRIPPED AFTER INITIAL START RNO: **PROCEED TO** the note prior to step 12.	Standard: Determines that a RCP hasn't tripped and proceeds to Step 12.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #17 GA-6 Step 12	Performance: **CHECK Starting Another RCP – DESIRED** • For RCP A, **RETURN TO** step 5 • For RCP B, **RETURN TO** step 3 • For RCP C, **RETURN TO** step 7 • For RCP D, **RETURN TO** step 9	Standard: Determines (from Note prior to Step 1), that 'A' RCP and another RCP should be started.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue: When the examinee makes the determination that 'A' RCP and one additional ('C' or 'D') should be started, direct the examinee to "Start 'A' RCP".			
	Comments: This JPM will be terminated after the start of 'A' RCP.			
STEP #18 GA-6 Step 5a	Performance: **CHECK** RCP A Seal Supply Isolation (3CHS*MV8109A) - OPEN	Standard: Observes that 3CHS*MV8109A is OPEN (red light ON, green light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

STEP #19 GA-6 Step 5b	Performance: **CHECK** RCP A Seal Leakoff Isolation (3CHS-AV8141A) - OPEN	Standard: Observes that 3CHS- AV8141A is OPEN (red light ON, green light OFF).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #20 GA-6 Step 5c	Performance: **VERIFY** RCP A seal injection - BETWEEN 8 to 13 gpm	Standard: On 'A' RCP Seal Injection Meter (CHS-FI145A), observes seal injection flow reads ~14.5 gpm. Proceeds to RNO, if necessary.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #21 GA-6 Step 5d	Performance: CHECK differential pressure across each seal stage - GREATER THAN OR EQUAL TO 25 psid. • CPBLOWSTGDP • CPBMIDSTGDP • CPBUPRSTGDP	Standard: Uses PPC screen "RCS-2" and observes that all seal stages are ~equal and greater than 25 psid.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

STEP #22 GA-6 Step 5e	Performance: Using ATTACHMENT B, **CHECK** RCP A CBO flow – WITHIN NORMAL OPERATING RANGE	Standard: Uses PPC or MB indication (Flow Recorder CHS-FR160) and determines CBO flow is within Normal Operating Range.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #23 GA-6 Step 5f	Performance: **VERIFY** the following annunciators - **NOT** LIT: • RCP A MOTOR TEMP HI (MB4B 2-1) (248° F) • RCP A THRM BARR FLOW LO (MB4B 3-2A) (36 gpm) • RCP A COOLER SPLY PRES LO (MB4B 3-2B) (85 psig) • RCP A UPR OIL RSVR LVL HI (MB4B 4-2A) • RCP A UPR OIL RSVR LVL LO (MB4B 4-2B) • RCP A LWR OIL RSVR LVL HI (MB4B 5-2A) • RCP A LWR OIL RSVR LVL LO (MB4B 5-2B)	Standard: Observes annunciators and determines they are NOT LIT.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #24 GA-6 Step 6a	Performance: **START** RCP A Oil Lift Pump (3RCS-P1A1)	Standard: Places 3RCS-P1A1 in Start and observes red light ON / green light OFF.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP using GA-6

STEP #25 GA-6 Step 6b	Performance: **CHECK** Lift Pump white light permissive - LIT	Standard: After 2 minutes, white light illuminates. Proceeds to start RCP A.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #26 GA-6 Step 6c	Performance: **START** RCP A	Standard: Places RCP 'A' in Start and observes red light ON / green light OFF.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #27 GA-6 Step 6d	Performance: **STOP** RCP A Oil Lift Pump (3RCS-P1A1)	Standard: Places 3RCS-P1A1 in Stop and observes green light ON / red light OFF.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

TERMINATION CUE: **The evaluation for this JPM is concluded.**

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC S.3 Revision: 0

Task Title: Start 'B' RCP Post-Accident using GA-6

Date Performed: _____

Examinee: _____

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?		☐ Yes ☒ No	
Validated Time (minutes):	13	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC S.3 Revision: 0

Initial Conditions: With the plant at 100%, the following events occurred:

- A Reactor Coolant System leak developed causing Safety Injection.
- The crew entered E-0 and stopped all RCP's (per foldout page).
- The crew has isolated the RCS leak and transitioned to ES-1.1 *SI Termination*.

Initiating Cues: The US directs you to start 'B' RCP using GA-6 *Starting Reactor Coolant Pump.*

In preparation for a RCS cooldown, the 'B' RCP overcurrent trip switches (43PP and 43PB) have been placed in the COLD position.

The annunciators are in Master Silence.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Dump Steam Using Atmospheric Relief Valve

JPM Number: 2021 NRC S.4 Revision: 0

Initiated:

W.M. Forrestt – Signature on File	4/5/2021
Developer	Date

Reviewed:

T. Fisher – Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone – Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/5/21	Previous NRC JPM, 2019 NRC S.5. On page 3, changed revision of ES-0.1 to Rev. 30 (no impact on JPM). Changed validated time from 20 to 15 minutes. On page 4, changed simulator requirements to match IC (had to recreate). SG levels at 40% NR (except 'B' is at 0% NR, as only loop with running RCP). On page 7 (JPM Step #5), changed IAS expectant IA pressure from 100 psi to 105 psi. On page 10 (JPM Step #14): changed desired cooldown rate from 50F – 80F / hr to 40F – 70F / hr. This is more realistic as the crew wouldn't attempt to reach the max allowed TS cooldown rate of 80F/hr.	0

JPM WORKSHEET

Facility: MP3 Examinee: _____

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☐ YES ☒ NO

Validated Time (minutes): 15

Applicable To: SRO X RO X

K/A Number: 041-A4.06 K/A Rating: 2.9/3.1

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

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

Task Standards: Align Atmospheric Steam Dumps and commence dumping steam in accordance with GA-26. While cooling down, maintain cooldown rate in RCS Cold Legs to between 40°F/hr - 70°F/hr and maintain SG NR levels 30% to 50%.

Required Materials: (procedures, equipment, etc.)

- GA-26 (Rev 003), Dumping Steam to Condenser or Atmosphere
- ES-0.1 (Rev 030), Reactor Trip Response, Step 16

General References: None

***** 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. 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: 2021 NRC S.4 Revision : 0

Initial Conditions: The plant was tripped from 100% power due to a COP 200.2 security threat.

The crew is currently performing step 16 of ES-0.1, Reactor Trip Response and is preparing to go to AOP 3586, Immediate RCS Cooldown.

Steam dumps are in steam pressure mode set at 1092 psig in auto.

Initiating Cues: In order to prepare for a cooldown, use GA-26 and **SHIFT** dumping steam to the Atmospheric Relief Valves.

Report when the shift is complete and you are ready to commence the cooldown.

The alarms are in Master Silence.

Simulator Requirements: **Reset to IC 97 (monitor / maintain RCS pressure when go to RUN, to avoid P-11 (as have blocked MSI / SI)**

-- OR --

Reset to IC 13 and perform the following:

- Trip the reactor from MB4
- Carry out actions of ES-0.1 up through step 15 (includes placing Steam Dumps in Steam Pressure Mode, Auto, 1092#)
- Carry out actions of AOP 3586 up through step 9 (don't stop RCP's until SG levels are ~ 40% NR)
- Ensure RCS pressure is stable at 1925 – 1950 psia (w/ SI blocked)
- Ensure SG NR levels are ~40% (within the 30% to 50% band).

Freeze Simulator

*** * * * 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: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

START TIME: _____

STEP #1 GA-26 Step 1 Note	Performance: **NOTE:** Auxiliary Feed flow directly impacts RCS heatup and cooldown rates AND must be considered along with dumping steam. **NOTE:** Steam line pressure changes more rapidly if fewer than four SGs are used. **NOTE:** After Low Steamline Pressure Safety Injection signal is BLOCKED, MSI will occur if the High Steam Pressure Rate setpoint is exceeded. **NOTE:** Instrument Air Compressor B is tripped by SI, CDA, and LOP.	Standard: Reads Notes	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #2 GA-26 Step 1	Performance: Control Feed Flow a. CHECK NR level - AT LEAST ONE GREATER THAN 8% [42% ADVERSE CTMT] b. CONTROL feed flow to maintain NR level - BETWEEN 8% and 50% [42% and 50% ADVERSE CTMT]	Standard: Observes SG NR levels. If necessary, makes Aux Feed adjustments to keep SG NR within 8% to 50% band.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: Aux feed controls are in service.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

STEP #3 GA-26 Step 2 Note	Performance: **NOTE:** Condenser Steam Dump is preferred UNLESS maximum cool down rate is to be used OR otherwise directed by the procedure in effect.	Standard: Reads note.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: If asked, **"The guidance provided is to transfer controls to the Atmospheric Relief valves."**			
	Comments:			
STEP #4 GA-26 Step 2	Performance: CHECK dumping steam with: • Steam Dumps to the Condenser OR • SG Atmospheric Relief Valves	Standard Determines that SG Atmospheric Relief Valves are to be used.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

STEP #5 GA-26 Step 3.a	Performance: Check Plant Condition a. CHECK Instrument Air Compressors - AT LEAST ONE RUNNING	Standard: Checks MB1 for indication of B Instrument Air Compressor (IAS-C1B) running: Red Light LIT, Green Light NOT LIT. Can check Instrument Air Pressure IAS-PI29 approx 105 psig.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #6 GA-26 Step 3.b	Performance: b. CHECK Annunciator MAIN STEAM LINE ISOLATION (MB2B 5-7) - NOT LIT	Standard Checks Annunciator MAIN STEAM LINE ISOLATION (MB2B 5-7) - NOT LIT	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #7 GA-26 Step 4	Performance: Determine Condenser Steam Dump Availability: • Using Condenser Steam Dumps - DESIRED • Annunciator CONDENSER AVAIL FOR STM DUMP C-9 (MB4D 5-6) - LIT • AT LEAST ONE INTACT SG MSIV OR BYPASS VALVE - OPEN	Standard: Determines from initial cue that using Condenser Steam Dumps is not desired and transitions to RNO column.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

STEP #8 GA-26 Step 4 RNO	Performance: PERFORM the following: 1. PLACE both trains of Steam Dump Interlock Selector Switches to OFF • INTLK-TR A (MSS-N05) • INTLK-TR B (MSS-N06) 2. PROCEED TO Note prior to step 6.	Standard At MB 5 places both trains of Steam Dump Interlock Selector Switches to OFF.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
		Standard Proceeds to step 6	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #9 GA-26 Step 6 Note	Performance: **NOTE:** Following MSI reset, an actuation signal will re-initiate MSI.	Standard: Reads note.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #10 GA-26 Step 6.a	Performance: Determine SG Atmospheric Relief Valves Availability a. CHECK using SG Atmospheric Relief Valves - DESIRED	Standard Determines from initial conditions that use of SG Atmospheric Relief Valves is desired.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

