Seabrook Station 2013 NRC Exam

- Simulator Guides
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NEXTera ENERGY NUCLEAR FLEET	SIMULATOR EXERCISE GUIDE	SEG

SITE: **Seabrook** **Revision #:** **DRAFT**

LMS ID: **LMS Rev. Date:**

SEG TITLE: **2013 LOIT NRC SIM Exam 1**

SEG TYPE: ☐ **Training** ☒ **Evaluation**

PROGRAM: ☐ **LOCT** ☒ **LOIT** ☐ **Other:**

DURATION: **90 minutes**

Developed by:	*Edward Lyons*	*5/21/13*
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Reviewed by:		
	Instructor (Instructional Review)	Date
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UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER REVIEWER	DATE DATE

OVERVIEW / SEQUENCE OF EVENTS

OVERVIEW

The crew will take the watch at MOL 55% power with, stable xenon, boron concentration at 1314 ppm, CB D at 205 steps and both Main feed Pumps and one Heater Drain pump in service. The crew will begin a power increase at 5%/hr to 75% power. 'A' SG Level Instrument controlling channel will fail low. The crew will then experience CC-V-341 failing closed which will force them to use excess letdown. A seismic event will cause rod H8 to drop. While I&C is checking fuses for dropped rod recovery, rod F8 drops, requiring a manual reactor trip. On the reactor trip the 'C' SG will fault inside containment. The auto isolation for 'C' SG EFW flow control valves will be defeated and manual action to close the valves will be required. When the SI occurs, CS-P-2-A will trip and lockout. CS-P-2-B will not auto start and must be manually started by the PSO.

SEQUENCE OF EVENTS

ALL TIMES IN THIS SCENARIO ARE APPROXIMATE

Event #	Description
1.	Crew begins a 5%/hr power increase.
2.	FW-LT-551, 'A' SG Level Instrument controlling channel fails low.
3.	CC-V-341 fails closed. Crew is forced to use excess letdown.
4.	Seismic event causes rod H8 to drop.
5.	While I&C is checking fuses for dropped rod recovery, rod F8 drops, requiring a manual reactor trip. On reactor trip the 'C' SG faults inside containment.
6.	When SI occurs, CS-P-2-A trip and lockout. CS-P-2-B blocked from starting on SI. CS-P-2-B must be manually started by PSO.
7.	Defeat the auto isolation for the 'C' SG EFW flow control valves FW-FV-4234-A and FW-FV-4234-B. Manual action to close the valves will be required.

SIMULATOR SET UP INSTRUCTIONS

Perform simulator set up per the Simulator Setup Checklist.

General Instructions

a. Provide extra copies of procedures to Examiners
b. Reset to IC #150
c. Place simulator in Run
d. Verify the following have been inserted OR reset to IC #38 and insert the following:
    1. A Train is Protected, SV C0755, '1'
    2. Block CS-P-2-B from starting on SI:
        - SELECT: MF List
        - SELECT: Chemical and Volume Control
        - SELECT: mfCS002
        - SELECT: INSERT
    3. Defeat the auto isolation for the 'C' SG EFW flow control valve FW-FV-4234-A:
        - SELECT: Scenario
        - OPEN: FW folder
        - SELECT: C SG EFW Auto Isolation Defeat
        - SELECT: Run
        - SELECT: OK
e. Insert Event Trigger
    - SELECT: Event Triggers
    - OPEN: Sim Support
    - SELECT: SG FAULT
    - SELECT: Activate
f. Ensure that FW-L-551 is the controlling channel for 'A' SG Level.
g. Advance logger and tear off any sheets with print.
h. Procedure OS1000.05, Power Increase is being performed and is completed to step 4.2.39. Provide appropriate shift turnover documentation.

SHIFT TURNOVER INFORMATION

- See Turnover Sheet

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Start	Allow the students to increase plant power to the extent that a significant reactivity manipulation is demonstrated.	Crew Begins the Power increase IAW MPE Procedure OS1000.05, Power Increase. The crew should prepare for and initiate a power increase at 5%/hr. **Unit Supervisor:** A brief reactivity review will take place discussing the temperature limits for Tavg to be used in the power increase. The temperature band will normally be + 1.5°F with rods in Auto or + 3°F with rods in manual. Dilution will be used for temperature control during the power increase. Control rods will be used for AFD and temperature control. **Turbine Operations**: The BOP will increase turbine load using automatic DEHC operations. Using the laminated sheets, Figure 9 of OS1000.05, The basic steps are: • Check the Load Set is in Hold mode. • Insert the desired loading Rate. • Insert the desired Power Level. • When RCS temperature begins to Increase, Select "Load." • Monitor turbine loading using "Load Status" is Loading and "Load Actual" increases. The BOP should verify the change with control valve position change, temperature change and power change. • At any time during the automatic loading, the power increase can be stopped by activating the "Hold" function.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Power Increase (continued)		**Reactor Power change**: The crew will use dilution to increase temperature during the turbine load increase. A dilution value will be determined to change the boron concentration and increase power/temperature. If control rods are used in manual to control AFD / temperature, the operator will verify rod speed, place the Rod Motion Selector (In-Hold-Out) switch to the OUT direction and withdraw the rods a maximum of three steps. The PSO will monitor temperature and power as confirmation of actions. Using the laminated sheets of OS1008.01, Figure 2, Dilution Check List, the PSO will set up the controllers for the required dilution volume and rate. The high level steps are: • Verify the pumps are in AUTO • Verify the makeup valves are in AUTO • Place Blender Mode Start Switch to STOP • Place the Mode Selector Switch to DILUTE or ALT DILUTE • Set the quantity and flow rate on CIS-FIQ-111 controller **Note:** During validation the crew used a dilution value of 950 gallons in approximately 240 gallon batches every 15 minutes. • If not desired, select OFF for the "Stepback Feature" • Set the Mode Start Switch to START • Verify the pumps and valves respond • Verify Plant Response. • Restore System to Automatic control

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
After Power Increase or At Lead Examiner's Discretion	FW-LT-551, 'A' SG Level Instrument controlling channel fails low: • SELECT: MF List • SELECT: Feedwater (Component) • SELECT: ltFWLT551 • SELECT: FAIL LOW • SELECT: INSERT If the crew calls the WCS/WWM for the FW-LT-551, then respond **"Understand that FW-LT-551 has failed low. A troubleshooting team is being formed."**	FW-LT-551, 'A' SG Level Instrument controlling channel fails low. **Initial Alarms:** D4770 SG A LVL REF DEVIATION D4876 SG A LEVEL LOW F4756 SG A LEVEL LO-LO F5871 SG LEVEL LO ATWS CHANNEL TRIP UA-53 A-3 SG A LEVEL HI/LO US will ask BOP if a controlling 'A' SG Level channel has failed. BOP will identify that FW-LT-551, 'A' SG Level Instrument controlling channel has failed low. US will direct BOP to take manual control of the 'A' SG feed control valve and return 'A' SG level to 45% to 55%. BOP will inform US when 'A' SG level is under his control. US enters OS1235.03, SG Level Instrument Failure and directs the following actions: **Step 1:** Check Steam Generator Water Level Control: • BOP will report FW-LT-551 failed low. • BOP will report 'A' SG feed control valve in manual. • BOP will control 'A' SG level to 45% to 55%. **Step 2:** Realign Steam Generator Level Instruments: • BOP will select an alternate controlling channel for 'A' SG level **Step 3:** Align Steam Generator Water Level Control: • BOP will check steam flow/feed flow signals matched, 'A' SG level at 50%, proper controller setpoint and then place the controller in Auto.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
FW-LT-551, 'A' SG Level Instrument controlling channel fails low. (continued)	If the crew calls the WCS/WWM for I&C, then respond **"I&C is on their way to the control room."** IF NEEDED at OS1235.03, step 6: • SELECT: Panel Overview • SELECT: AMSAC CP-519 • SELECT: SG A (L551)	**Step 4:** Verify redundant channels bistables not tripped: • PSO will report redundant channels bistables not tripped on UL-1 and UL-6. • BOP will report redundant channels bistables not tripped on UL-12. **Step 5:** US will verify technical specification compliance: • T.S. 3.3.1, Reactor Trip System Instrumentation; Table 3.3 1, Item 13 • T.S. 3.3.2, Engineered Safety Features Actuation System Instrumentation; Table 3.3-3, Items 5.b, 6.a, 7.c, 10.c • T.S. 3.3.3.6, Accident Monitoring Instrumentation; Table 3.3-10, Item 7 • US will coordinate with I&C to place bistables to bypass for up to 6 hours or trip within 6 hours. **Step 6:** US will direct BOP to verify ATWS Mitigation Input Status: • BOP will verify that 551 is the failed channel. • BOP will check UL-28 bistables per US direction. • US will direct I&C to place failed channel in 1-MM-CP-519, ATWS mitigation system cabinet to - OPERATE BYPASS

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
After T.S. Call is made (Can be left for post scenario)	CC-V-341 fails closed: • SELECT: MF List • SELECT: Primary Component Cooling (Component) • SELECT: cCCV341 • SELECT: Fail Closed • SELECT: INSERT • If the crew dispatches an NSO to CC-V-341, respond **"This is Primary NSO, go to CC-V-341 and let you know what I find."** If the crew dispatches an NSO to CC-V-341, wait 2 minutes then respond **"This is the NSO, I am at CC-V-341 is closed and the airline appears to have failed."** If the crew calls the WCS/WWM for maintenance support for CC-V-341, then respond **"I will inform maintenance that CC-V-341 airline appears to have failed."** If the crew calls Chemistry, then respond **"Chemistry understands that letdown cooling has been lost (OR lost letdown)."**	CC-V-341, PCCW to Letdown Heat Exchanger, fails closed. **Initial Alarms:** D4692 LTDN HX OUTLET TEMPERATURE HIGH D4692 LTDN HX TEMP HIGH & DEMIN BYPASS PSO may review D4692, LTDN HX Outlet Temperature High and under the US direction will complete the following actions: **Step 1:** PSO will verify high temperature on CS-TI-130. **Step 2:** PSO will verify CS-TK-130 proper operation. **Step 3:** PSO will find CC-V-341 closed and attempt to open. NOTE: At this time the US may direct PSO to isolate letdown by closing CS-V-145 due to loss of letdown temperature control and enter OS1202.01, Loss of Letdown. **Step 4:** US, PSO or BOP will contact Chemistry. **Step 5:** US will direct transfer to Excess Letdown, **Step 6:** PSO will monitor RCP parameters.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
3 minutes after CC-V-341, PCCW to Letdown Heat Exchanger, fails closed.		CC-V-341, PCCW to Letdown Heat Exchanger, fails closed. (continued) **Alarm:** D4698 VCT TEMP HIGH PSO or BOP may review D4698, VCT Temp Hi and under the US direction will complete the following actions: **Step 1:** PSO will verify VCT high temperature on CS-TI-116. **Step 2:** PSO will verify CS-TK-130 proper operation. **Step 3:** PSO will find CC-V-341 closed and attempt to open. **Step 4:** PSO will inform US that letdown temperature cannot be controlled at setpoint and recommend isolating letdown by closing CS-V-145. • US will direct PSO to close CS-V-145. • After CS-V-145 is closed, US will direct PSO to reduce charging flow to the RCP seals only (approximately 32 gpm). **Step 5:** US will enter OS1202.01, Loss of Letdown. **Step 6:** PSO will monitor RCP parameters.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
CC-V-341, PCCW to Letdown Heat Exchanger, fails closed. (continued)		US enters OS1202.01, Loss of Letdown and directs the following actions: **Step 1:** Check for Letdown Isolation: • PSO will report pressurizer level (>17%) • US will go to Step 2 per the RNO. **Step 2:** Check Letdown System Intact: • PSO or BOP will verify radiation levels are normal. **Step 3:** Check Status Of Letdown: • PSO will report Normal Letdown is not in service. • US will direct PSO to adjust charging flow to control PZR level on program, as necessary. • US will go to Step 4 per the RNO. **Step 4:** Check Normal Letdown Flowpath Alignment: • PSO will verify valves as requested by US or tell US that normal letdown is not available. • PSO will report BTRS is in OFF. **Step 5:** Check VCT Makeup Control System: • PSO will check blended makeup boron concentration set at required RCS boron concentration. • PSO will align makeup for automatic control. **Step 6:** Check If Normal Letdown Can Be Established: • PSO will verify charging flow and pressurizer level as requested by US or tell US that normal letdown is not available. • US will go to Step 7 per the RNO.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
CC-V-341, PCCW to Letdown Heat Exchanger, fails closed. (continued)	If the crew calls the waste NSO to inform him that they are flushing excess letdown to the RCDT, respond **"This is Waste NSO, you are flushing excess letdown to the RCDT. I will monitor the in-service PDT level during the RCDT pump down."**	**US will read CAUTION prior to Step 7:** • Do NOT exceed excess letdown heat exchanger outlet temperature of 175°F. • Do NOT exceed excess letdown heat exchanger outlet pressure of 150 PSIG. **Step 7:** Establish excess letdown: • PSO will open CC-V-434, excess letdown heat exchanger cooling water outlet. • PSO will check open RCP seal return containment isolation valves: CS-V-167 and CS-V-168. • PSO will check closed CS-HCV-123. • PSO will open excess letdown containment isolation valves: CS-V-175 and CS-V-176 • PSO will flush excess letdown heat exchanger to RCDT by performing the following: o Align CS-V-170 to the RCDT position. o Slowly throttle CS-HCV-123 open and flush to RCDT for greater than five minutes. o Close CS-HCV-123. • PSO will align CS-V-170 to the SEAL RET HDR position. • PSO will establish desired excess letdown flow by throttling open CS-HCV-123 while monitoring excess letdown heat exchanger outlet temperature and pressure. • PSO will remove normal letdown flow input to plant calorimetric by deleting from scan A0620, CS-E-4 LETDN OUTL FLOW. **Step 8:** Restore Normal Pressurizer Level Control: • PSO will control charging and letdown flow to maintain pressurizer level at program level and control RCP seal injection flow between 8 and 13 gpm to each RCP.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
After Excess Letdown is established or at Lead Examiner's Discretion	<u>Simultaneous Events</u> Seismic Event: • SELECT: MF List • SELECT: Seismic Monitoring • SELECT: mfSM001 • SELECT: INSERT Rod H8 Drop: • SELECT: MF List • SELECT: Rod Control and Position • SELECT: mfCP018 • SELECT: INSERT	Seismic Event coincident with rod H8 drop. **Initial Alarms:** D5452 SEISMIC EVENT IN PROGRESS D7753 CONTROL ROD DEVIATION D7730 ONE ROD ON BOTTOM B7457 ROD MOTION DETECTED F8105 DRPI/DEMAND DEVIATION – 12 STEPS IF rod control is in Auto, rods may step out. In this case the US will instruct the BOP to check generator load stable and then direct the PSO to place rods in Manual. PSO identifies to US that rod H8 has dropped from DRPI and temperature response as seen on Tavg/Tref indication. US enters OS1210.05, Dropped Rod and directs the following actions: **Step 1:** Stabilize Plant Conditions: • PSO will check ONLY one rod dropped and report H8 has dropped. • PSO will place rod bank selector switch in MANUAL. • BOP will reduce turbine load and maintain Tavg/Tref matched. • BOP will check C-7A TURB LOAD REDUCTION status light on UL-25 deenergized. • PSO will verify the reactor is critical.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Seismic Event coincident with rod H8 drop. (continued)	If the crew calls the SM or RE to evaluate recovery, then respond **"Recover the dropped rod as soon as possible."**	**Step 2:** Evaluate Conditions For Dropped Rod Recovery: • Verify Technical Specification compliance o T.S. 3.1.1.1, Shutdown Margin Tavg Greater Than 200°F. Shutdown margin calculation is required within 1 hour for an inoperable control rod. o T.S. 3.1.3.1, Movable Control Assemblies o T.S. 3.1.3.2, Position Indication Systems o T.S. 3.1.3.5, Shutdown Rod Insertion Limits o T.S. 3.1.3.6, Control Rod Insertion Limits o T.S. 3.2.1, Axial Flux Difference o T.S. 3.2.4, Quadrant Power Tilt Ratio • Consult with the Shift Manager and Reactor Engineering to evaluate the recovery.
Seismic Event coincident with rod H8 drop. (continued)	If the crew calls the WCS/WWM for I&C, then respond **"I&C is on their way to 'A' essential switchgear to check for a blown fuse at the rod control cabinets."** If the crew calls I&C to verify rod control cabinet alarms are clear, then respond **"All rod control cabinet alarms are clear."**	**Step 3:** Notify I&C To Check Rod Control System Status: • US will have I&C verify power to the dropped rod is available by checking for blown fuse at the rod control cabinets. • US will have I&C verify rod control cabinet alarms are clear for: o Logic cabinet o All five power cabinets o D7746

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Seismic Event coincident with rod H8 drop. (continued)	When the crew calls the SM to refer to ER-1.1, respond **"I will review ER-1.1."** When the crew calls plant engineering, respond **"Perform ES1802.001, Earthquake Response."** When the crew calls National Earthquake Information Center, acknowledge the report. When the crew calls the NSOs to ensure safety, respond **"All NSOs are in NSO central."**	When the plant is stable PSO or BOP will review D5452, Seismic Event in Progress, and under the US direction will complete the following actions: **Step 1:** PSO will check the Event Light (yellow) or the OBE Light (red) is lit at SM-CP-58. **Step 2:** PSO and BOP will check the MCB and plant conditions for any abnormalities. **Step 3:** PSO will contact I&C to perform IX1670.905. **Step 4:** US will inform SM to refer to ER-1.1, Classification of Emergencies. **Step 5:** US will contact plant engineering to perform ES1802.001, "Earthquake Response". **Step 6:** US will refer to TR21-4.3.3.3.2, Seismic Instrumentation. **Step 7:** US will report the seismic event to the National Earthquake Information Center at 1-303-273-8500. **Step 8:** PSO or BOP will perform a radio check with all NSOs to ensure safety.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
During I&C check of Rod Control System Status at Step 3 or at Lead Examiner's Discretion	Rod F8 drops: • SELECT: MF List • SELECT: Rod Control and Position • SELECT: mfCP009 • SELECT: INSERT	While I&C is checking fuses for dropped rod recovery, rod F8 drops. **Initial Alarms:** D7749 TWO OR MORE RODS ON BOTTOM D4421 TAVG-TREF DEVIATION PSO identifies to US that rod F8 has also dropped. US will go back to continuous action step 1 of OS1210.05, Dropped Rod and directs the following actions: **Step 1:** Stabilize Plant Conditions: • PSO will check ONLY one rod dropped and report F8 has also dropped and there are now 2 dropped rods. • US will direct manual reactor trip. • US will direct crew to enter E-0, Reactor Trip or Safety Injection and to perform their immediate actions.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
When crew trips the Reactor	Simultaneous Events will occur from Event Trigger SG FAULT OR insert the following: 'C' SG faults inside containment: • SELECT: MF List • SELECT: Main Steam • SELECT: mfMS049C • SELECT: Set Final Value to 0.03 • SELECT: INSERT CS-P-2-A trip and lockout when SI occurs: • SELECT: MF List • SELECT: Chemical and Volume Control • SELECT: mfCS016 • SELECT: INSERT	E-0, Reactor Trip or Safety Injection US will direct crew to enter E-0, Reactor Trip or Safety Injection and to perform their immediate actions. 'C' SG faults inside containment which will cause a Safety Injection on Containment pressure in approximately 15 seconds. This will result in Adverse Containment. **Step 1:** Verify Reactor Trip: • PSO will check Rod bottom lights lit, reactor trip and bypass breakers open and neutron flux decreasing. **Step 2:** Verify Turbine Trip: • BOP will check all stop valves or all control valves closed and the generator breaker open. **Step 3:** Verify Power To AC Emergency Busses: • BOP will check both AC emergency busses energized. **Step 4:** Check If SI Is Actuated: • PSO will check both SI annunciators lit. NOTE: US will direct PSO and BOP to bring up their alarms and notify him of any immediate plant concerns and share any pertinent plant information. At this time the PSO may identify that CS-P-2-A tripped and is locked out and that CS-P-2-B is not running. US may direct PSO to start CS-P-2-B by Skill of the Operator. **Step 5:** Perform ESF actuation verification per Attachment A: • PSO will perform Attachment A. • When SI occurs, CS-P-2-A will trip and lockout. CS-P-2-B is blocked from starting on SI. CS-P-2-B must be manually started by PSO.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
E-0, Reactor Trip or Safety Injection (continued)		PSO performing Attachment A while US and BOP process E-0. 1. PSO will verify Containment Isolation Phase A Actuation by checking all status panel lights lit for both trains. 2. PSO will verify Safeguard Equipment Alignment by checking proper alignment by status panel for both trains. • If not previously done, PSO will identify CS-P-2-A trip and lockout and CS-P-2-B failure to auto start and will start CS-P-2-B. 3. PSO will verify Feedwater Isolation by checking proper alignment by status panel. 4. PSO will verify a PCCW Pump running in both loops. 5. PSO will verify ECCS Flow by checking: • CCP indicated flow to RCS cold legs. • RCS pressure <1700 psig, SI pump indicated flow to both trains. • RCS pressure >300 psig, go to Step 6. 6. PSO will verify MS-V-129 is open. 7. PSO will verify a SW Pump running in both trains. 8. PSO will verify SW flow to Train A and Train B Diesels >900 gpm. 9. PSO will check all main steamlines isolated with containment pressure >4 psig. 10. PSO will check Containment Pressure has remained <18 psig by pressure recording. 11. PSO will verify Total EFW flow >500 gpm. 12. PSO will not need to reset RMO. 13. PSO will notify US of Actuation Verification Status. Attachment A is complete.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
E-0, Reactor Trip or Safety Injection (continued)		**Step 6:** Monitor RCS Temperature stable at or trending to 557°F. • BOP will report temperature less than 557°F and decreasing. • US will direct the following actions: o Stop dumping steam to condenser and atmosphere. o Check MS to MSRs isolated. NOTE: The following 2 steps may have been performed per the E-0 OAS page. Additionally, the BOP may stop all flow to the faulted 'C' SG. o If cooldown continues, then open EFW pump mini flow valves and throttle total feed flow to maintain greater than 500 GPM. o When SG level is adequate based on 15% narrow range in at least one SG (Adverse Containment) then throttle feed flow to maintain SG narrow range level between 15% and 50% (Adverse Containment). o If cooldown continues, then close MSIVs, MSIV bypass valves and upstream drains **Step 7:** Check RCS Isolated: • BOP will check CS-V-145, both PORVs and both normal PZR spray valves closed. **Step 8:** Check If RCPs Should Be Stopped: • BOP will check at least one running ECCS pump and report RCS subcooling greater than 40°F. NOTE: At 18 psig in containment the P signal will actuate. This will isolate all PCCW to containment. Per the E-0 OAS page the PSO will secure all RCPs. **Step 9:** Check If SG Pressure Boundary Is Faulted: • BOP will check pressures in all SGs and report 'C' SG pressure decreasing in an uncontrolled manner. • US will direct entry to E-2, Faulted Steam Generator Isolation, Step 1.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
E-2, Faulted Steam Generator Isolation		E-2, Faulted Steam Generator Isolation US will direct crew to enter E-2, Faulted Steam Generator Isolation. US, PSO or BOP will announce that Critical Safety Functions are in effect. If RCS temperature starts increasing, then the US may direct RCS temperature be stabilized by dumping steam per the E-2 OAS page **Step 1:** Check main steamline isolation and bypass valves of all SGs closed **Step 2:** Check If SG Pressure Boundary Is Intact: • PSO will check pressure in all SGs and report any stable or increasing. **Step 3:** Identify Faulted SG(s): • BOP will check pressures in all SGs and report 'C' SG pressure decreasing in an uncontrolled manner. **Step 4:** Check Faulted SG(s) Isolated: • BOP will check the faulted 'C' SG: feed line, EFW flow, ASDV, Main Steam Drain and blowdown are all isolated. **Step 5:** Check CST Level greater than 250,000 gallons • BOP will check CST level. **Step 6:** Check Secondary Radiation: • BOP will check main steamline, condenser air evacuation and steam generator blowdown radiation all normal. • BOP will check no uncontrolled SG narrow range level increase. **Step 6:** Check If ECCS Flow Should Be Reduced: • PSO will check RCS subcooling >40°F. • BOP will check secondary heat sink available. • PSO will check RCS pressure or stable or increasing. • PSO will check PZR level greater than 7% (28% for adverse containment) • US will entry to ES 1.1, SI TERMINATION, Step 1.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
ES 1.1, SI Termination		ES 1.1, SI Termination. US will direct crew to enter E-2, Faulted Steam Generator Isolation. US, PSO or BOP will announce that Critical Safety Functions are in effect. **Step 1:** Reset SI. **Step 2:** Stop All But One CCP And Place In Standby. **Step 3:** Check RCS Pressure stable or increasing by pressure recorder. **Step 4:** Restore Normal Charging Path: • PSO will open CS-V-142 and 143. **Step 5:** Establish Normal Charging Flow: • PSO will close SI-V-138 and 139. • PSO will establish 60 GPM charging flow using CS-FCV-121. • PSO will adjust seal injection flow for 6 GPM to 10 GPM using CS-HCV-182. **Step 6:** Control Charging Flow To Maintain PZR Level • PSO will reduce charging flow to the RCP seals only (approximately 32 gpm).
	Terminate the scenario when the crew starts to establish normal charging flow in ES-1.1, or at the discretion of the lead examiner.	

***** END OF SCENARIO *****

NEXTera ENERGY NUCLEAR FLEET	SIMULATOR EXERCISE GUIDE	SEG

SITE: Seabrook **Revision #:** DRAFT

LMS ID: **LMS Rev. Date:**

SEG TITLE: 2013 LOIT NRC SIM Exam 2

SEG TYPE: ☐ Training ☒ Evaluation

PROGRAM: ☐ LOCT ☒ LOIT ☐ Other:

DURATION: 90 minutes

Developed by:	*Edward Lyons*	*5/21/13*
	Instructor/Developer	Date
Reviewed by:		
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Approved by:		
	Training Program Owner (Line)	Date

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER / REVIEWER	DATE / DATE

OVERVIEW / SEQUENCE OF EVENTS

OVERVIEW

The crew will take the watch at MOL 75% power with stable Xenon, Boron Concentration at 1206 ppm, CB D at 207 steps and both Heater Drain pumps in service. The crew will begin a power increase at 10%/hr to 90% power. MS-PT-505 fails high causing outward rod motion. After recovery from the instrument failure, SW-P-41-A will trip and lockout The standby pump SW-P-41-C fails to auto start and cannot be manually started requiring manual TA. SW-V-20 will fail to auto actuate but can be manually aligned. 'A' RCP vibration will ramp up, requiring a reactor trip. When 'A' RCP is secured after the E-0 immediate actions a 300 gpm RCP seal leak (simulated with int leg leak) will occur simultaneously with a loss of offsite power. 'A' EDG will fail to auto start and the operator will be required to emergency start 'A' EDG from MCB. 'B' EDG will trip due to lube oil failure. CC-P-11-A will fail to auto start. RMO must be reset and either A Train CC pump may be started manually.

SEQUENCE OF EVENTS

ALL TIMES IN THIS SCENARIO ARE APPROXIMATE

Event #	Description
1.	Crew begins a 10%/hr power increase.
2.	MS-PT-505 fails high causing outward rod motion.
3.	SW-P-41-A trip and lockout, standby pump SW-P-41- C fails to auto start and cannot be manually started requiring manual TA. SW-V-20 fails to auto actuate but can be manually aligned.
4.	'A' RCP vibration ramps up, requiring a reactor trip.
5.	When 'A' RCP is secured after immediate actions, trigger starts 300 gpm RCP seal leak (simulated with int leg leak). Also triggers a loss of offsite power.
6.	'A' EDG fails to auto start, Operator emergency starts from MCB. 'B' EDG trips due to lube oil failure.
7.	CC-P-11-A fails to auto start. RMO must be reset and either 'A' Train CC pump may be started manually.

SIMULATOR SET UP INSTRUCTIONS

Perform simulator set up per the Simulator Setup Checklist.

General Instructions

a. Provide extra copies of procedures to Examiners
b. Reset to IC #151
c. Place simulator in Run
d. Verify the following have been inserted OR reset to IC #32 and insert the following:
   1. A Train is Protected, SV C0755, '1'
   2. Defeat the 'A' EDG auto start:
      - SELECT: MF List
      - SELECT: Electrical Distribution
      - SELECT: mfED031
      - SELECT: INSERT
   3. 'B' EDG Trip:
      - SELECT: MF List
      - SELECT: Electrical Distribution
      - SELECT: mfED034
      - SELECT: INSERT
   4. Block SW-P-41-C from Auto start:
      - SELECT: MF List
      - SELECT: Service Water
      - SELECT: mfSW014
      - SELECT: INSERT
   5. Block CS-P-2-B from starting on LOP:
      - SELECT: MF List
      - SELECT: Chemical and Volume Control
      - SELECT: mfCS002
      - SELECT: INSERT
   6. Block CC-P-11-A from Auto start:
      - SELECT: MF List
      - SELECT: Primary Component Cooling
      - SELECT: mfCC012
      - SELECT: INSERT

7. Defeat the auto actuation of SW-V-20:
   - SELECT: Scenario
   - OPEN: SW folder
   - SELECT: SW-V-20 auto failure
   - SELECT: Run
   - SELECT: OK
8. Block SW-P-41-C from manual start:
   - SELECT: Panel Overview
   - SELECT: GF
   - SELECT: Insert OR
   - SELECT: SW-P-41-C switch
   - SELECT: Set Final Value to PTL
   - SELECT: INSERT

e. Insert Event Trigger
   - SELECT: Event Triggers
   - OPEN: Sim Support
   - SELECT: RCP TRIP
   - SELECT: Activate

f. Advance logger and tear off any sheets with print.

g. Procedure OS1000.05, Power Increase is being performed and is completed to step 4.2.49. Provide appropriate shift turnover documentation.

SHIFT TURNOVER INFORMATION

- See Turnover Sheet

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Start	Allow the students to increase plant power to the extent that a significant reactivity manipulation is demonstrated.	Crew Begins the Power increase IAW MPE Procedure OS1000.05, Power Increase. The crew should prepare for and initiate a power increase at 10%/hr. **Unit Supervisor:** A brief reactivity review will take place discussing the temperature limits for Tavg to be used in the power increase. The temperature band will normally be + 1.5°F with rods in Auto or + 3°F with rods in manual. Dilution will be used for temperature control during the power increase. Control rods will be used for AFD and temperature control. **Turbine Operations**: The BOP will increase turbine load using automatic DEHC operations. Using the laminated sheets, Figure 9 of OS1000.05, The basic steps are: • Check the Load Set is in Hold mode. • Insert the desired loading Rate. • Insert the desired Power Level. • When RCS temperature begins to Increase, Select "Load." • Monitor turbine loading using "Load Status" is Loading and "Load Actual" increases. The BOP should verify the change with control valve position change, temperature change and power change. • At any time during the automatic loading, the power increase can be stopped by activating the "Hold" function.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Power Increase (continued)		**Reactor Power change**: The crew will use dilution to increase temperature during the turbine load increase. A dilution value will be determined to change the boron concentration and increase power/temperature. If control rods are used in manual to control AFD / temperature, the operator will verify rod speed, place the Rod Motion Selector (In-Hold-Out) switch to the OUT direction and withdraw the rods a maximum of three steps. The PSO will monitor temperature and power as confirmation of actions. Using the laminated sheets of OS1008.01, Figure 2, Dilution Check List, the PSO will set up the controllers for the required dilution volume and rate. The high level steps are: • Verify the pumps are in AUTO • Verify the makeup valves are in AUTO • Place Blender Mode Start Switch to STOP • Place the Mode Selector Switch to DILUTE or ALT DILUTE • Set the quantity and flow rate on CIS-FIQ-111 controller **Note:** During validation the crew used a dilution value of 1600 gallons in approximately 400 gallon batches every 15 minutes. • If not desired, select OFF for the "Stepback Feature" • Set the Mode Start Switch to START • Verify the pumps and valves respond • Verify Plant Response. • Restore System to Automatic control