STEP #11 GA-26 Step 6.b	Performance: b. PLACE SG Atmospheric Relief Valve Controllers in MANUAL AND ADJUST to zero output • 3MSS-PIC20A1 • 3MSS-PIC20B1 • 3MSS-PIC20C1 • 3MSS-PIC20D1	Standard: Selects manual by pressing the M button below each SG Atmospheric Relief Valve Controller. Places black manual lever to the left to ensure output is at zero.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #12 GA-26 Step 6.c	Performance: c. **CHECK** Annunciator MAIN STEAM LINE ISOLATION (MB2B 5-7) - LIT	Standard Observes that annunciator MAIN STEAM LINE ISOLATION (MB2B 5-7) is NOT LIT and transitions to RNO column.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

STEP #13 GA-26 Step 6.c RNO	Performance: c. PROCEED TO step 7.	Standard Goes to step 7. Reports that preparations for dumping steam to atmosphere are complete.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: When the examinee reports that preparations for dumping steam are complete, provide the following cue: **"In accordance with ES-0.1 step 16d, the US directs you to CLOSE the MSIV's and MSIV Bypass Valves."**			
	Comments:			
STEP #14 ES-0.1 16d	Performance: CLOSE the MSIVs and MSIV Bypass Valves	Standard Closes all four MSIV's and observes all four MSIV Bypass Valves are already closed. Reports all valves are closed to the US.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue: When the MSIV's and MSIV Bypass Valves are reported closed, provide the following cue: **"Actions for AOP 3586, Immediate RCS Cooldown, are complete through step 9. This includes the RO has blocked SI and the RO will maintain RCS pressure below P-12 reset pressure.** **The US directs you to establish an RCS cooldown using GA-26. Maintain cooldown rate in RCS Cold Legs to between 40°F/hr - 70°F/hr. Maintain SG NR levels 30% to 50%."**			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

STEP #15 GA-26 Step 7	Performance: Dump Steam to Atmosphere Using SG Atmospheric Relief Valves a. CHECK RCS cooldown or SG depressurization - DESIRED	Standard: Reports that the transfer to the Atmospheric Relief Valves has been completed and is ready to dump steam via the Atmospheric Relief Valves.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: Cooldown rate is at discretion of examiner, not to exceed 80°F/hr.			
STEP #16 GA-26 Step 7.b	Performance: b. CHECK the procedure in effect requires steam dump - AT A MAXIMUM RATE	Standard Recognizes that less than 80°F/hr is less than the max rate. Proceeds to RNO column.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #17 GA-26 Step 7.b RNO	Performance: b. PERFORM the following: 1. ADJUST selected SG Atmospheric Relief Valve Controllers to dump steam to reduce RCS temperature or SG pressure as specified by the procedure in effect. • 3MSS-PIC20A1 • 3MSS-PIC20B1 • 3MSS-PIC20C1 • 3MSS-PIC20D1	Standard: Establishes a cooldown rate of less than 80°F/hr. Should not generate a rate based MSI.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

	Cue:			
	Comments: Slight exceedance while developing rate is not failure criteria if action taken to correct.			
STEP #18 GA-26 Step 7.b RNO	Performance: 2. IF MSI actuates, THEN RETURN TO Note prior to step 6.	Standard Checks Atmospheric Dump valves still open. Checks annunciator MB2B 5-7, Main Steam ISOL – NOT Lit Checks MB5C 5-1, Steam Pressure Rate Hi – NOT Lit	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: Expectation is that MSI will not be generated. If MSI is generated, then a return to Note prior to step 6 is applicable.			
STEP #19 GA-26 Step 7.b RNO	Performance: 3. PROCEED TO step 10.	Standard	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC S.4 Revision: 0

Task Title: Dump Steam Using Atmospheric Relief Valve

Date Performed: _____

Examinee: _____

For the Examinee 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?		☐ Yes ☒ No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC S.4 Revision: 0

Initial Conditions: The plant was tripped from 100% power due to a COP 200.2 security threat.

The crew is currently performing step 16 of ES-0.1, Reactor Trip Response and is preparing to go to AOP 3586, Immediate RCS Cooldown.

Steam dumps are in steam pressure mode set at 1092 psig in auto.

Initiating Cues: In order to prepare for a cooldown, use GA-26 and **SHIFT** dumping steam to the Atmospheric Relief Valves.

Report when the shift is complete and you are ready to commence the cooldown.

The alarms are in Master Silence.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Stopping Containment Spray

JPM Number: 2021 NRC S.5 Revision: 0

Initiated:

W.M. Forrestt – Signature on File	4/5/2021
Developer	Date

Reviewed:

T. Fisher – Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone – Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC S.5 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/5/21	Bank JPM S121-2. Modified flow path on restoration of 'B' train CCP (step 9 of GA-8). Modification is considered minor. Therefore, listed as "Direct Bank" JPM on NRC Submittal.	0

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☐ YES ☒ NO

Validated Time (minutes) 12

Applicable To: SRO X RO X

K/A Number: 026 CTMT SPRAY 026-A2.08 K/A Rating: 3.2 / 3.7

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

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

Task Standards: Successfully restores the CTMT Spray and RPCCW systems in accordance with GA-8 *Stopping Containment Spray*.

Required Materials: (procedures, equipment, etc.) EOP 35 GA-8 Rev. 002

General References: None

***** 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: 2021 NRC S.5 Revision : 0

Initial Conditions: The following events have occurred:

- The plant was operating at 100% power when a seismic event caused multiple ESF actuations: LOP, SIS and CDA all initiated
- The operating crew has progressed through the EOP network and is presently at ES-1.1 *SI Termination* step 11 Check Stopping CTMT Spray
- All ESF Actuation signals have been reset.

Initiating Cues: The US has directed you to Stop Containment Spray IAW EOP 35 GA-8.

The annunciators are in Master Silence.

Simulator Requirements: **Reset to IC 98** (password: “iagtcas”)

OR

1. Reset to any 100% power IC
2. Place simulator in “RUN” and 1. Insert ED01 2. Manually Actuate SI And CDA 3. Insert Malfunction MB1B-E05 to ON 3. Insert CH09 “Earthquake”
3. Complete E-0 steps and ES-1.1 steps through 11.b.
4. Place simulator in "FREEZE".
5. Place simulator in "RUN" after the operator receives instructions.

Approximate Simulator setup time is 15 minutes

*** * * * 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: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

START TIME: _____

STEP #1 GA-8 Step 1	Performance: CHECK Ctmt High Range Radiation Monitors (3RMS*RE04A And 3RMS*RE05A) - NOT IN ALERT OR ALARM	Standard: Checks 3RMS*RE04A & 05A indications at 3RMS*RAK1A/1B and/or computer and determines monitors are not in Alert (Amber) or Alarm (Red)	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #2 GA-8 Step 2	Performance: **Reset Actuated ESF Signals** ○ **RESET** SI b. **RESET** the following: ○ CDA ○ LOP ○ CIA ○ CIB	Standard: Proceeds to next step. All signals are reset (per initial conditions or observance of MB2B annunciators).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

STEP #3 GA-8 Step3a	Performance: **STOP** Quench Spray pump(s) **AND PLACE** in AUTO	Standard: Rotates 'A' and 'B' Quench Spray pump(s) control switch(es) to STOP and then AUTO. Observes breaker indication red OFF/green ON	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #4 GA-8 Step3b	Performance: **CLOSE** stopped Quench Spray Pump(s) Discharge Valve • For pump A - 3QSS*MOV34A • For pump B - 3QSS*MOV34B	Standard: Depresses CLOSE pushbutton for both 3QSS*MOV34A / 3QSS*MOV34B and observes red light OFF/ green light ON.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #5 GA-8 Step4a	Performance: As required, **START OR STOP** one Quench Spray pump to maintain Ctmt pressure LESS THAN 17.5 psia	Standard: Step is not applicable as CTMT pressure is less than 17.5 psia.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

STEP #6 GA-8 Step4b	Performance: As required, **OPEN OR CLOSE** the running Quench Spray Pump Discharge Valve • For pump A - 3QSS*MOV34A • For pump B - 3QSS*MOV34B	Standard: Step is not applicable as CTMT pressure is less than 17.5 psia.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #7 GA-8 Step5a	Performance: **Check RSS Pumps** **a.** Any **RUNNING AND SUPPORTING** Ctmt Sump Recirculation RNO: **PROCEED TO** step 6.	Standard: Determines that the RSS pumps are not running by observation of breaker indication red OFF/green ON, and/or no RSS flow. Proceeds to Step 6.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

STEP #8 GA-8 Step6	Performance: **OPEN RPCCW Ctmt Supply And Return Header Isolation Valves** • 3CCP*MOV45A, CTMT ISOL TR A • 3CCP*MOV48A, CTMT ISOL TR A • 3CCP*MOV49A, CTMT ISOL TR A • 3CCP*MOV45B, CTMT ISOL TR B • 3CCP*MOV48B, CTMT ISOL TR B • 3CCP*MOV49B, CTMT ISOL TR B	Standard: Depresses OPEN pushbutton for 3CCP*MOV45A valves and observes red ON/ green OFF position indication	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
		Depresses OPEN pushbutton for 3CCP*MOV48A valves and observes red ON/ green OFF position indication	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
		Depresses OPEN pushbutton for 3CCP*MOV49A valves and observes red ON/ green OFF position indication	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
		Depresses OPEN pushbutton for 3CCP*MOV45B valves and observes red ON/ green OFF position indication	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
		Depresses OPEN pushbutton for 3CCP*MOV48B valves and observes red ON/ green OFF position indication	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
		Depresses OPEN pushbutton for 3CCP*MOV49B valves and observes red ON/ green OFF position indication	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

STEP #9 GA-8 Step7a & 7b	Performance: **CHECK** Train A MCC/Rod Control Area SW Booster pump (3SWP*P3A) – RUNNING	Standard: Checks 3SWP*P3A red light ON / green OFF.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Performance: **STOP** Train A MCC/Rod Control Area SW Booster pump (3SWP*P3A)	Standard: Rotates 3SWP*P3A to Stop and observes green light ON / red OFF.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #10 GA-8 Step7c	Performance: **CHECK** Train B MCC/Rod Control Area SW Booster pump (3SWP*P3B) – RUNNING RNO: **PROCEED TO** step 8.	Standard: Checks 3SWP*P3B red light OFF / green ON. Moves to RNO column. Proceeds to step 8	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #11 GA-8 Step8a	Performance: **START** one Train A RPCCW pump	Standard: Rotates 3CCP*P1A control switch to START and then to AUTO and observes breaker indication red ON/green OFF	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Examinee may rotate 3CCP*P1A control switch to STOP and observe amber trip light goes out; this is not required to start pump but is an acceptable operating practice.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