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
During Power Increase with Rods in Auto or At Lead Examiner's Discretion	MS-PT-505 fails high: • SELECT: MF List • SELECT: Feedwater (Component) • SELECT: ptFWPT505 • SELECT: FAIL HIGH • SELECT: INSERT	MS-PT-505, Turbine Impulse Pressure, fails high causing outward rod motion. **Initial Alarms:** D4421 TAVG-TREF DEVIATION B7457 ROD MOTION DETECTED US will direct BOP to check generator electrical load stable. BOP will identify that generator electrical load is stable. US will direct PSO to place rods in manual. PSO will place rod control in manual and auto rod motion will stop. PSO or BOP will identify that MS-PT-505 has failed high. US enters OS1235.05, Turbine Impulse Pressure PT 505 or PT 506 Instrument Failure and directs the following actions: **Step 1:** Check PT-505 - FAILED: • BOP will report MS-PT-505 failed high. • PSO will report rods in manual. • PSO or BOP will report Tavg at program temperature. If not at program temperature, US may direct rod insertion. **Step 2:** Check Condenser Steam Dumps: • BOP will report steam dump valves are closed. • BOP will transfer steam dumps to the steam pressure mode: o BOP will verify steam dump controller MS-PK-507 in manual/minimum. o BOP will place steam dump control mode selector to steam pressure mode. o BOP will adjust steam dump controller setpoint to 1092 psig. o BOP will place MS-PK-507 in AUTO.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
MS-PT-505 fails high (continued)	If the crew calls the WCS/WWM for the MS-PT-505, then respond **"Understand that MS-PT-505 has failed high. A troubleshooting team is being formed."** If the crew calls the WCS/WWM for I&C, then respond **"I&C is on their way to the control room."** If needed at OS1235.05, step 5: • SELECT: Panel Overview • SELECT: AMSAC CP-519 • SELECT: TB IMP (P505)	OS1235.05, Turbine Impulse Pressure PT 505 or PT 506 Instrument Failure. (continued) **Step 2:** Check Condenser Steam Dumps: (continued) • BOP will verify both steam dump interlock selector switches positioned to NA RESET NA BYPASS INTERLOCK **Step 3:** Verify Proper P-13 Status By Status Light TURBINE PWR BELOW P-13 UL-6 N-5: • BOP will report that with turbine power above 10%, the status light is deenergized. **Step 4:** Verify Technical Specification Compliance: • T.S. 3.3.1 Reactor Trip System Instrumentation; Table 3.3 1, Item 18.f **Step 5:** US will direct BOP to verify ATWS Mitigation Input Status: • US will direct I&C to place failed channel in 1-MM-CP-519, ATWS mitigation system cabinet to - OPERATE BYPASS • BOP will verify proper status light indication for C-20 ATWS MITIGATION SYS ARMED at UL-28 B-1. With turbine power above 20%, the status light is energized.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
After MS-PT-505 failure or at Lead Examiner's Discretion	SW-P-41-A trip and lockout: • SELECT: MF List • SELECT: Service Water • SELECT: mfSW001 • SELECT: INSERT It the crew dispatches an NSO to the Service Water Pump House, respond **"This is the roving NSO. I am on my way to the Service Water Pump House to check on SW-P-41A."** After 5 minutes, respond **"This is the roving NSO. I see don't see anything wrong with SW-P-41A."** When the crew dispatches an NSO to essential switchgear, respond **"This is the secondary NSO. I am on my way to essential switchgear verify relay actuation for SW-P-41A."** After 5 minutes, respond, **"This is the secondary NSO, SW-P-41A has an 86 lockout."**	SW-P-41-A trip and lockout and SW-P-41-C fails to auto start. **Initial Alarms:** D5523 SW PMP A BKR TRIP L/O F7192 SW TA TRAIN A FAIL TO ACTUATE NOTE: US may use 'Skill of the Operator' to attempt to start the back-up SW pump OR take initial actions using D5523 alarm response or OS1216.01, Degraded Ultimate Heat Sink. All are acceptable. US may place the plant power increase on hold. PSO will review D5523, SW PMP A BKR TRIP L/O and under the US direction will complete the following actions: **Step 1:** BOP will verify SW Pump A tripped by amber light indication on the MCB. **Step 2:** BOP will verify started/start SW Pump C. **Step 3:** If SW Pump C is not available, BOP will initiate Train A tower actuation from MCB. **Step 4:** BOP will verify SW Pump A discharge valve SW-V-2 closes. **Step 5:** BOP will place the control switch for SW-P-41A in pull to lock. **Step 6:** US will refer to and enter OS1216.01, Degraded Ultimate Heat Sink. **Step 7:** BOP will dispatch an operator to verify relay actuation for SW-P-41A BKR at Bus 5 <AQ3>. **Step 8:** US will refer to technical specifications for the service water system.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
SW-P-41-A trip and lockout and SW-P-41-C fails to auto start. (continued)	It the crew dispatches an NSO to perform a cooling tower fill, respond **"This is the roving NSO. Commence a cooling tower fill from potable water."** After 5 minutes, respond, **"This is the roving NSO, I started a cooling tower fill from potable water at 50 gpm."** IF NEEDED for Cooling Tower fill: • SELECT: RF List • SELECT: Service Water • SELECT: rfSW001PW or FP • SELECT: Set FINAL VALUE to 50 • SELECT: INSERT	US enters OS1216.01, Degraded Ultimate Heat Sink and directs the following actions: **Step 1:** Determine Appropriate Response: • If entered upon initial failure, then got to Step 2. • If entered after processing D5523 alarm response and affected SW train aligned to the cooling tower, then go to Step 8. • If entered after processing D5523 alarm response and Tower actuation is in progress, then got to Step 4. **Step 2:** Check For Ocean System Failure: • BOP will check one ocean service water pump running per train with associated discharge valve open. • With no Train A ocean SW pump running the BOP will perform the following: o Manually start SW Pump C. o SW Pump C can not be started and BOP will actuate Train A tower actuation. o Go to Step 4. **Step 4:** Verify Tower Actuation Sequence: • BOP will verify proper TA alignment by UL-16 status panel indication. o BOP will identify that SW-V-20 failed to auto close and will close the valve if not previously performed. • BOP will check cooling tower boundary intact by verifying SW-V-4, 20 and 74 are closed and cooling tower basin level is stable or increasing. **Step 5:** Determine Step Transition: • With one cooling tower pump in service, US will go to Step 7.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
SW-P-41-A trip and lockout and SW-P-41-C fails to auto start. (continued)		OS1216.01, Degraded Ultimate Heat Sink (continued) **Step 7:** Align equipment with one cooling tower pump in service: • BOP will place both Train A ocean SW pump control switches in PTL. • BOP will place running Train A CT pump control switch in NA START. • BOP will reset Train A tower actuation. • BOP will operate cooling tower spray and fans per Attachment A. **Step 8:** Check For Cooling Tower Failure: • BOP will report Cooling tower pump discharge pressure >40 psig. • BOP will check cooling tower boundary intact: o BOP will check SW-V-4, 20 and 74 are closed, identify that SW-V-20 failed to auto close and will close the valve if not previously performed. • BOP will check cooling tower basin level is stable or increasing. • BOP will verify Cooling tower basin level >43.5 feet. • BOP will operate cooling tower spray and fans per Attachment A, as necessary.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
After Step 7 or 8 of OS1216.01, or at Lead Examiner's Discretion NOTE: First alarm comes in approximately 8 minutes after failure is inserted.	'A' RCP vibration ramps up: • SELECT: MF List • SELECT: Reactor Coolant • SELECT: mfRC020 • SELECT: Set Ramp Time to 600 seconds and Final Value to 21 • SELECT: INSERT	'A' RCP vibration ramps up, which will require a manual reactor trip. **Initial Alarms:** B8300 RCP A MTR FRAME VIB VERT ROC HI B8301 RCP A MTR FRAME VIB HORIZ ROC HI B8308 RCP A SHAFT VIB VERT ROC HI B8309 RCP A SHAFT VIB HORIZ ROC HI US enters OS1201.01, RCP Malfunction and directs the following actions: **Step 1:** Determine Appropriate Procedure Step Transition: • With abnormal RCP vibration level US will go to Step 2. **Step 2:** Monitor RCP Vibration less than alert and danger limit: • Determine If RCP vibration indication is valid using applicable diverse indication as follows: o BOP will perform Attachment A to confirm RCP vibration rack module output is valid o PSO will use MPCS to obtain RCP vibration readings. o PSO will check RCP seal leak off flows. o PSO will check RCP bearing temperatures. • US and PSO determine valid RCP vibration are greater than alert and/or danger limits requiring a reactor trip. • US directs manual reactor trip and states that 'A' RCP will be tripped after immediate actions are completed. • US will direct crew to enter E-0, Reactor Trip or Safety Injection and perform their immediate actions.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Crew trips the Rx		E-0, Reactor Trip or Safety Injection US will direct crew to enter E-0, Reactor Trip or Safety Injection and perform their immediate actions. **Step 1:** Verify Reactor Trip: • PSO will check Rod bottom lights lit, reactor trip and bypass breakers open and neutron flux decreasing. **Step 2:** Verify Turbine Trip: • BOP will check all stop valves or all control valves closed and the generator breaker open. **Step 3:** Verify Power To AC Emergency Busses: • BOP will check both AC emergency busses energized. **Step 4:** Check If SI Is Actuated: • PSO will check and report no SI annunciators lit. • Check if SI is required o PSO checks RCS pressure <1800 psig, o PSO checks pressurizer level <7%, o PSO checks containment pressure >4 psig, o PSO checks RCS subcooling <40°F, o BOP checks any SG pressure <585 psig and o SI is not required. • Immediate actions are complete. US will direct the PSO to stop the 'A' RCP.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
When 'A' RCP is secured after immediate actions	Simultaneous Events Loss of offsite power: • SELECT: MF List • SELECT: Electrical Distribution • SELECT: mfED038 • SELECT: INSERT 350 gpm RCP seal leak (simulated with intermediate leg leak): • SELECT: MF List • SELECT: Reactor Coolant • SELECT: mfRC050A • SELECT: Set Final Value to 350 • SELECT: INSERT	Loss of offsite power and 300 gpm RCP seal leak. Crew will reassess E-0, Reactor Trip or Safety Injection, step 3 for LOP. **Step 3:** Verify Power To AC Emergency Busses: • BOP will check at least one AC emergency bus energized. • BOP will emergency start both emergency EDGs. • 'A' EDG will start and commence sequencing. • 'B' EDG will start and trip due to lube oil failure. NOTE: US may direct BOP to immediately pursue repowering of Bus 6 with SEPS. **Step 4:** Check If SI Is Actuated: • PSO will check and both SI annunciators lit. US will direct PSO and BOP to bring up their alarms and notify him of any immediate plant concerns and share any pertinent plant information. **Step 5:** Perform ESF actuation verification per Attachment A: • PSO will perform Attachment A.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
E-0, Reactor Trip or Safety Injection (continued)		PSO performing Attachment A while US and BOP process E-0. 1. PSO will verify Containment Isolation Phase A Actuation by checking all status panel lights lit for both trains. 2. PSO will verify Safeguard Equipment Alignment by checking proper alignment by status panel for both trains. 3. PSO will verify Feedwater Isolation by checking proper alignment by status panel. NOTE: US may direct PSO to start CC-P-11-A or C after Step 4 of E-0 using Skill of the Operator. 4. PSO will verify a PCCW Pump running in both loops. • PSO will identify CC-P-11-A failure to auto start. • PSO will reset RMO. • PSO will start CC-P-11-A or C. 5. PSO will verify ECCS Flow by checking: • CCP indicated flow to RCS cold legs. • RCS pressure <1700 psig, SI pump indicated flow to both trains. • RCS pressure >300 psig, go to Step 6. 6. PSO will verify MS-V-129 is open. 7. PSO will verify a SW Pump running in both trains. 8. PSO will verify SW flow to Train A and Train B Diesels >900 gpm. 9. PSO will check all main steamlines isolated with containment pressure >4 psig. 10. PSO will check Containment Pressure has remained <18 psig by pressure recorder. 11. PSO will verify total EFW flow >500 gpm. 12. PSO will reset RMO if not previously done. 13. PSO will notify US of Actuation Verification Status.
Filename: 2013 NRC SIM Exam 2 DRAFT.doc		Attachment A is complete.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
E-0, Reactor Trip or Safety Injection (continued)	When the BOP dispatches an NSO to open FW-V-347, B EFW pump miniflow, respond **"This is the roving NSO. Open FW-V-347, B EFW pump miniflow."** After 2 minutes open FW-V-347: • SELECT: SIM diagrams • SELECT: FW3 • SELECT: FW-V-347 • SELECT: Manual Adjust • SET: Final Value = 1 • SET: Ramp = 30 • SELECT: Insert After FW-V-347 is open, respond, **"This is the roving NSO, FW-V-347 is open."**	**Step 6:** Monitor RCS Temperature stable at or trending to 557°F. • BOP will report temperature less than 557°F and decreasing. • US will direct the following actions: o Stop dumping steam to condenser and atmosphere. o Check MS to MSRs isolated. NOTE: The following 2 steps may have been performed per the E-0 OAS page. o If cooldown continues, then open EFW pump mini flow valves and throttle total feed flow to maintain greater than 500 GPM. o When SG level is adequate based on 15% NR in at least one SG (Adverse Containment), then throttle feed flow to maintain SG narrow range level between 15% and 50% (Adverse Containment). o If cooldown continues, then close MSIVs, MSIV bypass valves and upstream drains. **Step 7:** Check RCS Isolated: • BOP will check CS-V-145, both PORVs and both normal PZR spray valves closed. **Step 8:** Check If RCPs Should Be Stopped: • BOP will check at least one running ECCS pump and report RCS subcooling greater than 40°F. **Step 9:** Check If SG Pressure Boundary Is Faulted: • BOP will check pressures in all SGs and report pressures as expected. **Step 10:** Check If SG U Tubes Are Intact: • BOP will check pressures and levels in all SGs and report pressures and levels as expected. **Step 11:** Check If RCS Is Intact: • BOP will report abnormal containment radiation and pressure. • US will direct entry to E-1, Loss of Reactor or Secondary Coolant.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
E-1, Loss of Reactor or Secondary Coolant		E-1, Loss of Reactor or Secondary Coolant US will direct crew to enter E-1, Loss of Reactor or Secondary Coolant and direct the following actions. US, PSO or BOP will announce that Critical Safety Functions are in effect. **Step 1:** Check If RCPs Should Be Stopped: • PSO will check one charging pump running. • PSO will check RCS subcooling >40°F. **Step 2:** Check If SG Pressure Boundary Is Faulted: • BOP will check pressures in all SGs and report pressures as expected. **Step 3:** Check Intact SG Levels: • BOP will verify 15% NR in at least one SG (Adverse Containment). • BOP will open EFW pump mini flow valves AND control feed flow to maintain NR level between 15% and 50% (adverse containment). **Step 4:** Check Secondary Radiation: • BOP will check main steamline, condenser air evacuation and steam generator blowdown radiation all normal. • BOP will check no uncontrolled SG narrow range level increase. **Step 5:** Check PZR PORV And Block Valves: • BOP will verify block valves have power and are open and both PORVs are closed.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
E-1, Loss of Reactor or Secondary Coolant (continued)		**Step 6:** Check If ECCS Flow Should Be Reduced: • PSO will check RCS subcooling greater than 40°F. • BOP will check secondary heat sink available. • PSO will check RCS pressure or stable or increasing. • PSO will check PZR level greater than 28% (adverse containment) • US will entry to ES 1.1, SI TERMINATION, Step 1.
	Terminate the scenario after the crew check If ECCS flow should be reduced at step 6 of E-1, or at the discretion of the lead examiner.	

***** END OF SCENARIO *****

NEXTera ENERGY NUCLEAR FLEET	SIMULATOR EXERCISE GUIDE	SEG

SITE: **Seabrook** **Revision #:** **DRAFT**

LMS ID: **LMS Rev. Date:**

SEG TITLE: **2013 LOIT NRC SIM Exam 3**

SEG TYPE: ☐ **Training** ☒ **Evaluation**

PROGRAM: ☐ **LOCT** ☒ **LOIT** ☐ **Other:**

DURATION: **90 minutes**

Developed by:	*Edward Lyons*	*5/21/13*
	Instructor/Developer	Date
Reviewed by:		
	Instructor (Instructional Review)	Date
Validated by:		
	SME (Technical Review)	Date
Approved by:		
	Training Supervision	Date
Approved by:		
	Training Program Owner (Line)	Date

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER REVIEWER	DATE DATE

OVERVIEW / SEQUENCE OF EVENTS

OVERVIEW

The crew will take the watch at MOL 100% power with, Rods in Auto, boron concentration at 1100 ppm, CB D at 230 steps. FW-P-37-B was taken out of service for maintenance 4 hours ago. RC-PT-455 will fail high and require manual control of RCS pressure. The 'C' SG will develop a 30 gpm tube leak that will require a rapid down power to 50% in the first hour. During the down power a continuous rod insertion will occur. Placing the Rod Selector switch to manual will not stop the rod insertion and a manual reactor trip will be required. The manual reactor trip will trigger a 'C' SG tube rupture at 400 gpm. MS-V-90, 'C' MSIV, will fail as is requiring the operator to isolate the ruptured SGs from remaining SGs by closing the other 3 MSIVs. MS-V-395 will not auto open and will require manual action.

SEQUENCE OF EVENTS

ALL TIMES IN THIS SCENARIO ARE APPROXIMATE

Event #	Description
1.	RC-PT-455, controlling channel for pressurizer pressure fails HIGH.
2.	'C' SG Tube Leak at 30 gpm.
3.	Commence rapid down power.
4.	Continuous Rod Insertion and manual Rod Selector switch does not stop insertion (time this failure with auto rod insertion from down power). Manual reactor trip required. 'C' SG Tube Rupture at 400 gpm triggered by manual reactor trip.
5.	MS-V-90, 'C' MSIV, fails as is.
6.	MS-V-395, Main Steam isolation to FW-P-37-A, does not auto open.

SIMULATOR SET UP INSTRUCTIONS

Perform simulator set up per the Simulator Setup Checklist.

General Instructions

a. Provide extra copies of procedures to Examiners
b. Reset to IC #152
c. Place simulator in Run
d. Verify the following have been inserted OR reset to IC #38 and insert the following:
    1. A Train is Protected, SV C0755, '1'
    2. FW-P-37-B out of service for maintenance:
        - SELECT: RF List
        - SELECT: Feedwater (Component)
        - SELECT: bkFWp37b
        - SELECT: Rack Out
        - SELECT: INSERT
        - SELECT: mvFWv347b
        - SELECT: Open Breaker
        - SELECT: INSERT
    3. Select "EMER FW TRAIN B BYP/INOP" pushbutton on MCB CF
    4. Defeat MS-V-90, 'C' MSIV, closure:
        - SELECT: MF List
        - SELECT: Main Steam (Component)
        - SELECT: svMSV90
        - SELECT: FAIL AS IS
        - SELECT: INSERT
    5. Defeat MS-V-395 auto opening:
        - SELECT: Scenario
        - SELECT: Open the MS folder
        - SELECT: MS-V-395 fail to auto open
        - SELECT: Run
        - SELECT: OK
e. Put CAUTION tags on the MCB for FW-P-37-B and FW-V-347
f. Advance logger and tear off any sheets with print.

SHIFT TURNOVER INFORMATION

- See Turnover Sheet

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Start	RC-PT-455 Failed High: • SELECT: MF List • SELECT: Reactor Coolant (Component) • SELECT: ptRCPT455 • SELECT: FAIL HIGH • SELECT: INSERT	RC-PT-455, controlling pressurizer pressure instrument fails high. **Initial Alarms:** D4326 PZR PRESS CONTROLLER OUTPUT HIGH F7860 PZR PRESS HI CHANNEL TRIP D4327 PZR PRESSURE LOW & BU HTRS ON US will ask OR PSO will report if a controlling pressurizer pressure channel has failed. PSO will identify that RC-PT-455, controlling pressurizer pressure instrument has failed high. US will direct PSO to take manual control of the Master pressure controller, RC-PK-455A, and restore pressurizer pressure to 2225 to 2250 psig (approximate band). PSO will inform US when pressurizer pressure is under his control. Note: Pressurizer pressure may drop below 2185 psig during this transient. It is expected that the PSO will inform the US when this occurs for proper DNB Tech Spec compliance.
	The crew calls the WCS/WWM for the RC-PT-455, then respond **"Understand that RC-PT-455 has failed low. A troubleshooting team is being formed."**	US enters OS1201.06, PZR Pressure Instrument / Component Failure and directs the following actions: **Step 1:** Check PORVs closed: • PSO will report both PORVs closed. **Step 2:** Check Normal PZR Spray Valves closed: • PSO will report both Normal PZR Spray valves are closed (or closing).

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
RC-PT-455, controlling pressurizer pressure instrument fails high. (continued)		**US will read NOTE prior to Step 3 to PSO:** Channel P-455/P-456 is normally selected for pressure control because a failed LOW – RC-PT-458 (selected for backup) or RC-PT-457 (selected for control), will prevent automatic operation of both pressurizer PORVs. **Step 3:** Check PZR Pressure Channels: Controlling channel failed: • PSO reports that RC-PT-455, controlling pressurizer pressure instrument has failed high. **US will read CAUTION prior to Step 4 to PSO:** Channel Selection of alternate pressurizer pressure control channel OR recorder channel uses a "make before break" circuit that can result in control system transient if a significant deviation exists between the channels. **Step 4:** Realign Pressurizer Pressure Instruments: • PSO reports that he is manually controlling pressurizer pressure at program using the master pressurizer pressure controller. • PSO will select 457/456 or 458/456 for control/backup. • PSO will select 456, 457 or 458 for the pressure channel recorder. • PSO will select an alternate ΔT, OT, OP channel for the recorder. **Step 5:** Align Pressurizer Pressure control: • PSO reports that RCS pressure is trending to 2235 psig. • PSO will verify proper controller setpoint and place the master pressure controller, RC-PK-455A in auto. **Step 6:** Verify redundant channels bistables not tripped: • PSO will report redundant channels bistables not tripped on UL-1 and UL-6 bistables.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
RC-PT-455, controlling pressurizer pressure instrument fails high. (continued)		**Step 7:** Verify Technical Specification Compliance: • T.S. 3.3.1, Reactor Trip System Instrumentation; Table 3.3 1, Items 7,9 and 10 • T.S. 3.3.2, Engineered Safety Features Actuation System Instrumentation; Table 3.3-3, Items 1.d. and 10.a. • T.S. 3.2.5, DNB Parameters • T.S. 3.4.4, Relief Valves • T.S. 3.4.11, Reactor Coolant System Vents • US will coordinate with I&C to place bistables to bypass for up to 6 hours or trip within 6 hours.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
After T.S. Call is made (Can be left for post scenario)	'C' SG Tube Leak at 30 gpm: • SELECT: MF List • SELECT: Steam Generator • SELECT: mfSG001C • SELECT: Set Final Value to 30 • SELECT: INSERT	'C' SG Tube Leak at 30 gpm. PSO will notify US of decreasing PZR pressure and level. US will give direction to the PSO to manually control charging and letdown to maintain PZR level on program or to stabilize PZR level. PSO will obtain a leak rate using a flow balance. BOP will obtain a leak rate using a mass balance. **Initial Alarms:** B8442 PRI TO SEC LEAK RATE OF CHANGE HI B8443 PRI TO SEC LEAK RATE OF CHANGE HIHI CP-295 alarms for PRI TO SEC LEAK RATE OF CHANGE HI and PRI TO SEC LEAK RATE OF CHANGE HIHI
		US enters OS1227.02, Steam Generator Tube Leak and directs the following actions: **Step 1:** Check RCP Status: • PSO will report 4 RCPs running. **Step 2:** Check If Pressurizer Level Can Be Maintained: • PSO will report PZR level is stable and his leakrate by flow balance is 30 gpm.
	When the crew calls Chemistry, then respond **"Implement CS0905.08, Response to a Primary to Secondary Leak."**	• BOP will report his leakrate by mass balance is 30 gpm. **Step 3:** Try To Identify Affected SG: • US or BOP will notify chemistry to implement CS0905.08, Response to a Primary to Secondary Leak. • PSO or BOP will report leak is on the 'C' SG based on high radiation from the 'C' SG steamline.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
'C' SG Tube Leak at 30 gpm. (continued)		**Step 4:** Check If VCT Level Can Be Maintained: • PSO will report VCT level and that level can be maintained with auto makeup. **Step 5:** Determine Steam Generator Tube Leakage: • PSO will report his leakrate by flow balance is 30 gpm. • BOP will report his leakrate by mass balance is 30 gpm. • US will transition to the RNO which will require the following: o Reduce power to 50% within one hour AND be in Mode 3 within the next two hours. o Refer to ER 1.1, Classification of Emergencies: ▪ Category S – System Malfunction ▪ Category A – Abnormal Rad Levels/Radiological Effluent ▪ Category F – Fission Product Barrier Degradation Matrix o Go to Step 7. The US will transition to OS1231.04, Rapid Down Power while continuing with OS1227.02, Steam Generator Tube Leak.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
'C' SG Tube Leak at 30 gpm. (continued)	When the US calls the SM to perform the ODI.61 notifications, then respond **"I will perform the ODI.61 notifications."**	US enters OS1231.04, Rapid Down Power and directs the following actions: **Step 1:** Perform Notifications per ODI.61, Redeclaration/Joint Owner Notification Guidelines. • US will notify SM to perform the notifications. **Step 2:** Perform Down Power Briefing per ATTACHMENT A • Power decrease priorities: o Load schedule should be maintained. o Tavg/Tref control band should be maintained: ▪ Between ZERO and +3ºF to insert control rods in auto ▪ Between -3ºF and +3ºF with control rods in manual o AFD should be maintained near the administrative control band during the transient. • Reactivity control guidance: o Boration control: ▪ Use ODI.56 or reactivity balance calculation to determine boron quantity. ▪ Boration rate should be controlled to maintain Tavg/Tref control band. ▪ If rapid boration method is selected, it is preferable to add the boron quantity in several batches to maintain a smooth load schedule. ▪ Boration should be established to avoid rod insertion limits. o Rod control: ▪ The preferred method is to have control rods in auto to expedite power reduction. ▪ If auto rod withdrawal occurs, control rods may be placed in manual to control AFD. ▪ As described in power decrease priorities above, control rods should be used to control AFD near the administrative band. After the transient, AFD should be returned to within the administrative band.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
'C' SG Tube Leak at 30 gpm. (continued)		o Turbine control: ▪ Turbine load should be reduced to maintain load schedule. ▪ Turbine load may be adjusted to help maintain Tavg/Tref within control band. • Human factor protocol guidance o The US may direct the operators to perform reactivity changes rather than direct each discrete reactivity manipulation. The operators must announce the intention to perform each manipulation. o Peer checks may be waived during transients. • Recovery actions must be taken to remain within the following limits: o Tavg/Tref control band (Auto or Manual Rods) o Tech Spec 3.2.1, AFD limit **US will read CAUTION prior to Step 3 to PSO:** Control Rods in Auto may initially insert rapidly and must be monitored to prevent exceeding Rod Insertion Limits. **Step 3:** Align Rod Control System: • PSO will verify/place rod control in auto. **Step 4:** Determine Boration Value For Desired Power Level: • PSO will obtain boration value per ODI.56. During validation the crew borated 1427 gallons at 40 gpm. • US will verify boration value per ODI.56. NOTE: The US will give Attachment B for the PSO to perform at Step 5. He will then procede to Step 6 to give direction to the BOP for turbine control.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
'C' SG Tube Leak at 30 gpm. (continued)		**Step 5:** Perform Boration: • PSO performs Attachment B: **PSO will read NOTE prior to Attachment B, step 1:** The maximum boration flow rate in normal mode is 40 GPM. 1. PSO will place the BLENDER MODE START SWITCH to STOP. 2. PSO will place the BORIC ACID BLENDER MODE SELECTOR SWITCH to BORATE. 3. PSO will perform the following using CS-FIQ-111 controller: a. PSO will set the desired BORIC ACID quantity. b. PSO will set the desired BORIC ACID flow rate. c. PSO will turn off the STEP BACK feature. 4. PSO will turn the BLENDER MODE START SWITCH to START and HOLD for approximately one second. 5. PSO will verify the plant responds as expected. NOTE: Attachment B will remain in progress for the duration of the makeup.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
'C' SG Tube Leak at 30 gpm. (continued)	Time the next failure with auto rod insertion from down power.	**US will read NOTE prior to Step 6 to BOP:** Turbine load decrease should be less than or equal to 50 MWe/min (225%/hr) to avoid opening condenser steam dump valves. **Step 6:** Reduce Turbine Load to the Desired Power Limit: • BOP will setup to reduce turbine load (MWE) as necessary to maintain load reduction schedule by selecting desired Load Ramp Rate and the desired Load Setpoint. **Step 7:** Initiate PZR Forced Spray • PSO will turn on C & D (or A & B) backup heaters and monitor that the spray valves respond as expected. NOTE: Once the US identifies the temperature change due to the boration, he will give the order to commence unloading the turbine. NOTE: The Rapid Down Power procedure will remain in progress for the duration of the down power.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Time this failure with auto rod insertion from down power	Simultaneous Events Continuous Rod Insertion: • SELECT: MF List • SELECT: Rod Control and Position • SELECT: mfCP002 • SELECT: INSERT Disable Rod Bank Selector switch: • SELECT: Panel Overview • SELECT: DF • SELECT: Insert OR • SELECT: Rod Bank selector switch • SELECT: Set Final Value to Auto • SELECT: INSERT	Continuous Rod Insertion Crew will identify that rods are stepping in even though there is no demand. US enters OS1210.03, Continuous Control Rod Insertion and directs the following actions: **Step 1:** Verify Secondary Plant Parameters: • BOP will report generator electrical load stable for the current plant conditions. **Step 2:** Check Rod Control System: • PSO will place Rod Bank Selector switch in MANUAL. • PSO will report that control rod insertion has not stopped. • US will direct manual reactor trip. • US will direct crew to enter E-0, Reactor Trip or Safety Injection and perform their immediate actions.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
When crew trips the Reactor	'C' SG Tube Rupture: • SELECT: MF List • SELECT: Steam Generator • SELECT: mfSG001C • SELECT: Set Final Value to 400 • SELECT: MODIFY	E-0, Reactor Trip or Safety Injection 'C' SG Tube Rupture at 400 gpm triggered by the manual reactor trip. US will direct crew to enter E-0, Reactor Trip or Safety Injection and perform their immediate actions and directs the following actions: **Step 1:** Verify Reactor Trip: • PSO will check Rod bottom lights lit, reactor trip and bypass breakers open and neutron flux decreasing. **Step 2:** Verify Turbine Trip: • BOP will check all stop valves or all control valves closed and the generator breaker open. **Step 3:** Verify Power To AC Emergency Busses: • BOP will check both AC emergency busses energized. **Step 4:** Check If SI Is Actuated: • PSO will check both SI annunciators lit. US will direct PSO and BOP to bring up their alarms and notify him of any immediate plant concerns and share any pertinent plant information. At this time the US may direct the Ruptured SG Isolation as follows: IF any SG level increases in an uncontrolled manner AND narrow range level in ruptured SG is greater than 6%, THEN open EFW pump mini-flow valves AND stop feed to ruptured SG(s). **Step 5:** Perform ESF actuation verification per Attachment A: • PSO will perform Attachment A.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
E-0, Reactor Trip or Safety Injection (continued)		PSO performing Attachment A while US and BOP process E-0. 1. PSO will verify Containment Isolation Phase A Actuation by checking all status panel lights lit for both trains. 2. PSO will verify Safeguard Equipment Alignment by checking proper alignment by status panel for both trains. • PSO will identify that MS-V-395 is closed and open the valve. 3. PSO will verify Feedwater Isolation by checking proper alignment by status panel. 4. PSO will verify a PCCW Pump running in both loops. 5. PSO will verify ECCS Flow by checking: • CCP indicated flow to RCS cold legs. • RCS pressure $\leq$1700 psig, SI pump indicated flow to both trains. • RCS pressure >300 psig, go to Step 6. 6. PSO will verify MS-V-129 is open. 7. PSO will verify a SW Pump running in both trains. 8. PSO will verify SW flow to Train A and Train B Diesels >900 gpm. 9. PSO will check if main steamlines should be isolated. MSI should not be required. 10. PSO will check Containment Pressure has remained less than 18 psig by pressure recording. 11. PSO will verify Total EFW flow >500 gpm. 12. PSO will not need to reset RMO. 13. PSO will notify US of actuation verification status. Attachment A is complete.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
E-0, Reactor Trip or Safety Injection (continued)		**Step 6:** Monitor RCS Temperature stable at or trending to 557°F. • IF BOP reports temperature >557°F, THEN US will direct the following actions: o Dump steam to condenser OR o Dump steam using SG ASDVs. • IF BOP reports temperature <557°F and decreasing, THEN US will direct the following actions: o Stop dumping steam to condenser and atmosphere. o Check MS to MSRs isolated. NOTE: The following 2 steps may have been performed per the E-0 OAS page. o IF cooldown continues, THEN open EFW pump mini flow valves AND throttle total feed flow to maintain greater than 500 GPM. o WHEN SG level is adequate based on 65% WR in at least two SGs OR 6% NR in at least one SG, THEN throttle feed flow to maintain SG narrow range level between 6% and 50%. o IF cooldown continues, THEN close MSIVs, MSIV bypass valves and upstream drains.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
E-0, Reactor Trip or Safety Injection (continued)		**Step 7:** Check RCS Isolated: • BOP will check CS-V-145, both PORVs and both normal PZR spray valves closed. **Step 8:** Check If RCPs Should Be Stopped: • BOP will check at least one running ECCS pump and report RCS subcooling greater than 40°F. **Step 9:** Check If SG Pressure Boundary Is Faulted: • BOP will check pressures in all SGs and report pressures as expected. **Step 10:** Check If SG U Tubes Are Intact: • BOP will report 'C' SG Tube Rupture. • At this time the US will direct the Ruptured SG Isolation if not completed. • US will direct entry to E-3, Steam Generator Tube Rupture, Step 1.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
E-3, Steam Generator Tube Rupture	When the crew dispatches an NSO to locally close valves per E-3, ATTACHMENT A, respond **"Locally close valves per E-3, ATTACHMENT A."** (no SIM action required)	E-3, Steam Generator Tube Rupture US will direct crew to enter E-3, Steam Generator Tube Rupture and direct the following actions. US, PSO or BOP will announce that Critical Safety Functions are in effect. **Step 1:** Check If RCPs Should Be Stopped: • PSO will check one charging pump running. • PSO will check RCS subcooling >40°F. **Step 2:** Identify Ruptured SGs: • BOP will indentify 'C' SG. **Step 3:** Isolate Flow From Ruptured SG(s): • BOP will verify 'C' SG ASDV controller setpoint is 1125 psig. • BOP will check 'C' SG ASDV is closed. • BOP will identify 'C' SG as the ruptured SG and it is not necessary to isolate the steam supply to turbine driven EFW pump. • BOP will verify that all SG blowdown isolation valves are closed. • BOP will verify that 'C' SG upstream drain valve is closed. • BOP will attempt to close 'C' SG MSIV, but valve fails open. o BOP may use actuate MSI or use the individual switches to close all remaining MSIVs. o BOP will verify main turbine stop and MSR steam supply valves are closed. o BOP will close MS-V-185, Main Steam to Auxiliary Steam Isolation. o BOP will dispatch a NSO to locally close valves per ATTACHMENT A. o BOP will verify condenser steam dumps are closed and use intact SG ASDVs to lower RCS temperature to 557°F. o BOP will place both steam dump interlock control switches to OFF.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
E-3, Steam Generator Tube Rupture (continued)		**US will read CAUTION prior to Step 4 to BOP:** If any ruptured SG is faulted, feed flow to that SG should remain isolated during subsequent recovery actions unless needed for RCS cooldown. **Step 4:** Check Ruptured SG(s) Level: • PSO will identify 'C' SG NR level >6% and EFW flow isolated. **Step 5:** Check Ruptured SG(s) Isolated From Intact SG(s): • BOP will indentify 'C' SG MSIV open, but all other MSIVs are closed. **Step 6:** Check Ruptured SG(s) Pressure >350 psig: • BOP will verify 'C' SG pressure >350 psig. **US will read CAUTION prior to Step 7 to BOP:** • RCP trip criteria does not apply after a controlled cooldown is initiated. • If NO RCPs running, ECCS flow may cause the affected RCS loop cold leg temperature to indicate less than 250°F. If this occurs, FR P.1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITIONS should not be implemented until after performing Step 30. **Step 7:** Initiate RCS Cooldown: • BOP will determine required core exit temperature based on pressure equal to or less than the lowest ruptured SG pressure. • BOP will start the cooldown by opening 'A', 'B' & 'D' SG ASDVs. • BOP may also increase EFW flow to 'A', 'B' & 'D' SGs. • PSO will depressurize the RCS and block P-11 per ATTACHMENT B.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
E-3, Steam Generator Tube Rupture (continued)		PSO performing Attachment B while US and BOP process E-3. **PSO will read NOTE prior to Attachment B, step 1:** After the low steamline pressure SI is blocked, a high steam pressure rate signal will cause a steamline isolation. 1. PSO will depressurize PZR pressure to <1950 psig using normal PZR spray(s). 2. PSO will block Low Steamline Pressure SI: a. PSO will verify high steam pressure rate bistables NOT lit on UL-1. b. When P-11 Block Bistable light is lit on UL-1, then the PSO will depress both Steamline Safety Injection Block switches. 3. PSO will maintain PZR pressure <1925 psig using normal PZR spray(s). 4. PSO will notify US that Low Steamline Pressure SI is blocked. Attachment B is complete.
E-3, Steam Generator Tube Rupture (continued)		**Step 7:** Initiate RCS Cooldown: (continued) • BOP will check core exit TCs less than required temperature. • US and BOP will continue with Steps 8 through 13. When core exit TCs are less than the required temperature they will stop the RCS cooldown and maintain temperature. **Step 8:** Check Intact SG Levels: • BOP will verify 65% WR in at least two SGs or 6% NR in at least one SG. • BOP will open EFW pump mini flow valves AND control feed flow to maintain NR level between 25% and 50%. **Step 9:** Check PZR PORVs And Block Valves: • BOP will verify block valves have power and are open and both PORVs are closed.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
E-3, Steam Generator Tube Rupture (continued)		**Step 10:** BOP will Reset SI. **Step 11:** Reset Containment Isolation Phase A and Phase B. • BOP will reset T and P signals. **Step 12:** Check Instrument Air Supplies: • BOP will verify instrument and containment instrument air header pressures are normal. • PSO will verify PCCW containment isolation valves are all open. **Step 13:** Check If RHR Pumps Should Be Stopped: • PSO will check RCS pressure >300 psig. • PSO will stop RHR pumps and place in standby. **Step 14:** Check If RCS Cooldown Should Be Stopped: • BOP will check core exit TCs less than required temperature. • BOP will close the 'A', 'B' & 'D' SG ASDVs to stop the RCS cooldown. • BOP will adjust the 'A', 'B' & 'D' SG ASDVs to maintain core exit TCs less than required temperature. **Step 15:** Check Ruptured SG Pressure Stable or Increasing: • BOP will check 'C' SG pressure stable or increasing. **Step 16:** Check RCS Subcooling >60°F • PSO will check RCS Subcooling >60°F.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
E-3, Steam Generator Tube Rupture (continued)		**Step 17:** Depressurize RCS To Minimize Break Flow And Refill PZR: • PSO will verify normal PZR spray is available. • PSO will spray PZR with maximum available spray until ANY of the following conditions satisfied: o RCS pressure less than 'C' SG pressure AND PZR level >7% OR o PZR level >75% OR o RCS Subcooling <40°F • PSO will close the normal PZR spray valves to stop the RCS depressurization. • US will go to Step 20. **Step 20:** Check If ECCS Flow Should Be Terminated:
	Terminate the scenario when the crew checks If ECCS flow should be terminated at step 20 of E-3, or at the discretion of the lead examiner.	

***** END OF SCENARIO *****

NEXTera ENERGY NUCLEAR FLEET	SIMULATOR EXERCISE GUIDE	SEG

SITE: **Seabrook** **Revision #:** **DRAFT**

LMS ID: **LMS Rev. Date:**

SEG TITLE: **2013 LOIT NRC SIM Exam 4**

SEG TYPE: ☐ **Training** ☒ **Evaluation**

PROGRAM: ☐ **LOCT** ☒ **LOIT** ☐ **Other:**

DURATION: **90 minutes**

Developed by:	*Edward Lyons*	*5/21/13*
	Instructor/Developer	Date
Reviewed by:		
	Instructor (Instructional Review)	Date
Validated by:		
	SME (Technical Review)	Date
Approved by:		
	Training Supervision	Date
Approved by:		
	Training Program Owner (Line)	Date

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER / REVIEWER	DATE / DATE

OVERVIEW / SEQUENCE OF EVENTS

OVERVIEW

The crew will take the watch at MOL 100% power with, Rods in Auto, boron concentration at 1100 ppm, CB D at 230 steps. The crew will begin a power decrease at 10%/hr to 50% power due to FW-P-32-A vibration issues. CC-P-322-A trips and standby pump fails to auto start, but can be started manually. The crew will then experience a loss of EDE-PP-1A due to EDE-I-1A failure. Instrument Bus 1A can be recovered on its maintenance supply. This event will require manual control of FRV's and charging. AR-P-50-B will then trip with auto start of third AR pump blocked, but it can be manually started. FW-P-32-A trips and power level is too high for Setback to be successful. Auto and Manual Rx trips are blocked, resulting in ATWS. Auto rod insertion is blocked and manual rod insertion will be required. On the manual turbine trip, turbine Stop Valve 2 and Control Valve 2 will stick open, requiring manual MSI.

SEQUENCE OF EVENTS

ALL TIMES IN THIS SCENARIO ARE APPROXIMATE

Event #	Description
1.	Crew begins a 10%/hr power decrease due to FW-P-32-A vibration issues.
2.	CC-P-322-A trips and standby pump fails to auto start, can be started manually.
3.	Loss of EDE-PP-1A due to EDE-I-1A failure. Instrument Bus 1A recovered on maintenance supply. Requires manual control of FRV's and charging.
4.	AR-P-50-B trips, auto start of third blocked but can be manually started. Vacuum will continue to decrease requiring downpower to maintain 25 inches of Hg.
5.	FW-P-32-A trips. Power level too high for Setback to be successful. Auto and Manual Rx trips blocked resulting in ATWS.
6.	Auto rod insertion blocked, manual rod insertion required.
7.	On manual turbine trip, turbine Stop Valve 2 and Control Valve 2 stick open, requiring manual MSI.

SIMULATOR SET UP INSTRUCTIONS

Perform simulator set up per the Simulator Setup Checklist.