STEP #12 GA-8 Step8b	Performance: **START** both Train A SW pumps	Standard: Observes that both Train "A" SW pumps are in operation and proceeds to next step	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #13 GA-8 Step8c	Performance: **OPEN** RPCCW Heat Exchanger Sw Inlet Isolation Valve (3SWP*MOV50A)	Standard: Depresses OPEN pushbutton for 3SWP*MOV50A and observes red ON/ green OFF position indication	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #14 GA-8 Step8d	Performance: **CLOSE** Recirculation Spray Heat Exchanger SW Inlet Isolation Valves: • 3SWP*MOV54A **AND** • 3SWP*MOV54C	Standard: Depresses CLOSE pushbutton for both 3SWP*MOV54A / 3SWP*MOV54C and observes red OFF/ green ON position indications.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

STEP #15 GA-8 Step8e	Performance: **CHECK** Recirculation Spray Heat Exchanger SW Inlet Isolation Valves – CLOSED **RNO: WHEN** Recirculation Spray Heat Exchanger SW Inlet Isolation Valves are closed, **THEN PROCEED TO** step 8.f.	Standard: When 3SWP*MOV54A and 3SWP*MOV54C indicate closed, moves onto step 8f.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #16 GA-8 Step8f	Performance: **STOP** one Train A SW pump	Standard: Rotates control switch for EITHER 3SWP*P1A OR 3SWP*P1C to STOP and then AUTO	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #17 GA-8 Step9a	Performance: **START** one Train B RPCCW pump	Standard: Rotates 3CCP*P1B control switch to START and then to AUTO and observes breaker indication red ON/green OFF	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Examinee may rotate CCP*P1B control switch to STOP and observe amber trip light goes out; this is not required to start pump but is an acceptable operating practice.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

STEP #18 GA-8 Step9b	Performance: **START** both Train B SW pumps	Standard: Observes that both Train "A" SW pumps are in operation and proceeds to next step	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #19 GA-8 Step9c	Performance: **OPEN** RPCCW Heat Exchanger Sw Inlet Isolation Valve (3SWP*MOV50B)	Standard: Depresses OPEN pushbutton for 3SWP*MOV50B and observes red ON/ green OFF position indication.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #20 GA-8 Step9d	Performance: **CLOSE** Recirculation Spray Heat Exchanger SW Inlet Isolation Valves: • 3SWP*MOV54B **AND** • 3SWP*MOV54D	Standard: Depresses CLOSE pushbutton for both 3SWP*MOV54B / 3SWP*MOV54D and observes red OFF/ green ON position indications.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #21 GA-8 Step 9e	Performance: **CHECK** Recirculation Spray Heat Exchanger SW Inlet Isolation Valves – CLOSED **RNO: WHEN** Recirculation Spray Heat Exchanger SW Inlet Isolation Valves are closed, **THEN PROCEED TO** step 9.f.	Standard: When 3SWP*MOV54A and 3SWP*MOV54C indicate closed, moves onto step 9f.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

STEP #22 GA-8 Step 9f	Performance: **STOP** one Train B SW pump	Standard: Rotates control switch for EITHER 3SWP*P1B OR 3SWP*P1D to STOP and then AUTO	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

TERMINATION CUE: **The evaluation for this JPM is concluded.**

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC S.5 Revision: 0

Task Title: Stopping Containment Spray

Date Performed: _____

Examinee: _____

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?		☐ Yes ☒ No	
Validated Time (minutes):	12	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC S.5 Revision: 0

Initial Conditions: The following events have occurred:

- The plant was operating at 100% power when a seismic event caused multiple ESF actuations: LOP, SIS and CDA all initiated
- The operating crew has progressed through the EOP network and is presently at ES-1.1 *SI Termination* step 11 Check Stopping CTMT Spray
- All ESF Actuation signals have been reset.

Initiating Cues: The US has directed you to Stop Containment Spray IAW EOP 35 GA-8.

The annunciators are in Master Silence.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to an Open Phase Condition (OPC)

JPM Number: 2021 NRC S.6 Revision: 0

Initiated:

W.M. Forrestt – Signature on File	5/26/2021
Developer	Date

Reviewed:

T. Fisher – Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone – Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC S.6 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
5/26/21	New JPM developed for 2021 NRC Exam.	0

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC S.6 Revision: 0

Task Title: Respond to an Open Phase Condition (OPC)

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☒ YES ☐ NO

Validated Time (minutes) 8

Applicable To: SRO X RO X

K/A Number: APE077 AA2.05 K/A Rating: 3.2 / 3.8

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

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

Task Standards: Successfully respond to an OPC event upstream of the 'A' NSST. This includes implementing E-0 step 3 to transfer 34C and 34D to the RSST and supply both Emergency Diesel Generators with cooling water.

Required Materials: (procedures, equipment, etc.) EOP 35 E-0, *Reactor Trip or Safety Injection* (Rev. 35)

General References: None

***** 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: 2021 NRC S.6 Revision : 0

Initial Conditions: The following plant conditions exist:

- The plant is at 100% power and stable.
- Plant systems are in a normal line-up.
- There is no equipment out of service.

You are the Balance Plant Operator. You have temporarily relieved the Reactor Operator (who has gone to work control).

Initiating Cues: Report when you are ready to take the shift.

Simulator Requirements: Reset to IC 99 (password “iagtcas”) and verify Trigger 1 Malfunctions match table below

Malfunction	Description	Value
RP02A	Reactor Trip Actuation Train A	-
RP02B	Reactor Trip Actuation Train B	-
ED16A	NSSA 4.16 KV PHASE A-B VOLTAGE DEGRADATION	75
ED16C	NSSA 4.16 KV PHASE C-A VOLTAGE DEGRADATION	50
ED20B	MAIN XFMR OPEN PHASE	-
MB7C-A05	GENERATOR PHASE UNBALANCE	ON
EG01	MAIN GENERATOR TRIP	-

-- OR --

Reset to 100% power IC & build Event Trigger 1 from table above.

Approximate Simulator setup time is 5 minutes

*** * * * 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: 2021 NRC S.6 Revision: 0

Task Title: Respond to an Open Phase Condition (OPC)

START TIME: _____

NOTE(s):

(1) JPM steps 1 thru 4 are Immediate Actions from E-0. They are to be performed from memory. Once the Examinee identifies an OPC condition exists (JPM step 4), E-0 step 3 is to be handed to the Examinee.

(2) FLOOR INSTRUCTOR NOTE: After ~30 seconds, Insert trigger 1 to trip the Reactor and insert the OPC. When alarms come in, inform the Examinee that are alarms are being placed in Master Silence (& leave them here for the duration of JPM).

STEP #1 E-0 Step 1	Performance: **CHECK Reactor Trip:** • Reactor Trip and Bypass Breakers - OPEN • Rod Bottom Lights - LIT • Neutron Flux - LOWERING	Standard: Determines the Reactor has tripped and reports such to the Unit Supervisor.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #2 E-0 Step2	Performance: **CHECK Turbine Trip:** • All Turbine Stop Valves - CLOSED	Standard: Determines the Turbine has tripped and reports such to the Unit Supervisor.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.6 Revision: 0

Task Title: Respond to an Open Phase Condition (OPC)

<table>
<tr><td rowspan="3">STEP #3
E-0
Step 3a</td><td>Performance:
AC Emergency Busses 34C and 34D - BOTH ENERGIZED</td><td>Standard:
On MB8, observes abnormally low bus voltage (1,000 V) for buses 34C and 34D.
Reports to the Unit Supervisor that 34C and 34D are energized.</td><td>Critical:
Y ☐ N ☒</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td rowspan="3">STEP #4
E-0
Step 3b</td><td>Performance:
Open Phase Condition (OPC) - NONE EXISTS:
• RSST Open Phase (MB8C 1-8) - NOT LIT
• Generator Phase Unbalance (MB7C 1-5) - NOT LIT
• Main XFMR Open Phase (MB7C 2-1) - NOT LIT
RNO: REPORT potential OPC Event to the US/SM AND PROCEED TO step 3.d.</td><td>Standard:
Observes MB7C 2-1 and MB7C 1-5 are lit and reports an OPC condition to the US.
Obtains a hardcopy of E-0 and proceeds to step 3d.</td><td>Critical:
Y ☐ N ☒</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue: This completes the examinee’s immediate action steps. As the Unit Supervisor, hand a copy of E-0 Step 3 to the examinee and state “Complete Step 3.d of E-0”.</td></tr>
<tr><td colspan="4">Comments: This begins the ALT PATH portion of the JPM.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.6 Revision: 0

Task Title: Respond to an Open Phase Condition (OPC)

<table>
<tr><td rowspan="3">STEP #5
E-0
Step3d</td><td>Performance:
CONFIRM the OPC Event - ANYONE OF THE FOLLOWING EXIST:
• Slow or Fast Transfer OCCURRED
• LOSS of Multiple Pumps, Busses or Load Centers
• COMPARE Individual Bus Phase Voltages Powered By Suspected Transformer - MISMATCHED:
• Either 4160V Emergency Bus Voltages (34C or 34D)
• One 6.9KV Bus Voltages (35A/B/C/D)
• Indications of OPC REPORTED From Field</td><td>Standard:
Uses either 34C or 34D BUS voltage switches (“VOLT SEL” switches on Bus side).and determines an OPC event is in progress.</td><td>Critical:
Y ☐ N ☒</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="3">Cue:</td></tr>
<tr><td colspan="3">Comments: (1) If a field report is requested, reply “There is no OPC identified from the field”. (2) The bulleted steps may be done in any order. The only confirmatory bullet is the bus voltage mismatch on 34C or 34D (correlates to an OPC on the ‘A’ NSST feeder). This will only be seen if the examinee uses the appropriate 34C or 34D Bus Voltmeter switches (“VOLT SEL” switches on Bus side).</td></tr>
<tr><td rowspan="3">STEP #6
E-0
Step3e</td><td>Performance:
CHECK NSST OPC Status - NSST POWERING ANY BUS AND OPC CONFIRMED ON MAIN XFMR/NSST</td><td>Standard:
Determines NSST’s supplying:
• 4kv breakers (NSSA-34A-2 & NSSA-34B-2) are closed and
• 6.9kv (NSSB-35A-2 (B) (C) (D) are closed)
AND OPC is confirmed.</td><td>Critical:
Y ☐ N ☒</td><td>Grade:
S ☐ U ☐</td></tr>
<tr><td colspan="3">Cue:</td></tr>
<tr><td colspan="3">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.6 Revision: 0

Task Title: Respond to an Open Phase Condition (OPC)

STEP #7 E-0 Step3f	Performance: **REMOVE** NSST as a Power Source: **PERFORM** the following: a. **OPEN** both 4160V NSST Feeder Breakers MB8): • NSSA-34A-2, NSSA-SPLY • NSSA-34B-2, NSSA-SPLY b. **OPEN** all 6.9 KV NSST Feeder Breakers (MB8): • NSSB-35A-2, NSSB-SPLY • NSSB-35B-2, NSSB-SPLY • NSSB-35C-2, NSSB-SPLY • NSSB-35D- 2, NSSB-SPLY	Standard: Opens all 6 breakers by positioning switches to the TRIP position (green light on / red light off).	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: This causes bus 34C & 34D to transfer to the RSST. All other buses will be de-energized. The 'A' & 'B' Emergency Diesel Generators automatically start (but their output breakers remain open).			
STEP #8 E-0 Step3g	Performance: **CHECK** RSST - POWERING ANY BUS	Standard: Determines 34C and 34D are being supplied by the RSST's by observing: • Bus Voltage on 34C & 34D • 34C and 34D RSST breaker position (RSSA*34C-2, RSSA*34D-2) indicate red light on / green light off	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.6 Revision: 0