General Instructions

a. Provide extra copies of procedures to Examiners
b. Reset to IC #153
c. Place simulator in Run
d. Verify the following have been inserted OR reset to IC #30 and insert the following:
   1. A Train is Protected, SV C0755, '1'
   2. Block MS-SV-2 Main Stop Valve closure:
      - SELECT: MF List
      - SELECT: Main Steam (Component)
      - SELECT: avMSVSV2
      - SELECT: FAIL OPEN
      - SELECT: INSERT
   3. Block MS-CV-2 Main Turbine Control Valve closure:
      - SELECT: MF List
      - SELECT: Main Steam (Component)
      - SELECT: avMSVCV2
      - SELECT: FAIL OPEN
      - SELECT: INSERT
   4. Block standby Air Removal pump start:
      - SELECT: MF List
      - SELECT: Condenser Air Evacuation
      - SELECT: mfAR006C
      - SELECT: INSERT
e. Advance logger and tear off any sheets with print.
f. Procedure OS1000.056, Power Decrease is being performed and is completed to step 4.3. Provide appropriate shift turnover documentation.

g. SHIFT TURNOVER INFORMATION

- See Turnover Sheet

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Start	Allow the students to decrease plant power to the extent that a significant reactivity manipulation is demonstrated.	Crew begins the power decrease IAW MPE Procedure OS1000.06, Power Decrease. The crew should prepare for and initiate a power decrease at 10%/hr. **Unit Supervisor:** A brief reactivity review will take place discussing the temperature limits for Tavg to be used in the power increase. The temperature band will normally be + 1.5°F. Boration will be used for temperature control during the power decrease. Control rods will be used for AFD and temperature control. **Turbine Operations**: The BOP will decrease turbine load using automatic DEHC operations. Using the laminated sheets, Figure 19 of OS1000.10, The basic steps are: • Check the Load Set is in Hold mode. • Insert the desired Ramp Rate. • Insert the desired Power Level. • When RCS temperature begins to decrease, Select "Load." • Monitor turbine unloading using "Load Status" is Unloading and "Load Actual" decreases. The BOP should verify the change with control valve position change, temperature change and power change. • At any time during the automatic unloading, the power decrease can be stopped by activating the "Hold" function.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
		Reactor Power change: The crew will use boration to decrease temperature during the turbine load decrease. A boration value will be determined to change the boron concentration and decrease power/temperature. If control rods are used in manual to control AFD / temperature, the operator will verify rod speed, place the Rod Motion Selector (In-Hold-Out) switch to the IN direction and insert the rods. The PSO will monitor temperature and power as confirmation of actions. Using the laminated sheets of OS1008.01, Figure 3, Boration Checklist, the PSO will set up the controllers for the required boration volume and rate. The high level steps are: • Verify the pumps are in AUTO • Verify the makeup valves are in AUTO • Place Blender Mode Start Switch to STOP • Place the Mode Selector Switch to BORATE • Set the quantity and flow rate on CIS-FIQ-111 controller **Note:** During validation the crew used a boration value of 300 gallons in approximately 75 gallon batches every 15 minutes. • If not desired, select OFF for the "Stepback Feature" • Set the Mode Start Switch to START • Verify the pumps and valves respond • Verify Plant Response • Restore System to Automatic control

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
At Lead Examiner's Discretion	CC-P-322-A trips: • SELECT: Scenario • OPEN: CC folder • SELECT: TB loss with failure of 322B to start • SELECT: Run • SELECT: OK	CC-P-322-A, 'A' Thermal Barrier Pump trips and CC-P-322-B, 'B' Thermal Barrier Pump fails to auto start. **Initial Alarms:** B5208 THERM BARR PMP A/B OUTLET FLOW LOW B5219 THERM BARR PMP A/B OUTLET FLOW LOW F8017 RCP A THERM BARRIER COOLING FLOW LOW F8018 RCP B THERM BARRIER COOLING FLOW LOW F8019 RCP C THERM BARRIER COOLING FLOW LOW F8020 RCP D THERM BARRIER COOLING FLOW LOW PSO identifies that CC-P-322-A, 'A' Thermal Barrier Pump trips and CC-P-322-B, 'B' Thermal Barrier Pump failed to auto start. NOTE: US may decide to take initial actions using "Skill of the Operator" or any of the above listed alarm responses or go directly to OS1212.01, PCCW Malfunction or OS1201.01, RCP Malfunction. Any method is acceptable. US may place the plant down power on hold. If the US chooses to use "Skill of the Operator": • US will direct the PSO to start CC-P-322-B using "Skill of the Operator". • PSO will start CC-P-322-B. • PSO will verify alarms clear and report the conditions to the US.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
CC-P-322-A, 'A' Thermal Barrier Pump trip (continued)		PSO may review B5208 or B5219, THERM BARR PMP A/B OUTLET FLOW LOW. If the US chooses to use B5208 or B5219 alarm response, then he will direct the PSO to complete the following actions: **PSO will read NOTE prior to Step 1:** This alarm is generated from the transmitter supplying point A0283. The standby pump auto start is supplied independently from the transmitter bistable at 120 gpm. **Step 1:** Verify Thermal Barrier Pump A/B outlet flow low conditions using the following: • A0283, CC-P-322A & B OUTLET FLOW • A0284, CC-P-322A & B OUTLET FLOW **Step 2:** Check one thermal barrier coolant pump running. • US may direct PSO to start CC-P-322-B using "Skill of the Operator". **Step 3:** If continued low flow conditions exist, go to OS1212.01, PCCW System Malfunction.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
CC-P-322-A, 'A' Thermal Barrier Pump trip (continued)		PSO may review F8017 (F8018, F8019 or F8020), RCP A (B, C or D) THERM BARRIER COOLING FLOW LOW. If the US chooses to use F8017 (F8018, F8019 or F8020) alarm response, then he will direct the PSO to complete the following actions: **PSO will read NOTE prior to Step 1:** CC-P-322A, Thermal Barrier Coolant Pump A is the preferred pump and will normally be in service. CC-P-322B, Thermal Barrier Coolant Pump B will normally be kept in auto as the standby pump. **Step 1:** Verify CC-P-322A or B, thermal barrier coolant pump in service per OS1012.08, Thermal Barrier Cooling Water System Operation. • PSO verifies no thermal barrier pumps running. • US may direct PSO to start CC-P-322-B using "Skill of the Operator". **PSO will read NOTE prior to Step 2:** RCP thermal barrier outlet isolation valves are normally open and deenergized to avoid redundant high flow closure on a single loop failure. **Step 2:** Verify Thermal Barrier Pump Outlet Flow Normal (180 to 220 gpm) using the following: • A0283, CC-P-322A & B OUTLET FLOW • A0284, CC-P-322A & B OUTLET FLOW **Step 3:** Refer to the following procedures as applicable: • OS1201.01, RCP Malfunction • OS1212.01, PCCW System Malfunction

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
CC-P-322-A, 'A' Thermal Barrier Pump trip (continued)		If the US chooses to go directly to OS1212.01, PCCW Malfunction, he will direct the following actions: **US will read CAUTION prior to Step 1:** The reactor and affected RCPs must be tripped within 10 minutes of losing all PCCW flow to affected RCPs. **Step 1:** Determine Appropriate Procedure Response: • IF PCCW system FLOW is degraded, THEN go to step 2. **Step 2:** Check PCCW Flow • PSO will check PCCW pumps, one pump running per loop. • PSO will check PCCW system flow >6000 gpm. • PSO will check RCP motor flow alarms reset. • PSO will check RCP motor temperatures are normal: o Motor bearing temperatures <195°F. o Motor stator winding temperature <302°F. • PSO will check at least one thermal barrier cooling pump running: o PSO will manually start pump. o PSO will verify alarms clear and report the conditions to the US. NOTE: The remaining steps check on PCCW system status. The US will process the AOP to Step 8 where he will return to procedure and step in effect.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
CC-P-322-A, 'A' Thermal Barrier Pump trip (continued)		If the US chooses to go directly to OS1201.01, RCP Malfunction, he will direct the following actions: **Step 1:** Determine Appropriate Procedure Step Transition: • IF RCP seal package cooling is degraded, THEN go to Step 14. **Step 14:** Monitor RCP Seal And Bearing Cooling Inlet Temperature: • PSO will check RCP seal and bearing inlet temperature indication is available to each RCP. • PSO will monitor RCP seal water inlet temperature <230°F • PSO will monitor RCP seal water inlet temperature <184°F **Step 15:** Monitor for minimum RCP seal cooling system requirements: • PSO will check RCP No.1 Seal injection flow >6 gpm to each RCP. **US will read CAUTION prior to Step 16 to PSO:** A loss of seal injection event may cause RCP seal and bearing temperatures to reach 230°F within 2 hours. Thermal barrier cooling may not provide adequate cooling to RCP seals with leakoff rates less than 2.5 gpm. **Step 16:** Check Seal Water Cooling System Status: • PSO will check RCP No.1 Seal injection flow >6 gpm to each RCP. • PSO will check RCP seal water injection temperature <135°F • PSO will check at least one thermal barrier cooling pump running: o PSO will manually start pump. o PSO will verify alarms clear and report the conditions to the US. • PSO will check RCP thermal barrier supply temperature <105°F • PSO will check thermal barrier head tank level between 30 and 45 inches. **Step 17:** Go to Step 19. **Step 19:** Verify Tech Spec compliance. **Step 20:** Verifies normal RCP parameters. **END AOP**

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
After start of CC-P-322-B or at Lead Examiner's Discretion	Loss of UPS-I-1A: • SELECT: MF List • SELECT: Electrical Distribution • SELECT: mfED025 • SELECT: INSERT	Loss of vital instrument panel PP-1A due to UPS-I-1A failure. **Initial Alarms:** Many alarms associated with the loss of ED-PP-1-A. Due to FW-PT-505 failing low from the loss of power, rods in auto will start inserting. The US will direct BOP to check generator electrical load stable. BOP will identify that generator electrical load is stable. US will direct PSO to place rods in manual. PSO will place rod control in manual and auto rod motion will stop. Due to SG Water Level controlling channel failing from the loss of power, SG NR levels will increase from program level. The US will direct the BOP to manually control feed regulating valves to restore SG level to program. (45% to 55%) and to manually control main feed pump master speed controller to restore programmed DP, as necessary.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Loss of PP-1A (continued)	When the crew dispatches an NSO to 'A' essential switchgear to check the status of PP-1A and UPS-I-1A, respond **"This is the secondary NSO, I am on my way to 'A' essential switchgear to check the status of PP-1A and UPS-I-1A."** After 5 minutes, respond **"Control, this is the secondary NSO, UPS-I-1A appears dead."** When the crew directs the NSO to repower PP-1A from its maintenance supply using Attachment D, respond **"This is the secondary NSO, repower PP-1A from its maintenance supply using Attachment D."** To place ED-PP-1A on its Maintenance supply: • SELECT: RF List • SELECT: Electrical Distribution • SELECT: rfED021 • SELECT: INSERT After repowering PP-1A, respond **"Control, this is the secondary NSO, PP-1A is on its Maintenance supply."**	With the plant stabilized the US enters OS1247.01, Loss of a 120 VAC Vital Instrument Panel (PP1A, 1B, 1C OR 1D) and directs the following actions: **US will read NOTE prior to Step 1 to BOP:** 120 VAC Instrument bus can be energized at any time per Attachment D. US will give BOP Attachment D and direct him to repower PP-1A. NOTE: PP-1A may be repowered from its maintenance supply at any time during this procedure. Repowering will cause a spurious containment evacuation alarm. **Step 1:** Check Rod Control System: • BOP will check generator electrical load stable. • PSO will place the Rod Bank Selector Switch in Manual. **Step 2:** Check Steam Generator Water Level Control: • BOP will check controlling channel is failed. • BOP will manually control feed regulating valves to restore SG level to program. • BOP will manually control main feed pump speed controller to restore programmed DP, as necessary. • BOP will restore steam generator water level control to automatic per ATTACHMENT A, as time permits.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Loss of PP-1A (continued)		BOP performing Attachment A to align SG level control to automatic as follows, while US and PSO continue in OS1247.01, Loss of a 120 VAC Vital Instrument Panel (PP1A, 1B, 1C OR 1D). 1. BOP will manually restore SG level to program level using: • Feed regulating valve control OR • Main feed water speed control, if necessary 2. BOP will select alternate control channel as necessary: • SG level • Steam flow • Feed flow 3. WHEN SG level returns to program, THEN perform the following: • Return feed regulating valve control to automatic. • Return main feed pump speed control to automatic, as necessary. Attachment A is complete.
Loss of PP-1A (continued)		**Step 3:** Check Rod Control System: • BOP will check Steam Dump Control: o Condenser steam dump valves closed. o Reset C-7A steam dump arming signal, as necessary. **Step 4:** Check Pressurizer Pressure Control: • PSO will check controlling channel is failed. • PSO will manually control the Master pressurizer pressure controller OR Heaters and spray valves to restore pressurizer pressure to program. • PSO will check pressurizer pressure is stable or trending to program. • PSO will restore pressurizer pressure control to automatic per ATTACHMENT B, as time permits.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Loss of PP-1A (continued)		PSO performing Attachment B to align pressurizer pressure control to automatic as follows, while US and BOP continue in OS1247.01, Loss of a 120 VAC Vital Instrument Panel (PP1A, 1B, 1C OR 1D). 1. PSO will manually restore pressurizer pressure to program using: • Master pressurizer pressure controller OR • Heaters and spray valves 2. PSO will select alternate pressure channel for control/backup as necessary. 3. PSO will select an alternate pressure channel for recorder as necessary. 4. PSO will select an alternate ΔT, OT, OP channel for recorder as necessary. 5. WHEN pressurizer pressure returns to program, THEN perform the following: • Place PZR master pressure controller in automatic • Place PZR spray controllers in automatic • If required, reset pressurizer control group heaters. Attachment B is complete.
Loss of PP-1A (continued)		**Step 5:** Check Pressurizer Level Control: • PSO will check controlling/backup/programmed level channel is failed. • PSO will manually control the Master level controller OR CS-FK-121 controller to restore pressurizer level to program. • PSO will select an alternate level channel for control and backup. • PSO will restore pressurizer level control to automatic per ATTACHMENT C, as time permits.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Loss of PP-1A (continued)		PSO performing Attachment C to align pressurizer level control to automatic as follows, while US and BOP continue in OS1247.01, Loss of a 120 VAC Vital Instrument Panel (PP1A, 1B, 1C OR 1D). 1. PSO will manually restore pressurizer level to program using: • Master level controller OR • CS-FK-121 controller 2. PSO will select alternate level channel for control and backup. 3. PSO will select an alternate level channel for recorder as necessary. 4. PSO will verify control rods are in manual 5. PSO will depress affected loop Tavg channel defeat pushbutton 6. WHEN pressurizer level returns to program, THEN perform the following: • Adjust RC-LK-459 as needed to match the input and setpoint signals on CS-FK-121 • Place CS-FK-121 in AUTO • Adjust RC-LK-459 input to match program level setpoint • Place RC-LK-459 in AUTO 7. If required, reset pressurizer control group heaters. Attachment C is complete.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Loss of PP-1A (continued)		**Step 6:** Check If E Plan Classification is required: • PSO will report PP-1C is energized and the US will go to Step 7. **Step 7:** Check If Letdown Was Isolated: • PSO will report that RC-LCV-459 is closed. **Step 8:** Check If Normal Letdown Can Be Established: • Verify charging flow >50 gpm: o PSO will report charging to the RCP seals only. o PSO will increase charging flow to >50 gpm. • PSO will report pressurizer level >17% and increasing. • PSO will establish normal letdown as follows: • PSO will open/check open CC-V-341 and check CS-TK-130 in AUTO to align PCCW to the letdown heat exchanger. • PSO will close letdown flow control valves CS-HCV-189 and 190. • PSO will open/check open letdown line isolation valves RC-LCV-459 and 460 and CS-V-145. • PSO will manually control CS-PK-131 AND establish letdown flow using letdown flow control valve CS-HCV-189 or 190. • US will go to Step 10. **Step 10:** Defeat Affected Loop ΔT and Tavg inputs: • PSO will depress affected loop ΔT channel defeat pushbutton. • PSO will verify control rods are in manual. • PSO will depress affected loop Tavg channel defeat pushbutton. • PSO will select a non affected channel for ΔT, OT, OP recorder.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Loss of PP-1A (continued)		**Step 11:** Restore 120 VAC Instrument Power: NOTE: Power may already be restored. • BOP will report that he is working with an NSO in the field to place PP-1A on its maintenance supply per Attachment D OR • BOP will report that PP-1A is energized on its maintenance supply per Attachment D. **Step 12:** Restore Normal System Alignment: • PSO will reset affected power range NI rate trip. • PSO will restore any defeated loop Tavg, ΔT channels. • PSO will restore pressurizer pressure control channels for preferred alignment, as necessary. • PSO will verify Tavg WITHIN 1°F OF Tref. • Under specific US direction, PSO will restore control rods to desired position, as necessary. • PSO will place rod control to AUTO. • PSO will reset SSPS power supply per ATTACHMENT E as follows: o At MM-CP-12, Train A Logic Cabinet, on PS 501, PSO will Press the Reset Push Button o At MM-CP-12, Train A Logic Cabinet, PSO will verify PS 501 "OK" LED is illuminated • US will restore other systems to automatic control using applicable attachments as necessary. **Step 13:** Verify Technical Specification Compliance: • T.S 3.8.3.1, Onsite Power Distribution Operating • T.S. 3.3.3.6, Accident Monitoring Instrumentation

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
After PP-1A is energized on its Maintenance supply and after rods are back in Auto	Block Auto Rod insertion: • SELECT: Scenario • OPEN: CP folder • SELECT: Auto Rod Failure • SELECT: Run • SELECT: OK Block Reactor Trip: • SELECT: Scenario • OPEN: CP folder • SELECT: Trip Breakers fail to open • SELECT: Run • SELECT: OK	

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
At Lead Examiner's Discretion	Simultaneous Events AR-P-50-B trips: • SELECT: MF List • SELECT: Condenser Air Evacuation • SELECT: mfAR005B • SELECT: INSERT Vacuum Leak: • SELECT: SIM Diagrams • SELECT: CO1 • SELECT: mfCO026 • SELECT: Set Final Value to 0.035 (adjust as necessary) • SELECT: INSERT When the crew dispatches an NSO to AR-P-50-B, respond **"This is the secondary NSO, I am on my way to AR-P-50-B."** After 2 minutes, respond **"Control, this is the secondary NSO, AR-P-50-B is not running and the suction valve is open."** When the crew directs the NSO to shut AR-P-50-B suction valve, respond **"Close AR-P-50-B suction valve."**	AR-P-50-B trips and loss of condenser vacuum. **Initial Alarms:** F5118 MECH VAC PMP B TRIP BOP identifies that AR-P-50-B tripped. BOP will review F5118 VAS. F5118 VAS directs the crew to start the standby mechanical vacuum pump A OR C. US will direct the BOP to start the standby mechanical vacuum pump A OR C. Vacuum will continue to decrease. US enters ON1233.01, Loss of Condenser Vacuum and directs the following actions: **Step 1:** Check Mechanical Vacuum Pump Status: • BOP will report all available vacuum pumps are running. • BOP will report vacuum seal water pump running lights are on. **Step 2:** Check Condenser Vacuum - DECREASING • BOP will report condenser vacuum is decreasing. **Step 3:** Decrease Plant Power To Restore Vacuum: • BOP will report generator output is >360 MWe. • BOP will reduce generator load until EITHER of the following conditions is met: o Load decrease to 360 MWe OR o Condenser vacuum can be maintained >25 inches of Hg vacuum. • BOP will check steam generator tubes are intact. • BOP will shift mechanical vacuum pump discharge to atmosphere,

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
Once the crew starts to decrease plant power to restore vacuum or at Lead Examiner's Discretion	FW-P-32-A trips: • SELECT: MF List • SELECT: Feed Water • SELECT: mfFW038 • SELECT: INSERT	FW-P-32-A trips. **Initial Alarms:** D4716 MFP A TURBINE BEARING OIL PRESSURE D4718 MFP A PUMP BEARING OIL PRESS LOW D4720 MFP A TURBINE TRIP D4854 MFP A ELECTRICAL TRIP D6045 TURB SETBACK LOSS OF ONE FW PUMP • BOP will report FW-P-32-A trip and a setback is in progress. • BOP will report all SG levels are rapidly decreasing and approaching the reactor trip setpoint. • US will direct the PSO to manually trip the reactor. • **The reactor will not trip MANUALLY or AUTOMATICALLY when the auto trip signal from SG Level Lo-Lo actuates.** • The US will declare that he is entering FR-S.1, Response to Nuclear Power Generation/ATWS, and direct the crew to perform their immediate actions. o Auto rod insertion is failed and the PSO will manually insert control rods. o BOP will manually trip the turbine. o Turbine Stop Valve 2 and Control Valve 2 will stick open. o BOP will manually actuate MSI.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
FR-S.1, Response to Nuclear Power Generation/ ATWS	Locally trip the Reactor: • SELECT: Scenario • OPEN: CP folder • SELECT: 120 second delay then clear fault and trip reactor • SELECT: Run • SELECT: OK When the reactor is tripped, respond **"Control, this is the secondary NSO, I locally tripped the reactor."**	FR-S.1, Response to Nuclear Power Generation/ATWS **Step 1:** Verify Reactor Trip: • PSO will report Rod bottom lights not lit. • PSO will continue to manually insert control rods. **Step 2:** Verify Turbine Trip: • BOP will report that Turbine Stop Valve 2 and Control Valve 2 are stuck open. • BOP will report that he manually actuated MSI. • BOP will report that the generator breaker is open. **NOTE: After the Immediate Actions are complete, the US or BOP will direct any available NSO to locally trip the reactor.** **Step 3:** Check EFW Pumps Running: • BOP will report that the Motor driven pump is running. • BOP will report that the Turbine-driven pump is running. **Step 4:** Initiate Emergency Boration Of RCS: • BOP will report that one charging pump is running. • Align boration path: o BOP will start a boric acid pump and open CS-V-426. • Align charging flow path: o BOP will place CS-FK-121 in manual and charge at maximum rate. o BOP will open CS-LCV-112D and E to align CCP suction to RWST. o BOP will close CS-LCV-112B and C to isolate the VCT. • BOP will report PZR pressure <2385 psig.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS		
TIME/NOTES	**INSTRUCTOR ACTIVITY**	**EXPECTED STUDENT RESPONSE**
FR-S.1, Response to Nuclear Power Generation/ ATWS (continued)		**Step 5:** Verify Containment Ventilation Isolation: • PSO will report COP-V-1, 2, 3 & 4 and CAP-V-1, 2, 3 & 4, Containment purge isolation valves, are closed. **US will read CAUTION prior to Step 6:** If an SI signal exists or occurs, ATTACHMENT A of E-0, REACTOR TRIP OR SAFETY INJECTION should be performed while continuing with this procedure. **Step 6:** Check If The Following Trips Have Occurred: • PSO will report the reactor is tripped. • BOP will report the turbine is tripped. **Step 7:** Check If Reactor Is Subcritical: • PSO will report power range channels <5%. • PSO will report intermediate range flux rate is zero or negative. • PSO will report gammametrics intermediate range flux level <5%. • PSO will report gammametrics intermediate range flux rate is zero or negative. • US will direct PSO to continue boration to obtain adequate shutdown margin during subsequent actions. NOTE: US will exit FR-S.1 and direct the crew to go back to E-0 and perform their immediate actions.
	Terminate the scenario when the crew finishes FR-S.1 and returns to E-0, or at the discretion of the lead examiner.	