Task Title: Respond to an Open Phase Condition (OPC)

STEP #9 E-0 Step 3h	Performance: **CHECK** RSST OPC Status – • RSST OPEN PHASE (MB8C 1-8) - **NOT** LIT	Standard: Observes that MB8C 1-8 is not lit.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐

	• Individual Phase Voltage Comparison On Any Bus Powered By The RSST - MATCHED:
	  • Either 4160V Emergency Bus Voltages (34C or 34D)
	  • One 6.9KV Bus Voltages (35A/B/C/D)
		Standard:
		Observes matched voltages on 34C or 34D using appropriate bus Voltmeter switches (“VOLT SEL” switches on Supply side or Bus side – both are reading same source).
			Critical:
			Y ☐ N ☒
				Grade:
				S ☐ U ☐

	Cue:			
	Comments: The ‘B’ RSST is not supplying a 6.9 KV bus; therefore, it is not necessary to compare voltages on these buses.			
STEP #10 E-0 Step 3i	Performance: **CHECK** 34C and 34D - ENERGIZED FROM OFFSITE	Standard: Observes grid voltage and electrical flow path (from offsite to ‘A’ RSST to 34C and 34D) to confirm 34C and 34D are energized by offsite power.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #11 E-0 Step 3j	Performance: **CHECK** Pumps – RUNNING Reactor Plant Component Cooling Pumps (CCP) - ONE PER TRAIN RUNNING	Standard: Observes 3CCP*P1A and 3CCP*P1B are both running (red light on / green light off)	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.6 Revision: 0

Task Title: Respond to an Open Phase Condition (OPC)

STEP #12 E-0 Step3j	Performance: Service Water Pumps (SWP) - AT LEAST ONE PER TRAIN RUNNING	Standard: Observes 3SWP*P1A / C and 3SWP*P1B / D. Identifies that 2 Service Water Pumps per train are running (red light on / green light off).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #13 E-0 Step3k	Performance: **CHECK** EDG SERVICE WATER OUT - OPEN • 3SWP*AOV39A • 3SWP*AOV39B	Standard: Observes both 3SWP*AOV39A & 3SWP*AOV39B are both closed (green light on / red light off) and proceeds to RNO.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #14 E-0 Step3k RNO	Performance: For any running EDG, **OPEN** the following valve(s) (MB1): • 3SWP*AOV39A, "SERVICE WATER TRAIN A DG A OUT".	Standard: Opens 3SWP*AOV39A by pressing OPEN pushbutton and observes red light on / green light off.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Performance: For any running EDG, **OPEN** the following valve(s) (MB1): • 3SWP*AOV39B, "SERVICE WATER TRAIN B DG B OUT".	Standard: Opens 3SWP*AOV39B by pressing OPEN pushbutton and observes red light on / green light off.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

TERMINATION CUE: **The evaluation for this JPM is concluded.**

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC S.6 Revision: 0

Task Title: Respond to an Open Phase Condition (OPC)

Date Performed: _____

Examinee: _____

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?		☐ Yes ☒ No	
Validated Time (minutes):	8	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC S.6 Revision: 0

Initial Conditions: The following plant conditions exist:

- The plant is at 100% power and stable.
- Plant systems are in a normal line-up.
- There is no equipment out of service.

You are the Balance Plant Operator. You have temporarily relieved the Reactor Operator (who has gone to work control).

Initiating Cues: Report when you are ready to take the shift.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to 3HVQ49-1 High Radiation

JPM Number: 2021 NRC S.7 Revision: 0

Initiated:

W.M. Forrestt – Signature on File	4/5/2021
Developer	Date

Reviewed:

T. Fisher – Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone – Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC S.7 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/5/21	Developed from bank JPM S143.	0

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC S.7 Revision: 0

Task Title: Respond to 3HVQ49-1 High Radiation

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☐ YES ☒ NO

Validated Time (minutes) 8

Applicable To: SRO X RO X

K/A Number: GEN 2.3.11 K/A Rating: 3.8 / 4.3

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

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

Task Standards: Start 'A' Train SLCRS in accordance with OP 3314I, section 4.2.

Required Materials: (procedures, equipment, etc.) OP 3314I, *Supplementary Leak Collection and Release System* (Rev 10)

General References: None

***** 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: 2021 NRC S.7 Revision : 0

Initial Conditions: There has been a radiation release into the Aux Building.

Initiating Cues: The US directs you to start 'A' Train SLCRS in accordance with OP 3314I, section 4.2.

The prerequisites are complete.

There is no painting or welding scheduled in the SLCR's boundary.

Simulator Requirements: **For the 2K21 NRC Exam, this JPM is being run in parallel with 2021 NRC S.4. A curtain will be set up and the Examinee will be directed to VP1.**

Reset to IC 97 (password "iagtcas")

Approximate Simulator setup time is 5 minutes

*** * * * 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: 2021 NRC S.7 Revision: 0

Task Title: Respond to 3HVQ49-1 High Radiation

START TIME: _____

STEP #1 3314I Step 4.2.	Performance: ENSURE General Prerequisite complete.	Standard: Examinee recognizes prerequisites are complete from initiating condition.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #2 3314I Step 4.2.	Performance: Using Precaution 3.4, REVIEW for applicability.	Standard: Examinee recognizes precaution 3.4 is met based upon initiating condition.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #3 3314I Step 4.2.3a	Performance: NOTIFY Chemistry Department that 3HVR---FN5, exhaust fan, will be stopped.	Standard: Examinee simulates contacting Chemistry and provides notification that 3HVR-FN5 will be stopped.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: As Chemistry, acknowledge notification: “Understand 3HVR-FN5 is being stopped.”			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.7 Revision: 0

Task Title: Respond to 3HVQ49-1 High Radiation

STEP #4 3314I Step 4.2.3b	Performance: STOP 3HVR---HVU2A, air supply unit.	Standard: Locates the Control Switch on VP1B and rotates the switch to the Stop/Off position. Verifies the fan indicators go from Red to Green.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Step is critical due to personnel safety concern associated with building differential pressures.			
STEP #5 3314I Step 4.2.3c	Performance: STOP 3HVR-FN5, exhaust fan.	Standard: Locates the Control Switch on VP1B and rotates the switch to the Stop/Off position. Verifies the fan indicators go from Red to Green.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: Step is critical due to personnel safety concern associated with building differential pressures.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.7 Revision: 0

Task Title: Respond to 3HVQ49-1 High Radiation

STEP #6 3314I Step 4.2.3d	Performance: CLOSE the following supply dampers to 3HVR-HVU2A: • 3HVR*AOD33A, "AUX BLDG" "SPLY DMPRS"	Standard: Locates the Control Switch on VP1B and presses the Close pushbutton for the associated dampers. Verifies the damper indicators go from Red to Green	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Performance: CLOSE the following supply dampers to 3HVR-HVU2A: • 3HVR*AOD35A, "AUX BLDG" "SPLY DMPRS"	Standard: Locates the Control Switch on VP1B and presses the Close pushbutton for the associated dampers. Verifies the damper indicators go from Red to Green	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #7 3314I Step 4.2.3e	Performance: CLOSE 3HVR*AOD39A/43A	Standard: Locates the Control Switch on VP1B and presses the Close pushbutton for the associated dampers. Verifies the damper 3HVR*AOD39A indicators go from Red to Green. 3HVR*AOD43A is already closed.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.7 Revision: 0

Task Title: Respond to 3HVQ49-1 High Radiation

STEP #8 3314I Step 4.2.3f	Performance: CLOSE 3HVR*AOD39B/43B	Standard: Locates the Control Switch on VP1B and presses the Close pushbutton for the associated dampers. Verifies the damper 3HVR*AOD39B indicators go from Red to Green. 3HVR*AOD43B is already closed.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #9 3314I Step 4.2.4	Performance: IF when starting 3HVR*FN12A in steps 4.2.5 and 4.2.6, the opposite train starts, PERFORM the following: a. IF 3HVR*AOD95B damper starts to open, PLACE 3HVR*FN12B, control switch, in “STOP” and HOLD. b. WHEN 3HVR*FN12A, running fan, at speed, RELEASE “STOP,” on 3HVR*FN12B.	Standard: If 3HVR*AOD95B starts to Open the examinee should take the described action.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments: This step will not be required.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.7 Revision: 0

Task Title: Respond to 3HVQ49-1 High Radiation

STEP #10 3314I Step 4.2.5	Performance: PLACE 3HVR*FN12A, supplementary leak collection and release exhaust fan switch, in "START" and HOLD, (VP1).	Standard: Locates the control switch on VP1B and rotates the switch to the Start/ON position and holds until the system is running	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #11 3314I Step 4.2.6	Performance: WHEN the following occurs, RELEASE control switch: • 3HVR*AOD95A, supplementary leak collection and release filter inlet damper, opens • 3HVR*FN12A, supplementary leak collection and release filter exhaust fan, starts • Supplementary leak collection and release filter heater, on	Standard: Observes Red light on, green light off for 3HVR*AOD95A and 3HVR*FN12A. Observes Red light on for filter heater (FLT3A). Releases control switch for 3HVR*FN12A	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

TERMINATION CUE: **The evaluation for this JPM is concluded.**

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC S.7 Revision: 0

Task Title: Respond to 3HVQ49-1 High Radiation

Date Performed: _____

Examinee: _____

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?		☐ Yes ☒ No	
Validated Time (minutes):	8	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC S.7 Revision: 0

Initial Conditions: There has been a radiation release into the Aux Building.

Initiating Cues: The US directs you to start 'A' Train SLCRS in accordance with OP 3314I, section 4.2.

The prerequisites are complete.

There is no painting or welding scheduled in the SLCR's boundary.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Implement GA-30, Aligning RPCCW for RCS and SG Sampling

JPM Number: 2021 NRC S.8 Revision: 0

Initiated:

W.M. Forrestt – Signature on File	4/5/2021
Developer	Date

Reviewed:

T. Fisher – Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone – Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

JPM Number: 2021 NRC S.8 Revision: 0

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/5/21	New Simulator JPM written for 2021 NRC Exam.	0

JPM WORKSHEET

Facility: MP3 Student: _____

JPM Number: 2021 NRC S.8 Revision: 0

Task Title: Implement GA-30, Aligning RPCCW for RCS and SG Sampling

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☒ YES ☐ NO

Validated Time (minutes) 5

Applicable To: SRO X RO X

K/A Number: 008 (CCWS) A4.01 K/A Rating: 3.3 / 3.1

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

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

Task Standards: Successfully aligns RPCCW for RCS and SG sampling in accordance with GA-30.

Required Materials: (procedures, equipment, etc.) GA-30, *Aligning RPCCW for RCS and SG sampling* (Rev. 0)

General References: None

***** 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: 2021 NRC S.8 Revision : 0

Initial Conditions: The following events have occurred:

- With the plant at 100% power, a steam line rupture occurred in the Turbine Building.
- The crew mitigated the event and is presently at step 7 of E-2, Faulted SG Isolation.

Initiating Cues: The Unit Supervisor directs you to implement GA-30, *Aligning RPCCW for RCS and SG Sampling*, to obtain RCS and SG samples.

The alarms are in Master Silence.

Simulator Requirements: **Reset to IC 103** (password: "iagtcas") and **Hang a YCT on 3IAS-C1C** "Diesel Inst. Air Comp" indicating lights (MB1).

-- OR –

1. Reset to any 100% percent power IC
2. Insert the following:
   - Malfunction: **IA02A** "Instru Air Comp Trip C1A"
   - Malfunction: **MS02A** "MS LN A RUP O.S. CTMT UP MSIV to **3.75E06**
   - Remote: **IAR08** "Diesel Inst Air Comp control switch.." to **OFF**
   - Override: **IALO0028** "3IAS-C1C … green light" to **OFF**
3. Trip Rx, initiate MSI, peform actions of E-0 and E-2 up to step 7 of E-2

Approximate Simulator setup time is 20 minutes

*** * * * 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: 2021 NRC S.8 Revision: 0

Task Title: Implement GA-30, Aligning RPCCW for RCS and SG Sampling

START TIME: _____

STEP #1 GA-30 Step1a	Performance: Check annunciator "CONTAINMENT DEPRES ACTUATION" (MB2B 5---5) --- NOT LIT	Standard: Observes MB2B 5-5, CDA, and determines annunciator is not lit.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #2 GA-30 Step1b	Performance: Check any RPCCW pumps --- RUNNING	Standard: Determines both 3CCP*P1A and 3CCP*P1B are running (red light on, green light off).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #3 GA-30 Step2a	Performance: RESET SI	Standard: On MB2 (under "ESF Reset Block"), depresses BOTH 'A' & 'B' Train SI RESET pushbuttons and clears annunciator MB2B 5-9.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.8 Revision: 0

Task Title: Implement GA-30, Aligning RPCCW for RCS and SG Sampling

STEP #4 GA-30 Step2b	Performance: RESET CIA	Standard: On MB2 (under "ESF Reset Block"), depresses BOTH 'A' & 'B' CIA RESET pushbuttons and clears annunciator MB2B 5-8.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #5 GA-30 Step3a	Performance: Check instrument air compressors --- AT LEAST ONE RUNNING	Standard: On MB1, determines that NO instrument air compressors are running: • 3IAS-C1A ('A' Instrument Air Compressor) is off (green light on, red light off) • 3IAS-C1B ('B' Instrument Air Compressor) is off (green light on, red light off) • 3IAS-C1C (Diesel instrument air compressor) is tagged with no indicating lights	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	RNO 3.a.1: RESET LOP if required.	On MB2 (under "ESF Reset Block"), depresses BOTH 'A' & 'B' LOP RESETs.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	RNO 3.a.2: START one instrument air compressor.	Rotates control switch for 3IAS-C1B to Start and observes compressor starts.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments: (1) As part of the simulator set-up, the 'A' IAS compressor is failed and 3IAS-C1C is tagged out. The intent is to have the examinee use the RNO and start the 'B' IAS compressor. (2) This begins the Alternate Path portion of the JPM.			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.8 Revision: 0

Task Title: Implement GA-30, Aligning RPCCW for RCS and SG Sampling

STEP #6 GA-30 Step4a	Performance: Check RPCCW pumps --- TRAIN A PUMP RUNNING	Standard: Determines 3CCP*P1A is running (red light on, green light off).	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #7 GA-30 Step4b	Performance: OPEN RPCCW non---safety related header Train A isolation valves • 3CCP*AOV197A/194A • 3CCP*AOV10A/19A	Standard: Depresses open pushbuttons for the following valve pairs and observes valve(s) open (red light on / green light off): • 3CCP*AOV197A/194A • 3CCP*AOV10A/19A	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #8 GA-30 Step5a	Performance: RESET SG blowdown sample isolation	Standard: On MB1, depresses pushbutton labeled “SG BLDN SAMPLE”.	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: 2021 NRC S.8 Revision: 0

Task Title: Implement GA-30, Aligning RPCCW for RCS and SG Sampling

STEP #9 GA-30 Step5b	Performance: OPEN SG blowdown sample isolation valves	Standard: Depresses open pushbutton(s) for the following valves and observes valves open (red light on / green light off): • 3SSR*CTV19A • 3SSR*CTV19B • 3SSR*CTV19C • 3SSR*CTV19D	Critical: Y ☒ N ☐	Grade: S ☐ U ☐
	Cue:			
	Comments:			
STEP #10 GA-30 Step5c	Performance: Request Chemistry obtain RCS and SG samples using HP coverage	Standard: Calls Chemistry and requests they obtain RCS and SG samples using HP coverage.	Critical: Y ☐ N ☒	Grade: S ☐ U ☐
	Cue: As chemistry, acknowledge sample request and end JPM.			
	Comments:			

TERMINATION CUE: **The evaluation for this JPM is concluded.**

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC S.8 Revision: 0

Task Title: Implement GA-30, Aligning RPCCW for RCS and SG Sampling

Date Performed: _____

Examinee: _____

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?		☐ Yes ☒ No	
Validated Time (minutes):	5	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC S.8 Revision: 0

Initial Conditions: The following events have occurred:

- With the plant at 100% power, a steam line rupture occurred in the Turbine Building.
- The crew mitigated the event and is presently at step 7 of E-2, Faulted SG Isolation.

Initiating Cues: The Unit Supervisor directs you to implement GA-30, *Aligning RPCCW for RCS and SG Sampling*, to obtain RCS and SG samples.

The alarms are in Master Silence.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Reset 3MSS*MSV5, Terry Turbine Trip Throttle Valve

JPM Number: 2021 NRC P.1 Revision: 0

Initiated:

W.M. Forrestt - Signature on File	4/19/2021
Developer	Date

Reviewed:

T. Fisher - Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone - Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/19/21	Developed from Bank JPM P-020-1.	0

JPM WORKSHEET

Facility: Millstone Examinee: _____

JPM Number: 2021 NRC P.1 Revision: 0

Task Title: Reset 3MSS*MSV5, Terry Turbine Trip Throttle Valve

System: FWA

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☐ YES ☒ NO

Validated Time (minutes): 10

Applicable To: SRO **X** RO **X**

K/A Number: EPE-E05-EA 1.1 K/A Rating: 4.1/4.0

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

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

Task Standards: Successfully resets 3MSS*MSV5 and starts the Turbine Driven Aux Feed Water Pump iaw GA-31 *Locally Restoring AFW Flow*.

Required Materials: NA
(procedures, equipment, etc.)

General References: EOP 35 GA-31 Rev 005-00

***** 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: 2021 NRC P.1 Revision : 0

Initial Conditions: A Loss of Secondary Heat Sink event is in progress and the control room team is carrying out the actions of EOP 35 FR-H.1. AFW flow could not be established from the control room.

Initiating Cues: The US directs you to locally verify the position of 3MSS*MSV5, Terry Turbine Trip Throttle Valve using step 2 of GA-31.

If 3MSS*MSV5 is out of position, you have been directed to reposition the valve per GA-31.

Simulator Requirements: NA

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

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

PERFORMANCE INFORMATION

JPM Number: 2021 NRC P.1 Revision: 0

Task Title: Reset 3MSS*MSV5, Terry Turbine Trip Throttle Valve

START TIME: _____

Examiner Note:	**Prior to performance of the JPM discuss bump hazards while in the area of 3MSS*MSV5. Performance of the JPM may be done at a distance from the valve, using Figures 1 and 2 of GA-31 (page 9 of 9) to explain actions.**			
STEP #1 GA-31 Step 2a	Performance: **Check** TDAFW Pump Operation a. TDAFW Pump Trip Throttle Valve (3MSS*MSV5) – OPEN	Standard: Operator determines that 3MSS*MSV5 is closed by observing Trip Hook and Latch Up Lever are disengaged and the valve slide nut is in the downward position. Operator proceeds to the RNO.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: **As the operator requests information on the pump or valve status, provide the applicable cue(s):** • **The TDAFW Pp is not running, there is no indication of steam leak, there is no indication of piping damage.** • **The Latch-up lever is disengaged from the Trip Hook and pointed downward towards the 4 o'clock position.** • **The valve stem slide nut on 3MSS*MSV5 is in the downward position.** • **The overspeed tappet is raised approximately 3/4"** • **The connecting rod has moved towards the pump shaft, with the base of the rod fulcrum under the trip tappet.**			
	Comments:			
STEP #2 GA-31 Step 2a RNO	Performance: RNO **PROCEED TO** step 2.d.	Standard: Operator proceeds to step 2.d.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue:			
	Comments:			

STEP #3 GA-31 Step 2d	Performance: **MOVE** connecting rod toward 3MSS*MSV5 until the trip tappet is free to move down (Ref. Figure - 1)	Standard: Moves connecting rod toward 3MSS*MSV5 until the trip tappet is free to move down.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: **Connecting rod moves towards 3MSS*MSV5 approximately 2 inches. The trip tappet is free to move down.**			
	Comments: Operator should be referencing Figure 1 prior to performance of the reset (reference to figure is not critical).			
STEP #4 GA-31 Step 2e	Performance: **ADJUST** the trip tappet - FULLY DOWN (Ref. Figure 1)	Standard: Adjusts the trip tappet fully down.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: **The trip tappet lowers until the bottom of the tappet is flush with the overspeed housing.** **There is no additional movement when the trip tappet is pushed down.**			
	Comments:			
STEP #5 GA-31 Step 2f	Performance: **RELEASE** connecting rod (Ref. Figure – 1)	Standard: Releases connecting rod.	Critical: Y [X] N []	Grade S [ ] U [ ]
	Cue: **Connecting rod moves toward the pump.** **The base of the connecting rod fulcrum is resting on the side of the trip tappet** **OR** **Trip Tappet and connecting rod are as shown** (if Terry Turbine is reset).			
	Comments:			

STEP #6 GA-31 Step 2g	Performance: **TURN** 3MSS*MSV5, TDAFW pump trip throttle valve, handwheel CW until trip hook engages with latch-up lever (Ref. Figure - 1)	Standard: Turns handwheel for 3MSS*MSV5 clockwise until the trip hook engages with the latch-up lever.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: • **Handwheel moves in the clockwise direction.** • **As the handwheel is rotated the latch-up lever rises.** • **As the latch-up lever reaches its top position (2 o'clock) the trip hook rotates in and engages the latch up lever.**			
	Comments:			
STEP #7 GA-31 Step 2h	Performance: **PRESS** trip hook **AND REMOVE** any gap between latch-up lever and trip hook (Ref. Figure - 1)	Standard: Presses trip hook toward latch-up lever and removes any gap between latch-up lever and trip hook.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: **There is no movement of the trip hook and no gap seen between the latch-up lever and trip hook.**			
	Comments:			
STEP #8 GA-31	Performance: CAUTION: When throttling open 3MSS*MSV5, adjustments should be made slowly to allow the TDAFW pump governor to control speed.	Standard: Operator reads caution	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue:			
	Comments:			