***** END OF SCENARIO *****

CONTROL ROOM JOB PERFORMANCE MEASURE ‘A’, Draft

PRESSURZER LEVEL CHANNEL FAILURE

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK 0110400101 Identify A Pressurizer Instrument Failure

2. Conditions:

A. The plant is at 100% power and all systems are normal.

3. Standards:

Identify a failed Pressurizer level instrument channel and restore the system per OS1201.07, PZR Level Instrument Failure.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of OS1201.07, PZR Level Instrument Failure Rev.14.

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- OS1201.07, PZR Level Instrument Failure.

Technical Specifications:

- 3.3.1 Reactor Trip System Instrumentation.
- 3.3.3.6 Accident Monitoring Instrumentation.

Sys	KA	Description	Value RO/SRO
011	A2.11	Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of PZR level instrument - low	3.4/3.6

7. Setting:

Simulator:

Reset the simulator to IC #154 or any 100% IC which contains the following:

A. Initialize the simulator to a 100% power IC.
B. Place the simulator in RUN.
C. Ensure that LT-459 is selected for master PZR level control and for the PZR level recorder.
D. Insert component malfunction ltRCLT459 fails low, time delay 90 seconds

Malfunctions have additional time added so that alarms can be acknowledged. Do not exceed 60 seconds of run time during setup to ensure malfunctions do not initiate. Place the simulator in FREEZE.

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. An event will occur. You are expected to identify the event and respond per the appropriate procedure.

B. The following information is provided to you:

    1. The plant is at 100% power and all systems are normal.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using the appropriate abnormal procedure, OR following verbal direction from the US (instructor as US) reading from the procedure.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), when an event occurs, identify the event to the US."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
1. P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

CUE: If student asks to reduce charging, US respond, **"Using skill of the operator reduce charging as necessary to maintain PZR level on program."**

2. P	Recognize and report that LT-459 is failed low.	Recognizes and reports that LT-459 is failed low.	_____	_____

NOTE: Because this JPM is an RO task, the instructor acting as the US, will cue the student **"Entering OS1201.07 PZR Level Instrument Failure."**

CUE: Give the student a copy of OS1201.07, PZR Level Instrument Failure.

3. P	Check PZR level channels: • Controlling channel failed -OR- • Backup channel failed -OR- • Recorder channel failed.	Checks PZR level channels and reports LT-459 is the controlling channel and is failed low.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT

NOTE: Caution and Note prior to step 2 of OS1201.07 should be read.

*4.	P	Realign PZR level instruments:	Realigns PZR level instruments:		
		a. Manually control PZR level at program:	a. Reduces charging flow. Adjusts seal injection flow as necessary.	____	____
		*b. Select an alternate level channel for Control/Backup as necessary.	*b. Selects alternate level channels L-461/ L-460.	____	____
		c. Select an alternate level channel for recorder as necessary.	c. Selects an alternate level channel for recorder as necessary: • L-460 OR • L-461	____	____
*5.	P	Verify PZR heaters ON as follows: Reset or manually control PZR heaters as necessary.	Resets the PZR control group of heaters.	____	____
6.	P	Check if letdown was isolated: Letdown isolation valves - closed • RC-LCV-459 -OR- • RC-LCV-460	Checks if letdown was isolated and identifies that RC-LCV-459 is closed.	____	____
*7.	P	Check if normal letdown can established:	Checks if normal letdown can be established:		
		*a. Verify charging flow – greater than 50 gpm.	*a. Verifies or adjusts charging flow - greater than 50 gpm.	____	____
		b. PZR level – greater than 17%	b. Verifies PZR level – greater than 17%.	____	____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
*8.	P	Establish normal letdown:	Establishes normal letdown:		
		a. Align PCCW to the letdown heat exchanger: • CC-V-341 - open • CS-TK-130 - auto	a. Verifies PCCW to the letdown heat exchanger • CC-V-341- open • CS-TK-130 - auto	_____	_____
		*b. Close letdown flow control valves: • CS-HCV-189 • CS-HCV-190	*b. Closes/checks closed letdown flow control valves: • CS-HCV-189 • CS-HCV-190	_____	_____
		*c. Open letdown isolation valves:	*c. Opens/checks open letdown isolation valves:		
		* a) RC-LCV-459	* a) RC-LCV-459	_____	_____
		b) RC-LCV-460	b) RC-LCV-460	_____	_____
		* c) CS-V-145	* c) CS-V-145	_____	_____

NOTE: The student should take manual control of CS-PK-131 and open CS-PCV-131 to approximately 10-20%, then slowly open a flow control to establish letdown flow. When CS-PK-131 input pressure equals setpoint pressure (about 350 psig), the student should return CS-PK-131 to auto.

		*d. Manually control or monitor CS-PK-131 response and establish letdown flow using letdown flow control valve(s). • CS-HCV-189 • CS-HCV-190	*d. Manually controls or monitors CS-PK-131 response and establishes letdown flow using letdown flow control valve(s). • CS-HCV-189 • CS-HCV-190	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: "The JPM is complete."

9.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	_____	_____
10.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. An event will occur. You are expected to identify the event and respond per the appropriate procedure.

B. The following information is provided to you:

1. The plant is at 100% power and all systems are normal.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using the appropriate abnormal procedure, OR following verbal direction from the US (instructor as US) reading from the procedure.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), when an event occurs, identify the event to the US."**

CONTROL ROOM JOB PERFORMANCE MEASURE 'B', "Draft"

TRANSFER SERVICE WATER TO THE COOLING TOWER

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1. Task Number and Description

Position RO

SBK 0760103401 Switch From SW To Cooling Tower Operation

2. Conditions:

A. The plant is operating at 100% power.
B. On line maintenance needs to be done on the Service Water system Train A.
C. The Shift Manager requested that Service Water Train A be transferred to the Cooling Tower until the job is complete in approximately 12 hours.
D. Local pre-starts are complete on the "A" Cooling Tower pump.

3. Standards:

Place the Cooling Tower in operation per OS1016.05, Service Water Cooling Tower Operation.

4. Student Materials:

- Copy of Tear-Off Sheet
- Copy of OS1016.05, Service Water Cooling Tower Operation, Rev. 23
- Copy of OS1016.05, Service Water Cooling Tower Operation, Pre-Job Brief
- Copy of ODI-5 Pump Prestart Guidelines – SW-P-110A Rev. 01

5. Limitations On Performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- OS1016.05, Service Water Cooling Tower Operation

Sys	KA	Description	Value RO/SRO
076	A2.01	Ability to predict the impact of and use procedures to control a loss of SW.	3.5/3.7
076	K3.01	Knowledge of the effect that a loss or malfunction of SW will have on closed cooling water system.	3.4/3.6

7. Setting:

Simulator:

Reset the simulator to IC #154 or any 100% IC which contains the following:

A. Initialize the simulator to a 100% power IC.
B. Place the simulator in RUN.
C. Insert component malfunction csSWV20, fail as is.
D. Place the simulator in FREEZE.

8. Safety Considerations:

None.

9. Approximate Completion Time:

30 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Secondary Operator.

B. The following information is provided to you:

1. The plant is operating at 100% power.
2. On line maintenance needs to be done on the Service Water system Train A.
3. The Shift Manager requested that Service Water Train A be transferred to the Cooling Tower until the job is complete in approximately 12 hours.
4. Local pre-starts are complete on the "A" Cooling Tower pump.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1016.05, Service Water Cooling Tower Operation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. The US will provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Secondary Operator, **"Secondary Operator (or student's name), review OS1016.05 Prerequisites and Precautions and the Service Water Cooling Tower Operation, Pre-Job Brief. Then transfer Service Water Train A from the ocean to the Cooling Tower per OS1016.05 section 4.3."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: Student will perform a Pre-Job Brief for this evolution. When student responds that his review of OS1016.05 Prerequisites and Precautions and the Service Water Cooling Tower Operation, Pre-Job Brief is complete, respond **"Prerequisites are complete. Please continue with the task."**

1. P Start time ___________ — When student is directed to continue with the task.

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2. OS1016.05, section 4.3, Transferring Only Train A Service Water System From the Ocean to the Cooling Tower

CUE: Inform student, **"Initial Cooling Tower level has been recorded on Form L, Cooling Tower flush NPDES tracking sheet."**

		Element/Step		Standard	SAT	UNSAT
P	1	Record initial cooling tower level on Form L, Cooling Tower Flush NPDES Tracking Sheet.				

CUE: When the student begins to perform pump prestart checks, provide cue, **"All local prestart checks are complete. Previous pump start was two days ago."**

		Element/Step		Standard	SAT	UNSAT
P	2	Perform pump pre-starts for SW-P-110A, Cooling Tower pump A, as determined by the US.	2	Performs control room pre-start checks for SW-P-110-A per ODI-5.	____	____
P	3	Verify SW-V-5, SW isolation to secondary loads is open.	3	Verifies SW-V-5 is open.	____	____
P	4	Verify SW-V-139, SW Cooling Tower Train A spray bypass recirculation is open	4	Verifies SW-V-139 is open.	____	____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step		STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
*P	5	Close SW-V-4, SW isolation to secondary loads.	5	Closes SW-V-4.	_____	_____
P	6	Check closed/Close SW-V-74, turbine building SW cross-connect to PAB.	6	Checks closed SW-V-74.	_____	_____

NOTE: If requested by student make a plant announcement, **"Starting Service Water pump 110A."**

*P	7	Start SW-P-110-A, Cooling Tower pump A.	7	Starts SW-P-110-A.	_____	_____
*P	8	Place the Train A standby SW pump control switch in Pull-To-Lock.	8	Places SW-P-41C in PTL.	_____	_____
*P	9	Shutdown the running Train A SW pump and place its control switch in Pull-To-Lock.	9	Stops SW-P-41A and places control switch in PTL.	_____	_____

NOTE: Time the flush. Record time when the student starts opening SW-V-54.

START Time __________

*P	10	Open SW-V-54, Cooling Tower pump A discharge isolation.	10	Opens SW-V-54.	_____	_____
P	11	When SW-V-54 indicates full open place SW-V-54 control switch in auto.	11	When SW-V-54 is full open places control switch in auto.	_____	_____

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step		STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
P	12	Verify SW-V-56, Cooling Tower Train A spray header test, auto closed.	12	Verify SW-V-56 auto closed.	_____	_____

CUE: After the student reads the step to manually control PCCW heat exchanger outlet temperature using CC-TK-2171 (Train A), provide cue, **"The Primary Operator is monitoring PCCW heat exchanger outlet temperature."**

P	13	If required, manually control PCCW heat exchanger outlet temperature using CC-TK-2171 (Train A)				
*P	14	Flush the Train A SW system to discharge transition structure for at least 103 seconds, then continue with next step.	14	Flushes to the ocean for at least 103 seconds prior to proceeding to the next step.	_____	_____

NOTE: Time the flush. Record time when the student starts opening SW-V-34.

End Time __________

Δ Time __________ **(≥103 seconds)**

*P	15	Open SW-V-34, SW Train A return to Cooling Tower.	15	Opens SW-V-34.	_____	_____
*P	16	Close SW-V-20, SW Train A to discharge structure.	16	Places SW-V-20 switch to close. Identifies that SW-V-20 does not close.	_____	_____

CUE: If the student dispatches the Primary NSO to close SW-V-20, then respond, **"This is the Primary NSO, I am at SW-V-20 and there appears to be a problem with the actuator. SW-V-20 cannot be repositioned."**

NOTE: STUDENT DECISION POINT

Student will recognize boundary valve issue. Student has the two following optional procedure paths:

1. OS1016.05, section 4.4, Transferring Train A Service Water System From the Cooling Tower to the Ocean per precaution 3.10 -OR-
2. OS1216.01, Degraded Ultimate Heat Sink per pre-job briefing sheet or OS1216.01 entry conditions

If student selects path 1, go to JPM step 3 (this page).
If student selects path 2, go to JPM step 4 (page 10).

3. Path 1: OS1016.05, section 4.4, Transferring Train A Service Water System From the Cooling Tower to the Ocean

		ELEMENT/STEP		STANDARD	SAT	UNSAT
P	1	CHECK SW Train A and SW Train B is aligned to the cooling tower, DO NOT PROCEED if this is the case.	1	Student recognizes only one train of SW is aligned to the cooling tower and proceeds to next step.	_____	_____

CUE: Inform student, **"Initial Cooling Tower level has been recorded on Form L, Cooling Tower flush NPDES tracking sheet."**

P	2	Record initial cooling tower level on Form L, Cooling Tower Flush NPDES Tracking Sheet.

CUE: Inform student, **"SW-V-44 is open and de-energized."**

P	3	If SW-V-44, SW isolation from the intake structure is closed, Perform the following: Open SW-V-44 and lock open its breaker.

CUE: US to student, **"Pre-starts will not be done at this time. Continue with the next step."**

P	4	Perform SW ocean pump pre-starts as determined by the US.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step		STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT

CUE: If the student asks about SW-V-20 position, then respond, **"SW-V-20 is stuck open. Continue with the next step."**

P	5	Open SW-V-20, SW train A to discharge structure.	5	Student recognizes that SW-V-20 is stuck open and proceeds.	_____	_____
*P	6	Close SW-V-34, SW train A return to cooling tower.	6	Closes SW-V-34.	_____	_____
*P	7	Simultaneously place and hold the control switch for SW-V-54, Cooling Tower Pump A Discharge Isolation, to throttle close, and the control switch for SW-V-56, Cooling Tower Train A Spray Header Test, to open until the valves reposition.	7	Simultaneously closes SW-V-54 and opens SW-V-56.	_____	_____
*P	8	Start the desired train A ocean SW pump.	8	Starts SW-P-41A OR SW-P-41C.	_____	_____
P	9	Check the selected SW pump discharge valve opens. • SW-V-2, SW-P-41-A discharge isolation OR • SW-V-22, SW-P-41-C discharge isolation.	9	Verifies SW-V-2 OR SW-V-22 opens.	_____	_____

NOTE: If student selected path 1, then the JPM is complete.

CUE: **"The JPM is complete."**

	10	Stop time __________ Evaluator calculates time to complete task		Time to complete task ≤30 minutes	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step		STANDARD * denotes a critical step	SAT	UNSAT
	11	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.			____	____

CUE: Provide copy of OS1216.01, Degraded Ultimate Heat Sink, to student.

4. Path 2: OS1216.01, Degraded Ultimate Heat Sink

D=Discuss P=Perform S=Simulate		ELEMENT/STEP		STANDARD	SAT	UNSAT
P	1	Determine Appropriate Response: IF affected SW train aligned to the cooling tower, THEN Go to Step 8.	1	Student goes to OS1216.01, Step 8.	____	____
	2	Check For Cooling Tower Failure:	2			
P	2a	Cooling tower pump discharge pressure >40 psig	2a	Student checks Cooling tower pump discharge pressure >40 psig.	____	____
P	2b	Check cooling tower boundary intact: • Check cooling tower boundary valves – CLOSED: o SW-V4 o SW-V20 o SW-V74 -AND- • Check cooling tower basin level – STABLE OR INCREASING	2a	Student identifies SW-V20 is NOT CLOSED and Cooling tower basin level is DECREASING. Student goes to RNO column.	____	____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step		STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
P	3	Manually or locally close boundary valve(s) for affected train. IF any boundary valve can NOT be closed OR cooling tower level is decreasing, THEN:	3	Student identifies SW-V20 cannot be closed and cooling tower basin level is decreasing.	_____	_____
*P	3a	Place the affected cooling tower pump in PULL TO LOCK within 10 minutes of boundary valve failure.	3a	Stops SW-P-110A and places control switch in PTL.	_____	_____

CUE: US to student, **"I will refer to OS1212.01. Continue with the next step."**

P	3b	Refer to OS1212.01, PCCW System Malfunction for Degraded Cooling while continuing with this procedure.				
P	3c	IF a suction source is AVAILABLE from intact intake tunnels, THEN transfer the affected train to the ocean: ATTACHMENT B, Transfer Train A Service Water to Ocean	3b	Student goes to Attachment B.	_____	_____
	4	ATTACHMENT B, Transfer Train A Service Water to Ocean				
P	4a	Reset TA signal, as necessary.	4a	Student may reset the TA or vocalize that it is not necessary. Either is acceptable.	_____	_____

CUE: If the student asks about SW-V-20 position, then respond, **"SW-V-20 is stuck open. Continue with the next step."**

P	4b	Open SW-V20, SW Train A to discharge structure.	4b	Student recognizes that SW-V-20 is stuck open and proceeds.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
*P	4c Close SW-V34, SW Train A return to cooling tower	4c Closes SW-V-34.	_____ _____
*P	4d Close SW-V54, Cooling tower pump discharge isolation.	4d Closes SW-V-54.	_____ _____
*P	4e Open SW-V56, Cooling tower spray header test.	4e Opens SW-V-56.	_____ _____
*P	4f Start one SW Ocean pump: SW-P-41A OR SW-P-41C.	4f Starts SW-P-41A OR SW-P-41C.	_____ _____

NOTE: If student selected path 2, then the JPM is complete.

CUE: **"The JPM is complete."**

	5 Stop time __________	Time to complete task ≤30 minutes	_____ _____
	Evaluator calculates time to complete task		
	6 Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____ _____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR CONTROL ROOM 'B' JPM

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Secondary Operator.