STEP #9 GA-31 Step 2i	Performance: **OPEN** 3MSS*MSV5, TDAFW pump trip throttle valve handwheel in CCW direction (Ref. Figure - 1)	Standard: Opens 3MSS*MSV5, trip throttle valve, by turning handwheel in counter-clockwise direction (open direction).	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: **The valve stem coupling nut on 3MSS*MSV5 moves toward the upward position. Handwheel moves freely until resistance is met and comes to a hard stop.**			
	Comments: Step is not critical as 3MSS*MSV5 will be opened again, in a later step.			
STEP #10 GA-31 Step 2j	Performance: **CHECK** both of the following: • TDAFW pump – ROTATING • Governor controlling TDAFW Pump speed - 4375 - 4425 rpm	Standard: Checks Terry Turbine for rotation and observes no rotation. Operator proceeds to the RNO.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: **Terry Turbine is not rotating**			
STEP #11 GA-31 Step 2j RNO	Performance: RNO **PROCEED TO** step 2.m.	Standard: Operator proceeds to step 2.m.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue:			
	Comments:			
STEP #12 GA-31 Step 2m	Performance: **CLOSE** 3MSS*MSV5, TDAFW pump trip throttle valve handwheel in CW direction (Ref. Figure - 1)	Standard: Rotates 3MSS*MSV5, TDAFW pump trip throttle valve handwheel in CW (closed) direction.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: **The valve stem coupling nut on 3MSS*MSV5 moves toward the downward position. Handwheel moves freely until resistance is met and comes to a hard stop.**			
	Comments:			

STEP #13 GA-31	Performance: CAUTION: When throttling open 3MSS*MSV5, adjustments should be made slowly to allow the TDAFW pump governor to control speed.	Standard: Operator reads caution	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue:			
	Comments:			
STEP #14 GA-31 Step 2n	Performance: **ROTATE** 3MSS*MSV5, TDAFW pump trip throttle valve handwheel up to 2 turns in CCW direction to slowly roll TDAFW pump.	Standard: Rotates 3MSS*MSV5, TDAFW pump trip throttle valve handwheel up to 2 turns in CCW (open) direction to slowly roll TDAFW pump.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: • **Handwheel has been moved two full turns in the CCW direction.** • When asked, **"There is no shaft rotation".**			
	Comments:			
STEP #15 GA-31 Step 2o	Performance: Check both of the following: • TDAFW pump - ROTATING • TDAFW rack position - GREATER THAN 0	Standard: Checks Terry Turbine for rotation and observes no rotation. Checks rack position on Terry Turbine Governor at 0. Operator proceeds to the RNO.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: **Terry Turbine is not rotating** **Governor Rack position is at 0.**			
	Comments: Operator should recognize that the RNO for step 2.o applies.			

STEP #16 GA-31 Step 2o RNO	Performance: RNO **PROCEED TO** the note prior to step 2.q.	Standard: Operator proceeds to note prior to step 2.q.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue:			
	Comments:			
STEP #17 GA-31	Performance: Note: If the TDAFW pump tripped on mechanical overspeed, the linkage will resist movement for approximately 10 minutes due to hydraulic lock on the governor.	Standard: Operator reads note	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: If operator asks, it has been 14 minutes since the crew noticed no flow from the TDAFW pump.			
	Comments: The time between the TDAFW pump trip and the operators attempt to reset the TDAFW pump has been more than the 10 minutes, to allow manual movement of the governor rack position.			
STEP #18 GA-31	Performance: Caution: As linkage is lifted, TDAFW pump will begin to roll and linkage will move.	Standard: Operator reads caution	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue:			
	Comments:			

STEP #19 GA-31 Step 2q	Performance: Lift up on governor rack linkage on TDAFW pump until TDAFW pump begins to roll (Ref. Figure - 2).	Standard: Operator lifts up on governor rack linkage.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: If operator asks, **"It has been 14 minutes since the TDAFW pump did not start".** As operator lifts up on governor rack linkage**:** • **Governor Rack Linkage rises approximately 1 inch.** • **The TDAFW pump starts to slowly rotate** • **Governor rack position increases to 10 (or Rack position is "As Shown").**			
	Comments:			
STEP #20 GA-31	Performance: CAUTION: When throttling open 3MSS*MSV5, adjustments should be made slowly to allow the TDAFW pump governor to control speed.	Standard: Operator reads caution	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue:			
	Comments:			
STEP #21 GA-31 Step 2r	Performance: **OPEN** 3MSS*MSV5, TDAFW pump trip throttle valve handwheel in CCW direction (Figure - 1)	Standard: Opens 3MSS*MSV5, trip throttle valve, by turning handwheel in counter-clockwise direction (open direction).	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: **The valve stem coupling nut on 3MSS*MSV5 moves toward the upward position.** **Handwheel moves freely until resist is met and comes to a hard stop.** **Turbine speed and sound are increasing as the throttle valve is opened.**			
	Comments:			

STEP #22 GA-31 Step 2s	Performance: **CHECK** both of the following: • TDAFW pump - ROTATING • Governor controlling TDAFW Pump speed - 4375 - 4425 rpm	Standard: Observes Terry Turbine for rotation. Checks TDAFW Pump speed - 4375 - 4425 rpm.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: **Terry Turbine is rotating at 4400 rpm.**			
	Comments:			
STEP #23 GA-31 Step 2t	Performance: **ROTATE** 3MSS*MSV5, TDAFW pump trip throttle valve handwheel 1/4 turn in CW direction.	Standard: Rotates 3MSS*MSV5, TDAFW pump trip throttle valve handwheel 1/4 turn in CW (closed) direction.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: **Handwheel moves clockwise ¼ handturn.**			
	Comments:			
STEP #24 GA-31 Step 3	Performance: Notify Control Room Of AFW System Alignment And Status	Standard: Notifies Control Room that 3MSS*MSV5 has been reset and that the governor rack position had to be assisted.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: Control Room acknowledges completion of GA-31 step 2.			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC P.1 Revision: 0

Date Performed: _____

Examinee: _____

For the examinee 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?		☐ Yes ☒ No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC P.1 Revision: 0

Initial Conditions:

A Loss of Secondary Heat Sink event is in progress and the control room team is carrying out the actions of EOP 35 FR-H.1. AFW flow could not be established from the control room.

Initiating Cue:

The US directs you to locally verify the position of 3MSS*MSV5, Terry Turbine Trip Throttle Valve using step 2 of GA-31.

If 3MSS*MSV5 is out of position, you have been directed to reposition the valve per GA-31.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Verify all Dilution Paths Isolated

JPM Number: 2021 NRC P.2 Revision: 0

Initiated:

W.M. Forrestt - Signature on File	4/19/2021
Developer	Date

Reviewed:

T. Fisher - Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone - Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/19/21	Developed from Bank JPM P-01. Changed to have 3CHS*V305 found in the open position.	0

JPM WORKSHEET

Facility: Millstone Unit 3 Examinee: _____

JPM Number: 2021 NRC P.2 Revision: 0

Task Title: Verify all Dilution Paths Isolated

System: CHS

Time Critical Task: ☐ YES ☒ NO

Alternate Path ☐ YES ☒ NO

Validated Time (minutes): 7

Applicable To: SRO **X** RO **X**

K/A Number: 004 CVCS A2.25 K/A Rating: 3.8 / 4.3

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

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

Task Standards: Satisfactorily closes 3CHS*V305 in accordance with step 5 of AOP 3566 *Immediate Boration*.

Required Materials: (procedures, equipment, etc.) NA

General References: AOP 3566, Rev. 15-00

***** 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. 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: 2021 NRC P.2 Revision : 0

Initial Conditions: An unexplained reactivity increase is occurring and the Control Room crew has entered AOP 3566 *Immediate Boration.*

3CHS*FCV111A Primary Makeup Water to Blender has been verified closed.

Initiating Cues: The US directs you to ensure 3CHS*V317 and 3CHS*V305 are closed IAW step 5 of AOP 3566 *Immediate Boration*.

You have a locked valve (2022) key.

Simulator Requirements: NA

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

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

PERFORMANCE INFORMATION

JPM Number: 2021 NRC P.2 Revision: 0

Task Title: VERIFY ALL DILUTION PATHS ISOLATED

START TIME: _____

S T E P # 1 **A O P 3 5 6 6** **S t e p 5**	Performance: Check All Dilution Paths Isolated • Locally CHECK Chemical Mix Tank Outlet Isolation Valve (3CHS*V317) - CLOSED	Standard: Examinee proceeds to chemical mix tank (Aux Bldg 45' east just outside boric acid transfer pump cubicle) and locates 3CHS*V317 Examinee pulls on lock and chain to verify lock not open, broken, or damaged. Examinee checks placement of locking device hinders valve operation.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: 1. Lock is locked and chain is secure. 2. Locking device hinders valve operation.			
	Comments: Steps 1 and 2 may be performed in any order. Verification of locked components shall be in accordance with PI-AA-500, Verification Practices, Att 2 step 1.d Verifying Locked valves): • CHECK locking device to ensure secured by pulling lock and chain to check for integrity, lock NOT open, broken, or damaged. •• IF locking device is NOT in place, position NOTIFY Shift Manager for guidance. •• CHECK that placement of locking device hinders valve operation. • CHECK valve stem position, mechanical position indicator, and alternate means such as pressure or flow are consistent with the required position.			

S T E P # 2 **A O P 3 5 6 6** **S t e p 5**	Performance: • Locally CHECK Manual Dilution Valve (3CHS*V305) - CLOSED	Standard: Examinee proceeds to Aux Bldg 24', "A" charging pump cubicle and locates 3CHS*V305 Examinee notes (from Examiner cue) that the valve is not locked. Examinee rotates hand wheel in clockwise (closed) direction and notes valve movement (thereby determining the valve is open). Examinee proceeds to fully close 3CHS*V305 by rotating valve hand wheel in the clockwise direction until a hard stop is felt.	Critical: Y [X] N [ ]	Grade S [ ] U [ ]
	Cue: 1. Initial Conditions: There is no lock or chain on 3CHS*V305. 2. When Closing 3CHS*V305: Valve handwheel rotates in the clockwise direction until a hard stop is felt. 3. If called as Unit Supervisor: Acknowledge report and provide direction to complete step 5 of AOP 3566.			
	Comments:			
S T E P # 3	Performance: Notify the US that valves 3CHS*V317 and 3CHS*V305 have been verified closed.	Standard: Reports that step 5 of AOP 3566 is complete and 3CHS*V305 required closure.	Critical: Y [ ] N [X]	Grade S [ ] U [ ]
	Cue: Acknowledge report.			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC P.2 Revision: 0

Date Performed: _____

Examinee: _____

For the examinee 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?		☐ Yes ☒ No	
Validated Time (minutes):	**7**	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Comments:

EXAMINEE HANDOUT

JPM Number: 2021 NRC P.2 Revision: 0

Initial Conditions:

An unexplained reactivity increase is occurring and the Control Room crew has entered AOP 3566 *Immediate Boration.*

3CHS*FCV111A Primary Makeup Water to Blender has been verified closed.

Initiating Cues:

The US directs you to ensure 3CHS*V317 and 3CHS*V305 are closed IAW step 5 of AOP 3566 *Immediate Boration*.

You have a locked valve (2022) key.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Energizing Inverter 1 (or 2)

JPM Number: 2021 NRC P.3 Revision: 0

Initiated:

W.M. Forrestt - Signature on File	4/19/2021
Developer	Date

Reviewed:

T. Fisher - Signature on File	5/27/2021
Technical Reviewer	Date

Approved:

A. Leone - Signature on File	6/11/2021
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
4/20/21	Developed from Bank JPM's P-094-1 and P-094-2.	0

JPM WORKSHEET

Facility: MP3 Examinee: _____

JPM Number: 2021 NRC P.3 Revision: 0

Task Title: Energizing Inverter 1 (or 2)

System: 062 120V Vital Instrument AC

Time Critical Task: ( ) YES (X) NO

Alternate-Path JPM: ( ) YES (X) NO

Validated Time (minutes): 12

Applicable To: SRO **X** RO **X**

K/A Number: APE: 057-AA1.01 K/A Rating: 3.7* / 3.7

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

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

Task Standards: Successfully energize Inverter 1 (or 2) in accordance with OP 3345B.

Required Materials: (procedures, equipment, etc.) None

General References: OP 3345B, 120 Volt Vital Instrument AC, Rev. 013

***** 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. 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: 2021 NRC P.3 Revision : 0

You are to perform this task on (select Non Protected Train):

☐ TRAIN A

☐ TRAIN B

NOTE: This JPM is to only be performed on the NON Protected Train. The JPM is written for either condition.

Initial Conditions for TRAIN A:	Four (4) hours ago the plant experienced a loss of one protective system channel and the Control Room Team entered AOP 3564, Loss of One Protective System Channel. VIAC-1 has been re-energized by the alternate power source via 3VBA*SW-1, Inverter 1 Bypass Switch in accordance with OP 3345B Steps 4.3.1 through 4.3.3. Repairs have since been completed to the Inverter.
Initiating Cues for TRAIN A:	The US has directed you to energize inverter 3VBA*INV-1 in accordance with OP 3345B section 4.2.
Initial Conditions for TRAIN B:	Four (4) hours ago the plant experienced a loss of one protective system channel and the Control Room Team entered AOP 3564, Loss of One Protective System Channel. VIAC-2 has been re-energized by the alternate power source via 3VBA*SW-2, Inverter 2 Bypass Switch in accordance with OP 3345B Steps 4.10.1 through 4.10.3. Repairs have since been completed to the Inverter.
Initiating Cues for TRAIN B:	The US has directed you to energize inverter 3VBA*INV-2 in accordance with OP 3345B Section 4.9.
Simulator Requirements:	NA

*** * * * 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: 2021 NRC P.3 Revision: 0

Task Title: Energizing Inverter 1 (or 2)

START TIME: _____

NOTE: IF THIS JPM IS BEING PERFORMED ON INVERTER 1, COMPLETE JPM STEPS 1 -15 ONLY. IF THIS JPM IS BEING PERFORMED ON INVERTER 2, COMPLETE JPM STEPS 16 -30 ONLY.

S T E P # 1	Performance: **NOTE** Depending on length of inverter shutdown, it may take up to 8 hours for inverter output voltage to reach proper range of 118.3 to 123.1 VAC.	Standard: Reads Note	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: If asked, the inverter was deenergized 4 hours ago.			
	Comments:			
S T E P # 2 S t e p 4 . 2 . 1	Performance: ENSURE the following breakers are "OFF": (3VBA*INV-1) • CB-40, "INVERTER AC INPUT" • CB-41, "INVERTER DC INPUT" • CB-42, "INVERTER OUTPUT"	Standard: Locates breaker CB-40 (at Inverter 1, lower left) and ensures breaker is in the OFF (DOWN) position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
		Locates breaker CB-41 (at Inverter 1, lower left) and ensures breaker is in the OFF (DOWN) position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
		Locates breaker CB-42 (at Inverter 1, lower right) and ensures breaker is in the OFF (DOWN) position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: When examinee asks for each breaker position, provide the following: 1. Breaker CB-40 handle is in the DOWN (OFF) position. 2. Breaker CB-41 handle is in the DOWN (OFF) position. 3. Breaker CB-42 handle is in the DOWN (OFF) position.			
	Comments:			

STEP #3 Step 4.2.2	Performance: Place breaker 32-2T-6KT, “INVERTER 1 3VBA*INV-1” to “ON”	Standard: Locates breaker 6KT on bus 32-2T (Control Bldg., 14’ elev. East SWGR, center wall) and switches breaker to the “ON” position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: If examinee asks for breaker position, provide the following: Breaker handle is pointing towards the OFF position. After examinee simulates operating the switch, provide the following: breaker 6KT handle points to “ON.”			
	Comments:			
STEP #4 Step 4.2.3	Performance: PLACE 3BYS*PNL-1 “CKT-05 3VBA*INV-1 INVERTER 1” to “ON”.	Standard: Locates breaker CKT-05 3VBA*INV-1 INVERTER 1 at 3BYS*PNL-1 and places breaker to the “ON” position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: If examinee asks for breaker position, provide the following: Breaker handle is pointing towards the OFF position. After examinee simulates operating the switch, provide the following: breaker CKT-05 3VBA*INV-1 INVERTER 1 handle points to “ON.”			
	Comments: Placing CKT-05 breaker to ON energizes INV-1 lights and meters.			

STEP #5 Step 4.2.4	Performance: PLACE 3VBA*INV-1 voltage selector switch to “BATTERY VOLTAGE”	Standard: Locates the VOLTMETER SELECT SWITCH at INV-1 and positions the switch to the “BATTERY VOLTAGE” position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: If examinee asks for switch position, provide the following: VOLTMETER SELECT SWITCH points towards the “BATTERY VOLTAGE” position. If examinee simulates repositioning switch, provide the following: VOLTMETER SELECT SWITCH is in position “BATTERY VOLTAGE.” If the examinee checks the DC voltage, provide the following cue: **“0” volts DC on the meter.**			
	Comments:			
STEP #6 Step 4.2.5	Performance: PRESS and HOLD “PRECHARGE” pushbutton.	Standard: Locates precharge pushbutton to the left of CB-41, depresses and holds the pushbutton down.”	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: If examinee asks for indicating light status, provide the following: **Precharge Light is NOT lit.** When examinee simulates depressing pushbutton, provide the following: **The precharge pushbutton is depressed.** **Approximately 5 seconds after the precharge pushbutton is depressed and held, provide the cue that the precharge light is LIT.**			
	Comments:			

STEP #7 Step 4.2.6	Performance: WHEN "PRECHARGE" lamp is lit, PLACE 3VBA*INV-1, Inverter 1, CB-41, "INVERTER DC INPUT" breaker to "ON".	Standard: Locates CB-41 at Inverter 1, (lower left) and moves breaker handle up to ON position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: After examinee simulates operating the breaker, provide the following: **the breaker handle moves up to the ON position and a "clunk" sound is heard.**			
	Comments:			
STEP #8 Step 4.2.7	Performance: RELEASE "PRECHARGE" pushbutton.	Standard: Releases pushbutton.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: When examinee simulates releasing pushbutton, provide the following: **Precharge pushbutton has been released and has returned to normal position.**			
	Comments:			

STEP #9 Step 4.2.8	Performance: CHECK the following: (3VBA*INV-1) • "DC INPUT" voltmeter indicates approximately Battery 1 voltage • "INVERTER OUTPUT" frequency meter indicates approximately 60 Hz (59.70 to 60.30).	Standard: Locates the DC Input voltmeter (left side INV-1) and checks indication. Locates Inverter Output frequency meter (INV-1, right side) and checks indication.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: If the examinee checks the DC input voltage, provide the following cue: **The DC Input meter reads 134 volts DC.** If the examinee checks the Inverter Output frequency, provide the following cue: **The Inverter Output frequency meter indicates 60 Hz.**			
	Comments:			
STEP #10 Step 4.2.9	Performance: PLACE 3VBA*INV-1 voltage selector switch to "RECTIFIER VOLTAGE"	Standard: Places voltage selector switch in the Rectifier Voltage position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: When examinee simulates repositioning switch, provide the following: **Voltage selector switch is in the Rectifier Voltage position.**			
	Comments:			

<table>
<tr><td rowspan="3">STEP #11

Step 4.2.10</td><td>Performance:
PLACE 3VBA*INV-1, Inverter 1, CB-40, “INVERTER AC INPUT” breaker to “ON”.</td><td>Standard:
Locates breaker CB-40 (INV-1, lower left) and moves breaker handle up to the “ON” position.</td><td>Critical:
Y [X] N [ ]</td><td>Grade
S [ ] U [ ]</td></tr>
<tr><td colspan="4">Cue:
After examinee simulates operating the breaker, provide the following: the breaker handle moves up to the ON position and a “clunk” sound is heard.</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td rowspan="3">STEP #12

Step 4.2.11</td><td>Performance:
CHECK the following: (3VBA*INV-1)
• “DC INPUT” voltmeter indicates approximately 140 VDC.
• “INVERTER OUTPUT” frequency meter indicates approximately 60 Hz (59.70 to 60.30).</td><td>Standard:
Locates the DC Input voltmeter (left side INV-1) and checks indication. Locates Inverter Output frequency meter (INV-1, right side) and checks indication.</td><td>Critical:
Y [ ] N [X]</td><td>Grade
S [ ] U [ ]</td></tr>
<tr><td colspan="4">Cue:
If the examinee checks the DC input voltage, provide the following cue:
The DC Input meter reads 140.5 volts DC.