B. The following information is provided to you:

1. The plant is operating at 100% power.
2. On line maintenance needs to be done on the Service Water system Train A.
3. The Shift Manager requested that Service Water Train A be transferred to the Cooling Tower until the job is complete in approximately 12 hours.
4. Local pre-starts are complete on the "A" Cooling Tower pump.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1016.05, Service Water Cooling Tower Operation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. The US will provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Secondary Operator, **"Secondary Operator (or student's name), review OS1016.05 Prerequisites and Precautions and the Service Water Cooling Tower Operation, Pre-Job Brief. Then transfer Service Water Train A from the ocean to the Cooling Tower per OS1016.05 section 4.3."**

CONTROL ROOM JOB PERFORMANCE MEASURE 'C', Draft

POST LOCA PORV OPERATION

Student Name: ____________________ LMS #: __________

Evaluator Name: ____________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ____________________ DATE: __________

APPROVED BY: ____________________ DATE: __________

TRAINING SUPERVISOR

1. **Task Number and Description**

Position RO

SBK 0100400201 Operate The PORV/Block Valve To Control RCS Pressure

2. **Conditions:**

A. The reactor tripped from 100% due to a LOCA and Safety Injection has actuated.
B. All actions were completed in E-0 and E-1.
C. The crew is presently at step 11 in ES-1.2, Post LOCA Cooldown And Depressurization.
D. An RCS cooldown to cold shutdown is in progress.

3. **Standards:**

Refill the pressurizer to >30% [44% adverse] per ES-1.2, Post LOCA Cooldown And Depressurization.

4. **Student Materials:**

Copy of Tear Off Sheet.
Copy of ES-1.2, Post LOCA Cooldown And Depressurization Rev. 38.

5. **Limitations On Performance:**

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. **References:**

Procedures:
- ES-1.2, Post LOCA Cooldown And Depressurization.

Sys	KA	Description	Value RO/SRO
009	EA1.15	Ability to operate and monitor PORV and PORV block valve as they apply to a small break LOCA.	3.9/4.1
009	EA2.04	Ability to determine or interpret PZR level as they apply to a small break LOCA.	3.8/4.0

7. Setting:

Reset the simulator to IC #155 or any 100% IC which contains the following:

A. Initialize to an IC at 100% power.
B. Insert malfunction mfRC049D RCS Cold Leg 4 leak 0-175000gpm Final Value=1200.
C. Run the simulator and allow the reactor to trip and SI to actuate.
D. Complete E-0 and E-1 through step 12 for ES-1.2 transition.
E. Open EFW mini-flow valves and throttle EFW flow.
F. Reset SI.
G. Shut down and reset EDGs. Isolate SW to EDGs
H. Trip all RCPs.
I. Transition to ES-1.2 and perform steps 1-10. Ensure RHR pumps are secured.
J. Modify mfRC049D to 1000 gpm to restore subcooling to >40°F.
K. Place the simulator in FREEZE.

8. Safety Considerations:

None.

9. Approximate Completion Time:

10 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to depressurize the RCS to refill the pressurizer.

B. The following information is provided to you:

   1. The reactor tripped from 100% due to a LOCA and Safety Injection has actuated.
   2. All actions were completed in E-0 and E-1.
   3. The crew is presently at step 11 in ES-1.2, Post LOCA Cooldown And Depressurization.
   4. An RCS cooldown to cold shutdown is in progress.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using ES-1.2, Post LOCA Cooldown And Depressurization.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

Evaluator to Primary Operator, **"Primary Operator (or student's name), depressurize the RCS to refill the pressurizer using step 11 of ES-1.2."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

1. P Start time ____________ — Initiating cue read

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: Read the note prior to step 11 of ES-1.2.

		ELEMENT/STEP	STANDARD	SAT	UNSAT
*2.	P	Depressurize the RCS to refill the PZR:			
		a. PZR level less than 30% [44% adverse].	a. Verifies PZR level less than 30% [44% adverse].	_____	_____

NOTE: The student should recognize that the pressurizer spray valves cannot be used due to RCPs being secured and transition to the RNO. If the student opens the normal spray valve(s), then they should subsequently be closed and transition to the RNO for satisfactory completion of the JPM.

ELEMENT/STEP	STANDARD	SAT	UNSAT
b. Open normal PZR spray valve(s) to refill PZR.	b. Verifies normal spray is not available.	_____	_____
*b1) RNO step 11b. Use one PZR PORV to refill PZR.	*b1) Uses one PZR PORV to refill PZR. Opens one PZR PORV (with associated block valve open).	_____	_____
c. PZR level greater than 30% [44% adverse].	c. Verifies and reports that PZR level is not greater than 30% [44% adverse].	_____	_____

CUE: US (Instructor) provide the following cue, **"Monitor PZR level to see what the effects of depressurizing the RCS are on PZR level."**
PZR level should come on scale within a minute.
When PZR level is greater than 30% and the student reports that information, provide the following cue, **"Stop the depressurization."**

ELEMENT/STEP	STANDARD	SAT	UNSAT
*d. Stop the RCS depressurization: If PORV in use then close PZR PORV.	*d. Closes PZR PORV.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: "The JPM is complete."

3.	Stop time ________ Evaluator calculates time to complete task	Time to complete task ≤ 10 minutes	
4.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		____ ____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to depressurize the RCS to refill the pressurizer.

B. The following information is provided to you:

1. The reactor tripped from 100% due to a LOCA and Safety Injection has actuated.
2. All actions were completed in E-0 and E-1.
3. The crew is presently at step 11 in ES-1.2, Post LOCA Cooldown And Depressurization.
4. An RCS cooldown to cold shutdown is in progress.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using ES-1.2, Post LOCA Cooldown And Depressurization.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Evaluator to Primary Operator, **"Primary Operator (or student's name), depressurize the RCS to refill the pressurizer using step 11 of ES-1.2."**

CONTROL ROOM JOB PERFORMANCE MEASURE 'D', Draft

PLACE FAH IN FUEL HANDLING MODE

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________

TRAINING SUPERVISOR

1. **Task Number and Description**

Position RO

SBK 1100100101 Shift Ventilation Lineups Between Normal And FAH

2. **Conditions:**

A. The plant is at 100% power and all systems are normal.
B. Reactor Engineering and Westinghouse will be performing an inspection of the RCCA change out tool in the Fuel Storage Building.
C. Normal Fuel Storage Building ventilation is in service.

3. **Standards:**

Place FAH in the fuel handling mode per OS1023.63, Fuel Storage Building Ventilation System Operation.

4. **Student Materials:**

Copy of Tear Off Sheet.
Copy of OS1023.63, Fuel Storage Building Ventilation System Operation Rev.13.

5. **Limitations On Performance:**

Perform all steps. Verbalize all actions to the evaluator.
Even if requested, no Peer Checks will be provided during the JPM.

6. **References:**

Procedures:

- OS1023.63, Fuel Storage Building Ventilation System Operation.

Sys	KA	Description	Value RO/SRO
2.1	2.1.44	Knowledge of RO duties in the control room during fuel handling, such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.9/3.8

7. Setting:

Simulator:

A. Initialize the simulator to IC #155 OR 100% power IC OR any IC that does not interfere with FAH operations.
B. FAH is in the normal lineup (i.e. FAH-FN-124 running).

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. In response to activities about to occur in the Fuel Storage Building, the US has directed you to place FAH in the fuel handling mode.

B. The following information is provided to you:

   1. The plant is at 100% power and all systems are normal
   2. Reactor Engineering and Westinghouse will be performing an inspection of the RCCA change out tool in the Fuel Storage Building.
   3. Normal Fuel Storage Building ventilation is in service

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1023.63, Fuel Storage Building Ventilation System Operation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and

procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. The US will provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), place Train "A" Fuel Storage Building ventilation in the fuel handling mode in accordance with OS1023.63. All Prerequisites and Initial Conditions are complete."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: Student should review the Note prior to step 4.4.1 of OS1023.63

CUE: Provide the following cue concerning signs, when required, **"A sign has been hung on door F202 prohibiting the use of any fossil fueled equipment in the FSB.**

NOTE: Student should review the Note and Caution prior to step 4.3.1 of OS1023.63

2.	P	Locally place PAH-DP-1003, PAB/FSB balancing damper, to the fuel handling position.	Directs NSO to place PAH-DP-1003 to the fuel handling position.	_____	_____

CUE: NSO to Primary Operator, **"I copy, place PAH-DP-1003 in the fuel handling position."**

CUE: After completion of communication to place PAH-DP-1003 to the fuel handling position, NSO to Primary Operator,"**I have placed PAH-DP-1003 in the fuel handling position."**

*3.	P	Place the control switch for FAH-DP-14, FSB normal exhaust damper, to close. Exhaust fan FAH-FN-124 is interlocked with FAH-DP-14 and will stop when the damper reaches the full closed position.	Places the control switch for FAH-DP-14 to close. (Observes FAH-FN-124 stops when FAH-DP-14 is full closed)	_____	_____
*4.	P	Place the control switches for FAH-DP-13A and FAH-DP-13B, FSB supply dampers, to close.	Places the following control switches to close: • FAH-DP-13A • FAH-DP-13B.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
*5.	P	Place both Train A and Train B Fuel Storage Building ventilation mode control switches to fuel handling.	Places the following switches to fuel handling: • Train A mode switch • Train B mode switch.	_____	_____
6.	P	Verify FAH-DP-13A and FAH-DP-13B, FSB supply dampers indicate closed.	Verifies closed: • FAH-DP-13A • FAH-DP-13B	_____	_____
7.	P	Verify FAH-DP-14, FSB normal exhaust damper, is fully closed. If not full closed, the damper must be closed manually at the damper (FSB 64 ft elevation)	Verifies FAH-DP-14 is closed.	_____	_____

CUE: If asked, US to Primary Operator,"**Place Train A air cleaning unit in service."**

NOTE: Student should review Caution prior to step 4.4.6.1 of OS1023.63.

NOTE: Placing FAH-DP-366 to start will start FAH-FN-11A when FAH-DP-366 starts to open.

*8.	P	If fan FAH-FN-11A and its associated air cleaning unit, 41, are to be placed in service, perform the following:	Performs the following:		
		*a. Place the control switch for FAH-DP-366, FSB cleaning unit exhaust damper to start.	*a. Places the control switch for FAH-DP-366 to start.	_____	_____

NOTE: FAH-DP-13A will modulate to mid-position (20% open).

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
	*b. Place the control switch for FAH-DP-13A, FSB supply damper to open. The damper will open to a preset position to maintain FSB internal pressure at a negative value.	*b. Positions FAH-DP-13A control switch to open.	_____	_____
	*c. At MCB, place the FAH-F-41, cleaning unit heater, control switch to auto.	*c. Positions FAH-F-41, cleaning unit heater control switch to auto.	_____	_____

CUE: "The JPM is complete."

9.	Stop time __________	Time to complete task ≤ 20 minutes	_____	_____
	Evaluator calculates time to complete task			
10.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR CONTROL ROOM 'D' JPM

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. In response to activities about to occur in the Fuel Storage Building, the US has directed you to place FAH in the fuel handling mode.

B. The following information is provided to you:

1. The plant is at 100% power and all systems are normal
2. Reactor Engineering and Westinghouse will be performing an inspection of the RCCA change out tool in the Fuel Storage Building.
3. Normal Fuel Storage Building ventilation is in service

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1023.63, Fuel Storage Building Ventilation System Operation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. The US will provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), place Train "A" Fuel Storage Building ventilation in the fuel handling mode in accordance with OS1023.63. All Prerequisites and Initial Conditions are complete."**

CONTROL ROOM JOB PERFORMANCE MEASURE 'E', Draft

FAILED OPEN ASDV

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK 0390101501 OPERATE ASDV'S FROM MCB OR RSS

2. Conditions:

A. The plant is at 100% power and all systems are normal.

3. Standards:

Identify a failed open ASDV and restore the system per VAS D5214 ASDV A NOT FULL CLOSED or hardwire alarm MM-UA-53, A-7 ATMOS STM DUMP VALVE OPEN.

4. Student Materials:

Copy of Tear Off Sheet.

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- VAS D5214 ASDV A NOT FULL CLOSED
- Hardwire alarm MM-UA-53, A-7 ATMOS STM DUMP VALVE OPEN

Technical Specifications:

- 3.7.1.6 Atmospheric Relief Valves

Sys	KA	Description	Value RO/SRO
035	K6.02	Knowledge of the effect of a loss or malfunction on the following will have on the S/Gs: Secondary PORV	3.1/3.5

7. Setting:

Simulator:

Reset the simulator to IC #156 or any 100% IC:

A. Initialize the simulator to a 100% power IC.
B. Place the simulator in RUN.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Second Operator. An event will occur. You are expected to identify the event and respond per the appropriate procedure.

B. The following information is provided to you:

   1. The plant is at 100% power and all systems are normal.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using the appropriate abnormal procedure, OR following verbal direction from the US (instructor as US) reading from the procedure.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Secondary Operator, **"Secondary Operator (or student's name), when an event occurs, identify the event to the US."**

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

CUE: MS-PV-3001, 'A' SG Atmospheric Dump Valve fails open to a mid position:
SELECT: MF List
SELECT: Main Steam (Component)
SELECT: ctMSPK3001
SELECT: FAIL OUTPUT (AUTO)
SET VALUE: 15
SET RAMP: 15
SELECT: INSERT

*2.	P	Recognize and report that an ASDV has failed open.	Recognizes and reports that 'A' ASDV has failed open.	_____	_____

NOTE: If student requests 'Skill of the Operator' to close the ASDV, read the following CUE to student.

CUE: Because this JPM is an RO task, the instructor acting as the US, will cue the student **"Review the alarm response procedures and take the appropriate actions."**

NOTE: The remaining steps are performed using VAS D5214 ASDV A NOT FULL CLOSED or hardwire alarm response for MM-UA-53, A-7 ATMOS STM DUMP VALVE OPEN.

NOTE: Note prior to step 1.1 of VAS D5214 ASDV A NOT FULL CLOSED or hardwire alarm response for MM-UA-53, A 7 ATMOS STM DUMP VALVE OPEN should be read.

*3.	P	VERIFY SG pressures and ASDV controllers setpoints. NOTE: ASDV controllers are normally set for 1125 psig in auto.	Checks SG pressures are less than 1125 psig and ASDV controllers setpoints set at 1125 psig.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
4. P	ADJUST ASDV controllers and/or TRANSFER steam loads to condenser steam dumps as necessary.	Acknowledges step requires no actions.	_____	_____
5. P	If an ASDV has failed OPEN:	Verifies that an ASDV has failed OPEN:	_____	_____
	*1 PLACE affected ASDV control switch to close.	*1 Places the affected ASDV control switch to close and verifies that the ASDV closes. Reports ASDV closed to US.	_____	_____

CUE: If the student dispatches an NSO to the West Pipe Chase to locally isolate the 'A' ASDV respond, **"This is Primary NSO (or name) responding to the West Pipe Chase to locally isolate the 'A' ASDV."**

	2 Locally ISOLATE ASDV as necessary.	2 Dispatches an NSO to the West Pipe Chase to locally isolate the 'A' ASDV.	_____	_____
	*3 PLACE controller for failed ASDV in manual/minimum.	*3 Places controller for failed ASDV in manual/minimum.	_____	_____
6. P	Observes for proper ASDV response.	Informs US that the 'A' ASDV is closed.	_____	_____

CUE: "The JPM is complete."

7.	Stop time __________	Time to complete task ≤15 minutes	_____	_____
	Evaluator calculates time to complete task			
8.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Secondary Operator. An event will occur. You are expected to identify the event and respond per the appropriate procedure.

B. The following information is provided to you:

 1. The plant is at 100% power and all systems are normal.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using the appropriate abnormal procedure, OR following verbal direction from the US (instructor as US) reading from the procedure.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Secondary Operator, **"Secondary Operator (or student's name), when an event occurs, identify the event to the US."**

NEXTera ENERGY SEABROOK

CONTROL ROOM JOB PERFORMANCE MEASURE 'F', Draft

RAISE SI ACCUMULATOR PRESSURE

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. **Task Number and Description**

Position RO

SBK 0060100201 Monitor The Safety Injection System

2. **Conditions:**

A. The "A" Accumulator pressure has decreased to the low pressure alarm setpoint due to normal system leakage.
B. The Roving NSO is available at the nitrogen skid.

3. **Standards:**

Pressurize the "A" Accumulator to above the low pressure alarm, and within the limitations of Technical Specifications. (610 psig +10 psig/- 0 psig)

4. **Student Materials:**

Copy of Tear Off Sheet.
Copy of OS1005.05 Safety Injection System Operation Rev. 16 Pages 9-11 & 27-29.

5. **Limitations On Performance:**

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. **References:**

Procedures:
- OS1005.05 Safety Injection System Operation

Technical Specifications:
- 3.5.1.1 ECCS Accumulators – Hot Standby, Startup, and Power Operation

Drawings
- 1-SI-B20455 Safety Injection System

Sys	KA	Description	Value RO/SRO
006	A1.13	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Accumulator pressure.	3.5/3.7

7. Setting:

Reset the simulator to IC #156 or any 100% IC which contains the following:

A. Initialize to an IC at 100% power.
B. Vent the "A" Accumulator (using the vent valves), to approximately 590 psig, until UA-50 hardwire alarm Accum Press Hi/Lo and VAS alarm D4505 are in alarm.
C. Use "GD ACCUMS" on MPCS to view Accumulator level and pressure "A" points.
D. Freeze the simulator.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator and you are going to pressurize the "A" Accumulator to within limits of Tech. Specs. (610 psig +10 psig/- 0 psig). You may use MPCS Group Display "GD ACCUMS" to view Accumulator level and pressure "A" points or SVD A0414 for "A" Accumulator pressure.