If the examinee checks the Inverter Output frequency, provide the following cue:
The Inverter Output frequency meter indicates 60 Hz.</td></tr>
<tr><td colspan="4">Comments:</td></tr>
</table>

STEP #13 Step 4.2.12	Performance: IF VIAC-1 bus is energized from alternate AC source, CHECK for one of the following: • 3VBA*SW-1, Inverter 1 Bypass Switch, "MANUAL SWITCH" in "BYPASS TO LOAD" • 3VBA*INV-1 "BYPASS SOURCE SUPPLYING LOAD" amber light lit	Standard: Checks for one of the following: • 3VBA*SW-1, Inverter 1 Bypass Switch, "MANUAL SWITCH" in "BYPASS TO LOAD" • 3VBA*INV-1 "BYPASS SOURCE SUPPLYING LOAD" amber light lit	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: If examinee asks for switch position, provide the following**, 3VBA*SW-1 points to the "Bypass to Load" and the Bypass Source Supplying Load amber light is lit.**			
	Comments: From initial cue, VIAC-1 is energized from alternate AC source using section 4.3, Therefore, 3VBA*SW-1 is in "Bypass to Load".			
STEP #14 Step 4.2.13	Performance: PLACE 3VBA*INV-1, Inverter 1, CB-42, "INVERTER OUTPUT" breaker to "ON".	Standard: Locates breaker CB-42 (INV-1, lower right) and moves breaker handle up to the "ON" position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: After examinee simulates operating the breaker, provide the following: the **the breaker handle moves up to the ON position and a "clunk" sound is heard.**			
	Comments:			
STEP #15	Performance: Notify the Control Room that inverter 3VBA*INV1 is energized.	Standard: Examinee reports to the US that Inverter 1 has been energized using Section 4.2 of OP 3345B.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded. **STOP TIME: _____**

STEP #16	Performance: **NOTE** Depending on length of inverter shutdown, it may take up to 8 hours for inverter output voltage to reach proper range of 118.3 to 123.1 VAC.	Standard: Reads Note	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: If asked, the inverter was deenergized 4 hours ago.			
	Comments:			
STEP #17 Step 4.9.1	Performance: ENSURE the following breakers are "OFF": (3VBA*INV-2) • CB-40," INVERTER AC INPUT" • CB-41, "INVERTER DC INPUT" • CB-42, "INVERTER OUTPUT"	Standard: Locates breaker CB-40 (at Inverter 2,lower left) and ensures breaker is in the OFF (DOWN) position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
		Locates breaker CB-41 (at Inverter 2,lower left) and ensures breaker is in the OFF (DOWN) position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
		Locates breaker CB-42 (at Inverter 2,lower right) and ensures breaker is in the OFF (DOWN) position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: When examinee asks for each breaker position, provide the following: 4. Breaker CB-40 handle is in the DOWN (OFF) position. 5. Breaker CB-41 handle is in the DOWN (OFF) position. 6. Breaker CB-42 handle is in the DOWN (OFF) position. 7.			
	Comments:			

STEP #18 Step 4.9.2	Performance: Place breaker 32-2U-6KT, “INVERTER 2 3VBA*INV-2” to “ON”	Standard: Locates breaker 6KT on bus 32-2U (Control Bldg., 14’ elev. West SWGR, center wall) and switches breaker to the “ON” position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: If examinee asks for breaker position, provide the following: Breaker handle is pointing towards the OFF position After examinee simulates operating the switch, provide the following: breaker 6KT handle points to “ON.”			
	Comments:			
STEP #19 Step 4.9.3	Performance: PLACE 3BYS*PNL-2 “CKT-05 3VBA*INV-2 INVERTER 2” to “ON”.	Standard: Locates breaker CKT-05 3VBA*INV-2 INVERTER 2 at 3BYS*PNL-2 and places breaker to the “ON” position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: If examinee asks for breaker position, provide the following: Breaker handle is pointing towards the OFF position. After examinee simulates operating the switch, provide the following: breaker CKT-05 3VBA*INV-2 INVERTER 2 handle points to “ON.”			
	Comments: **Comments:** Placing CKT-05 breaker to ON energizes INV-2 lights and meters.			

STEP #20 Step 4.9.4	Performance: PLACE 3VBA*INV-2 voltage selector switch to “BATTERY VOLTAGE”	Standard: Locates the VOLTMETER SELECT SWITCH at INV-2 and positions the switch to the “BATTERY VOLTAGE” position.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: If examinee asks for switch position, provide the following: VOLTMETER SELECT SWITCH points towards the “BATTERY VOLTAGE” position. If examinee simulates repositioning switch, provide the following: VOLTMETER SELECT SWITCH is in position “BATTERY VOLTAGE.” If the examinee checks the DC voltage, provide the following cue: **“0” volts DC on the meter.**			
	Comments:			
STEP #21 Step 4.9.5	Performance: PRESS and HOLD “PRECHARGE” pushbutton.	Standard: Locates precharge pushbutton to the left of CB-41, depresses and holds the pushbutton down.”	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: If examinee asks for indicating light status, provide the following: **Precharge Light is NOT lit.** When examinee simulates depressing pushbutton, provide the following: **The precharge pushbutton is depressed.** **Approximately 5 seconds after the precharge pushbutton is depressed and held, provide the cue that the precharge light is LIT.**			
	Comments:			

STEP #22 Step 4.9.6	Performance: WHEN "PRECHARGE" lamp is lit, PLACE 3VBA*INV-2, Inverter 2, CB-41, "INVERTER DC INPUT" breaker to "ON".	Standard: Locates CB-41 at Inverter 2, (lower left) and moves breaker handle up to ON position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: After examinee simulates operating the breaker, provide the following: **the breaker handle moves up to the ON position and a "clunk" sound is heard.**			
	Comments:			
STEP #23 Step 4.9.7	Performance: RELEASE "PRECHARGE" pushbutton.	Standard: Releases pushbutton.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: When examinee simulates releasing pushbutton, provide the following: **Precharge pushbutton has been released and has returned to normal position.**			
	Comments:			

<table>
<tr><td rowspan="3">STEP #24

Step 4.9.8</td><td>Performance:
CHECK the following: (3VBA*INV-2)
“DC INPUT” voltmeter indicates approximately Battery 2 voltage
“INVERTER OUTPUT” frequency meter indicates approximately 60 Hz (59.70 to 60.30).</td><td>Standard:
Locates the DC Input voltmeter (left side INV-2) and checks indication. Locates Inverter Output frequency meter (INV-2, right side) and checks indication.</td><td>Critical:
Y [ ] N [X]</td><td>Grade
S [ ] U [ ]</td></tr>
<tr><td colspan="4">Cue:
If the examinee checks the DC input voltage, provide the following cue:
The DC Input meter reads 134 volts DC.

If the examinee checks the Inverter Output frequency, provide the following cue:
The Inverter Output frequency meter indicates 60 Hz.</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td rowspan="3">STEP #25

Step 4.9.9</td><td>Performance:
PLACE 3VBA*INV-2 voltage selector switch to “RECTIFIER VOLTAGE”</td><td>Standard:
Places voltage selector switch in the Rectifier Voltage position.</td><td>Critical:
Y [ ] N [X]</td><td>Grade
S [ ] U [ ]</td></tr>
<tr><td colspan="4">Cue:
When examinee simulates repositioning switch, provide the following: Voltage selector switch is in the Rectifier Voltage position.</td></tr>
<tr><td colspan="4">Comments:</td></tr>
</table>

STEP #26 Step 4.9.10	Performance: PLACE 3VBA*INV-2, Inverter 2, CB-40, "INVERTER AC INPUT" breaker to "ON".	Standard: Locates breaker CB-40 (INV-2, lower left) and moves breaker handle up to the "ON" position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: After examinee simulates operating the breaker, provide the following: **the breaker handle moves up to the ON position and a "clunk" sound is heard.**			
	Comments:			
STEP #27 Step 4.9.11	Performance: CHECK the following: (3VBA*INV-2) • "DC INPUT" voltmeter indicates approximately 140 VDC. • "INVERTER OUTPUT" frequency meter indicates approximately 60 Hz (59.70 to 60.30).	Standard: Locates the DC Input voltmeter (left side INV-2) and checks indication. Locates Inverter Output frequency meter (INV-2, right side) and checks indication.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: If the examinee checks the DC input voltage, provide the following cue: **The DC Input meter reads 140.5 volts DC.** If the examinee checks the Inverter Output frequency, provide the following cue: **The Inverter Output frequency meter indicates 60 Hz.**			
	Comments:			

STEP #28 Step 4.9.12	Performance: IF VIAC-2 bus is energized from alternate AC source, CHECK for one of the following: • 3VBA*SW-2, Inverter 2 Bypass Switch, "MANUAL SWITCH" in "BYPASS TO LOAD" • 3VBA*INV-2 "BYPASS SOURCE SUPPLYING LOAD" amber light lit	Standard: Checks for one of the following: • 3VBA*SW-2, Inverter 2 Bypass Switch, "MANUAL SWITCH" in "BYPASS TO LOAD" • 3VBA*INV-2 "BYPASS SOURCE SUPPLYING LOAD" amber light lit	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue: If examinee asks for switch position, provide the following**, 3VBA*SW-2 points to the "Bypass to Load" and the Bypass Source Supplying Load amber light is lit.**			
	Comments: From initial cue, VIAC-2 is energized from alternate AC source using section 4.10, Therefore, 3VBA*SW-2 is in "Bypass to Load".			
STEP #29 Step 4.9.13	Performance: PLACE 3VBA*INV-2, Inverter 2, CB-42, "INVERTER OUTPUT" breaker to "ON".	Standard: Locates breaker CB-42 (INV-2, lower right) and moves breaker handle up to the "ON" position.	Critical: Y [**X**] N [ ]	Grade S [ ] U [ ]
	Cue: After examinee simulates operating the breaker, provide the following: **the breaker handle moves up to the ON position and a "clunk" sound is heard.**			
	Comments:			
STEP #30	Performance: Notify the Control Room that inverter 3VBA*INV2 is energized.	Standard: Examinee reports to the US that Inverter 2 has been energized using Section 4.9 of OP 3345B.	Critical: Y [ ] N [**X**]	Grade S [ ] U [ ]
	Cue:			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded. STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: 2021 NRC P.3 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?		☐ Yes ☒ No	
Validated Time (minutes):	12	Actual Time to Complete (minutes):	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT – for INVERTER 1

NOTE: This JPM is to ONLY be performed on the NON Protected Train. The JPM is written for either condition.

JPM Number: 2021 NRC P.3 Revision: 0

Initial Conditions: Four (4) hours ago the plant experienced a loss of one protective system channel and the Control Room Team entered AOP 3564, Loss of One Protective System Channel. VIAC-1 has been re-energized by the alternate power source via 3VBA*SW-1, Inverter 1 Bypass Switch in accordance with OP 3345B Steps 4.3.1 through 4.3.3. Repairs have since been completed to the Inverter.

Initiating Cues: The US has directed you to energize inverter 3VBA*INV-1 in accordance with OP 3345B section 4.2.

STUDENT HANDOUT – for INVERTER 2

NOTE: This JPM is to ONLY be performed on the NON Protected Train. The JPM is written for either condition.

JPM Number: 2021 NRC P.3 Revision: 0

Initial Conditions: Four (4) hours ago the plant experienced a loss of one protective system channel and the Control Room Team entered AOP 3564, Loss of One Protective System Channel. VIAC-2 has been re-energized by the alternate power source via 3VBA*SW-2, Inverter 2 Bypass Switch in accordance with OP 3345B Steps 4.10.1 through 4.10.3. Repairs have since been completed to the Inverter.

Initiating Cues: The US has directed you to energize inverter 3VBA*INV-2 in accordance with OP 3345B Section 4.9.