B. The following information is provided to you:

   1. The "A" Accumulator pressure has decreased due to normal system leakage.
   2. All applicable prerequisites of OS1005.05 Safety Injection System Operation are complete.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1005.05 Safety Injection System Operation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), Pressurize the "A" Accumulator to 610 psig +10 psig / -0 psig."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2.	P	Verify a N_2 source is available from the N_2 truck or the N_2 bottle banks per ON1024.01 Startup and Shutdown of Nitrogen Gas System	Determines if a nitrogen source is available.	_____	_____

CUE: When the student attempts to determine if a nitrogen source is available, inform the student, **"Nitrogen is being supplied via a tube truck."**

*3.	P	Open the following valves			
		*a. NG-V-13, nitrogen to SI accumulator ORC isolation.	*a. Opens NG-V-13, nitrogen to SI accumulator ORC isolation.	_____	_____
		*b. NG-V-14, nitrogen to SI accumulator IRC isolation.	*b. Opens NG-V-14, nitrogen to SI accumulator IRC isolation.	_____	_____
*4.	P	Slowly opens NG-V-30, nitrogen inlet isolation to the accumulators.	Directs NSO to slowly open NG-V-30, nitrogen inlet isolation to the accumulators.	_____	_____

CUE: Simulator Operator when NSO is directed to open NG-V-30 then:
SELECT: RF List
SELECT: Nitrogen Gas
SELECT: rfNG003 NG-V30 Nitrogen to SI accumulators manual isolation
SELECT: Final Value=OPEN
SELECT: INSERT

Then report, **"NG-V-30 is open."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: If the student requests US direction, respond, **"Pressurize the "A" Accumulator to 610 psig +10 psig/ - 0 psig."**

Step		ELEMENT/STEP	STANDARD	SAT	UNSAT
*5.	P	Open the nitrogen header isolation valve for the desired accumulator. NG-V-17 Accumulator "A" nitrogen isolation.	Opens NG-V-17 Accumulator "A" nitrogen isolation.	_____	_____
*6.	P	When pressure reaches desired value, close NG-V-30, nitrogen inlet isolation to the accumulators.	When pressure reaches desired value, directs NSO to close NG-V-30, nitrogen inlet isolation to the accumulators.	_____	_____

CUE: Simulator operator monitor Accumulator pressure. Student may direct closing NG-V-30 prior to being in the band due to time required for field operator to close the valve. If this occurs, when NSO is directed to close NG-V-30 ensure Accumulator pressure is greater than 610 psig then:
SELECT: RF List
SELECT: Nitrogen Gas
SELECT: rfNG003 NG-V30 Nitrogen to SI accumulators manual isolation
SELECT: Final Value=CLOSED
SELECT: INSERT

Then report, **"NG-V-30 is closed."**

Step		ELEMENT/STEP	STANDARD	SAT	UNSAT
*7.	P	Check closed/close the following valves:			
		*a. NG-V-17 Accumulator "A" nitrogen isolation.	*a. Closes NG-V-17 Accumulator "A" nitrogen isolation.	_____	_____
		b. NG-V-19 Accumulator "B" nitrogen isolation.	b. Check closed NG-V-19 Accumulator "B" nitrogen isolation.	_____	_____
		c. NG-V-21 Accumulator "C" nitrogen isolation.	c. Check closed NG-V-21 Accumulator "C" nitrogen isolation.	_____	_____
		d. NG-V-23 Accumulator "D" nitrogen isolation.	d. Check closed NG-V-23 Accumulator "D" nitrogen isolation.	_____	_____

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT

"A" Accumulator final pressure ____________ psig at completion of task 610 psig +10 psig/ - 0 psig."

*8.	P	Close the following valves:			
		*a. NG-V-13, nitrogen to SI accumulator ORC isolation	*a. Closes NG-V-13, nitrogen to SI accumulator ORC isolation.	_____	_____
		*b. NG-V-14, nitrogen to SI accumulator IRC isolation.	*b. Closes NG-V-14, nitrogen to SI accumulator IRC isolation.	_____	_____

CUE: "The JPM is complete."

9.		Stop time __________	Time to complete task ≤ 15 minutes	_____	_____
		Evaluator calculates time to complete task			
10.		Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator and you are going to pressurize the "A" Accumulator to within limits of Tech. Specs. (610 psig +10 psig / -0 psig). You may use MPCS Group Display "GD ACCUMS" to view Accumulator level and pressure "A" points or SVD A0414 for "A" Accumulator pressure.

B. The following information is provided to you:

   1. The "A" Accumulator pressure has decreased due to normal system leakage.
   2. All applicable prerequisites of OS1005.05 Safety Injection System Operation are complete.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1005.05 Safety Injection System Operation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), Pressurize the "A" Accumulator to 610 psig +10 psig / -0 psig."**

NEXTera ENERGY SEABROOK

CONTROL ROOM JOB PERFORMANCE MEASURE 'G', Draft

ESTABLISH CHARGING AND LETDOWN (HCV-189/190 FAIL)

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK 0040104801 Establish Charging And Seal Injection Flow
SBK 0040104901 Establish Normal Letdown Flow

2. Conditions:

A. A manual Safety Injection was initiated due to a SG tube rupture.
B. The control room executed E-0 and transitioned to E-3.
C. The crew identified SG "C" as the ruptured SG.
D. The crew has completed E-3 up to and including step 21.
E. A Loss of Offsite Power occurred on the reactor trip.
F. Offsite power has been restored.
G. Bus 5 and 6 are powered by the 'A' and 'B' Emergency Diesel Generators.

3. Standards:

Establish normal charging and letdown in accordance with E-3, SG Tube Rupture.

4. Student Materials:

Copy of Tear-Off Sheet
Copy of E-3 SG Tube Rupture, Rev. 42

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:
- E-3, SG Tube Rupture
- Westinghouse Background Document, E-3.

Sys	KA	Description	Value RO/SRO
038	EK3.06	Knowledge of bases for actions contained in EOP for RCS water inventory balance.	4.2/4.5
038	EA1.09	Ability to operate and monitor PZR level/pressure indicators, gauges, and recorders.	3.2/3.3
038	EA1.29	Ability to operate and monitor CVCS tank indicators and water charging sources.	3.5/3.3

7. Setting:

Reset the simulator to IC #157 or any 100% IC which contains the following:

A. Initialize to any 100% IC and place the simulator in RUN.
B. Insert malfunction mfSG001C SG C DBL END Tube Rupture Hot Side (0 – 1150gpm) for a 425 gpm tube rupture on "C" SG.
C. When RDMS alarms due to the tube rupture manually trip the reactor and initiate a manual SI.
D. Execute E-0. Open EFW mini-flow valves and isolate EFW to "C" SG when level is adequate (E-0 OAS page).
E. Transition to E-3 and execute steps 1-21.
F. Using Panel Graphics insert override to close HCV-189 and HCV-190. Override both the potentiometer and meter for each valve.
G. Insert malfunction mfED038 loss of offsite power and allow Bus 5 and 6 to be powered by the 'A' and 'B' Emergency Diesel Generators.
H. Delete malfunction mfED038 loss of offsite power.
I. Stop CS-P-2-B and place in Standby.
J. FREEZE the simulator.

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to re-establish charging and letdown per E-3, SG Tube Rupture. The evaluator will act as the Unit Supervisor. The student will read and execute the procedure.

B. The following information is provided to you:

   1. A manual Safety Injection was initiated due to a SG tube rupture.
   2. The control room executed E-0 and transitioned to E-3.
   3. The crew identified SG "C" as the ruptured SG.
   4. The crew has completed E-3 up to and including step 21.
   5. A Loss of Offsite Power occurred on the reactor trip.
   6. Offsite power has been restored.
   7. Bus 5 and 6 are powered by the 'A' and 'B' Emergency Diesel Generators.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using E-3, SG Tube Rupture.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

Evaluator to Primary Operator, **"Primary Operator (or student's name), you will be establishing letdown in accordance with E-3. You will begin performance of E-3, starting at step 22."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: When student is ready to begin place the simulator in RUN. Student begins at step 22 of E-3.

1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

*2.	P	Restore normal charging path: • Open CS-V-142 • Open CS-V-143	Opens charging line isolation valves: • Open CS-V-142 • Open CS-V-143	_____	_____
*3.	P	Establish normal charging flow: *a. Isolate CCP to RCS Cold Legs: • Close SI-V-138 • Close SI-V-139	*a. Isolates CCP to RCS Cold Legs: • Close SI-V-138 • Close SI-V-139	_____	_____

NOTE: It is not necessary to establish exactly 60 gpm charging flow. The evaluator judges that the intent is met if enough flow is established to supply letdown regenerative cooling, and not too much flow established such that Pressurizer level is adversely affected.

		*b. Establish 60 gpm charging flow.	*b. Establishes adequate charging flow by adjusting CS-FCV-121.	_____	_____

CUE: If necessary, provide the following cue, US to PSO: **"6-10 gpm is the desired seal injection flow rate."**

		*c. Adjust seal injection flow as necessary using CS-HCV-182.	*c. Adjusts seal injection flow to 6-10 gpm using CS-HCV-182.	_____	_____

NOTE: The intent of the next step is met if the student is charging into the RCS via CS-FCV-121. It is a continuous action step. Control of charging flow is specifically addressed after letdown is established (step 30 of E-3).

4.	P	Control charging flow to maintain Pressurizer level.	Controls charging flow to maintain Pressurizer level.	_____	_____

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
5.	P	Verify ECCS flow not required: • RCS subcooling greater than 40°F • PZR level greater than 7%.	Verifies ECCS flow not required: • RCS subcooling greater than 40°F • PZR level greater than 7%.	_____	_____

CUE: US to PSO, **"Set the boric acid controller to provide the highest blended makeup concentration possible."**

6.	P	Check VCT makeup control system			
		a. Makeup set for greater than RCS boron concentration. .	a. Sets boric acid controller to maximum.	_____	_____
		b. Makeup set for automatic control.	b. Checks makeup in automatic and armed.	_____	_____

NOTE: The instructor (acting as the BOP) should maintain RCS temperature using steam dumps or ASDVs.

*7.	P	Check if letdown can be established:			
		a. Check PZR level greater than 30%.	a. Checks PZR level greater than 30%.	_____	_____
		b. Establish letdown:			
		*b1) Open CC-V-341 letdown HX cooling water outlet.	*b1) Opens CC-V-341 letdown HX cooling water outlet.	_____	_____
		b2) Close letdown flow control valves: • CS-HCV-189 • CS-HCV-190.	b2) Closes letdown flow control valves: • CS-HCV-189 • CS-HCV-190.	_____	_____
		*b3) Open letdown line Phase A isolation valves:	*b3) Open letdown line Phase A isolation valves:		
		* • CS-V-149	* • CS-V-149	_____	_____
		* • CS-V-150.	* • CS-V-150.	_____	_____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
	*b4) Open letdown line isolation valves: a) RC-V-81	*b4) Opens letdown line isolation valves: a) RC-V-81	_____	_____
	* b) RC-LCV-459	* b) RC-LCV-459	_____	_____
	* c) RC-LCV460	* c) RC-LCV-460	_____	_____
	* d) CS-V-145	* d) CS-V-145	_____	_____

CUE: US to PSO, **"Take manual control of CS-PK-131 as necessary to establish flow in the letdown line."**

NOTE: The student may place CS-PCV-131 in manual and open the valve about 20%.

	b5) Throttle open letdown flow control valve.	b5) • Attempts to throttle open CS-HCV-189. Determines that valve will not open. • Attempts to throttle open CS-HCV-190. Determines that valve will not open. • Transitions to step 27b RNO.	_____	_____
	*b6) RNO: Establish Excess Letdown per ATTACHMENT E.	*b6) Determines Excess Letdown per ATTACHMENT E is required.	_____	_____

CUE: "The JPM is complete."

8.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	_____	_____
9.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to re-establish charging and letdown per E-3, SG Tube Rupture. The evaluator will act as the Unit Supervisor. The student will read and execute the procedure.

B. The following information is provided to you:

1. A manual Safety Injection was initiated due to a SG tube rupture.
2. The control room executed E-0 and transitioned to E-3.
3. The crew identified SG "C" as the ruptured SG.
4. The crew has completed E-3 up to and including step 21.
5. A Loss of Offsite Power occurred on the reactor trip.
6. Offsite power has been restored.
7. Bus 5 and 6 are powered by the 'A' and 'B' Emergency Diesel Generators.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using E-3, SG Tube Rupture.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Evaluator to Primary Operator, **"Primary Operator (or student's name), you will be establishing letdown in accordance with E-3. You will begin performance of E-3, starting at step 22."**

CONTROL ROOM JOB PERFORMANCE MEASURE 'H', Draft

OFFSITE POWER RESTORATION

Student Name: ____________________ LMS #: __________

Evaluator Name: ____________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ____________________ DATE: __________

APPROVED BY: ____________________ DATE: __________
TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK 0640402501 Restore Offsite Power to Bus E5/E6.

2. Conditions:

A. The A manual Safety Injection was initiated due to a SG tube rupture.
B. The control room executed E-0 and transitioned to E-3.
C. The crew identified SG "C" as the ruptured SG.
D. The crew has completed E-3 up to and including step 21.
E. A Loss of Offsite Power occurred on the reactor trip.
F. Offsite power has been restored.
G. Bus 5 and 6 are powered by the 'A' and 'B' Emergency Diesel Generators.

3. Standards:

Student will restore offsite power to bus 6 using E-3, SG Tube Rupture, attachment H.

4. Student Materials:

Copy of Tear-Off Sheet
Copy of Attachment H of E-3, Offsite Power Restoration to Bus E5 and E6, Rev. 42.

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:
- E-3, SG Tube Rupture, attachment H

Sys	KA	Description	Value RO/SRO
062	K1.04	Knowledge of offsite power sources.	3.7/4.2
062	A4.01	Ability to manually operate and/or monitor breakers.	3.3/3.1
062	A4.07	Synchronizing and paralleling of different AC supplies.	3.1/3.1

7. Setting:

Reset the simulator to IC #157 or any 100% IC which contains the following:

A. Initialize to any 100% IC and place the simulator in RUN.
B. Insert malfunction mfSG001C SG C DBL END Tube Rupture Hot Side (0 – 1150gpm) for a 425 gpm tube rupture on "C" SG.
C. When RDMS alarms due to the tube rupture manually trip the reactor and initiate a manual SI.
D. Execute E-0. Open EFW mini-flow valves and isolate EFW to "C" SG when level is adequate (E-0, OAS page).
E. Transition to E-3 and execute steps 1-21.
F. Using Panel Graphics insert override to close HCV-189 and HCV-190. Override both the potentiometer and meter for each valve.
G. Insert malfunction mfED038 loss of offsite power and allow Bus 5 and 6 to be powered by the 'A' and 'B' Emergency Diesel Generators.
H. Delete malfunction mfED038, loss of offsite power.
I. Stop CS-P-2-B and place in Standby.
J. FREEZE the simulator.

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Secondary Operator. You will restore offsite power to Bus 6 using E-3, SG Tube Rupture, attachment H.

B. The following information is provided to you:
   1. The A manual Safety Injection was initiated due to a SG tube rupture.
   2. The control room executed E-0 and transitioned to E-3.
   3. The crew identified SG "C" as the ruptured SG.
   4. The crew has completed E-3 up to and including step 21.
   5. A Loss of Offsite Power occurred on the reactor trip.
   6. Offsite power has been restored.
   7. Bus 5 and 6 are powered by the 'A' and 'B' Emergency Diesel Generators.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using E-3, SG Tube Rupture, attachment H.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Secondary Operator, **"Secondary Operator (or student's name), restore offsite power to Bus E6 using E-3, SG Tube Rupture, attachment H.**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

1. P Start time ____________ — Initiating cue read

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

CUE: US to student: **"The System Dispatcher reports grid conditions are now stable, and are expected to remain stable".**

2. IF AC emergency bus is powered by emergency diesels 1A/1B, THEN restore offsite power as follows:

		Element/Step		Standard	SAT	UNSAT
*P	a	Raise DG frequency to 60.2 to 60.4 Hz.	a	Raises DG frequency to 60.2 to 60.4 Hz.	_____	_____
*P	b	Place DG sync. selector switch in the RAT or UAT position.	b	Places DG sync. selector switch in the RAT or UAT position.	_____	_____
*P	c	Reset RMO.	c	Resets RMO.	_____	_____
*P	d	Adjust DG voltage to match INCOMING VOLTS with RUNNING VOLTS.	d	Adjusts DG voltage to match INCOMING VOLTS with RUNNING VOLTS.	_____	_____
*P	e	Adjust DG frequency so that the sync. meter is going slowly in the fast direction.	e	Adjusts DG frequency so that the sync. meter is going slowly in the fast direction.	_____	_____
*P	f	Close the RAT or UAT breaker when synchronized.	f	Closes the RAT or UAT breaker when synchronized. (sync. meter approximately 12 o'clock position)	_____	_____
*P	g	Place the sync. selector switch in OFF.	g	Places the sync. selector switch in OFF.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: The evaluator should observe that the operator maintains control over the generator VARs while unloading. Due to simulator bus voltage settings, it is expected that leading VAR loading will initially be observed. Until this issue can be corrected, the following cue must be stated to the student:

CUE: "Due to simulator bus voltage settings, it is expected that you will initially see leading VARs after paralleling. The response of KVARS to DG voltage adjustments will be reversed. Adjust DG KVARS to 1000 lagging at this time. This adjustment is not part of the evaluation."

CUE: Inform the student: "For the purposes of this JPM, the 10 minute unloading period can be compressed."

			SAT	UNSAT
	h Shutdown DG by performing the following:	h Shuts down DG by performing the following:	_____	_____
*P	h1 Over a 10 minute period lower KVARS to less than 200 lagging and lower load to 75 to 125 KW.	h1 Over a 10 minute period, lowers KVARS to less than 200 lagging and lower load to 75 to 125 KW.	_____	_____
*P	h2 Open DG breaker.	h2 Opens DG breaker.	_____	_____
*P	h3 Adjust DG voltage to 4160 volts.	h3 Adjusts DG voltage to 4160 volts.	_____	_____

CUE: When the above step is completed, inform the student: "For the purpose of this JPM, ten minutes have elapsed and the DG is cooled sufficiently to shutdown the engine."

			SAT	UNSAT
*P	h4 After running DG unloaded for 10 minutes to cool the engine, shutdown the diesel by depressing both emergency stop buttons simultaneously.	h4 Runs DG unloaded for 10, then shuts down the diesel by depressing both emergency stop buttons simultaneously.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: When the above step is completed and DG rpm is zero, inform the student: "For the purpose of this JPM, two minutes have elapsed and the DG has stopped rolling."

*P	h5 After waiting two minutes to allow time for diesel to stop, reset the DG.	h5 Resets the DG.	_____	_____
*P	h6 Close SW-V-16 for DG A, or SW-V-18 for DG B.	h6 Closes SW-V-18 for DG B.	_____	_____

CUE: "The JPM is complete."

3.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤20 minutes	_____	_____
4.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions to the Student:

Student:
1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Secondary Operator. You will restore offsite power to Bus 6 using E-3, SG Tube Rupture, attachment H.

B. The following information is provided to you:

1. The A manual Safety Injection was initiated due to a SG tube rupture.
2. The control room executed E-0 and transitioned to E-3.
3. The crew identified SG "C" as the ruptured SG.
4. The crew has completed E-3 up to and including step 21.
5. A Loss of Offsite Power occurred on the reactor trip.
6. Offsite power has been restored.
7. Bus 5 and 6 are powered by the 'A' and 'B' Emergency Diesel Generators.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using E-3, SG Tube Rupture, attachment H.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Secondary Operator, **"Secondary Operator (or student's name), restore offsite power to Bus E6 using E-3, SG Tube Rupture, attachment H.**

IN-PLANT JOB PERFORMANCE MEASURE 'A', Draft

DC START OF ELGAR UPS

Student Name: ______________________ LMS #: ____________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: ____________

APPROVED BY: ______________________ DATE: ____________
TRAINING SUPERVISOR

1. Task Number and Description

Position NSO

SBK 0620100304 Place In/Remove From Service A Static Inverter

2. Conditions:

A. The plant is in mode 5.
B. UPS EDE-I-1E(F) was shutdown during the previous shift to support an inspection performed by Engineering Support Staff. UPS 1-EDE-I-1E(F) was shutdown using OS1047.01, Vital Inverter Operation.
C. PP-1E(F) was transferred to its maintenance supply per OS1047.02, Transferring Power Supplies To 120 VAC Vital Instrument Buses prior to inverter shutdown.
D. On the other train PP-1F(E) is energized from its inverter connected to the respective DC bus.

3. Standards:

Simulate restart of UPS-1-EDE-I-1E(F).

4. Student Materials:

Copy of Tear Off Sheet.
Copy of OS1047.01, Vital Inverter Operation Rev 14
Operator Aid 90-0019 Inverter 1E, PP-1E Power Supplies
Operator Aid 90-0020 Inverter 1F, PP-1F Power Supplies

5. Limitations On Performance:

Simulate all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- OS1047.01, Vital Inverter Operation
- OS1047.02, Transferring Power Supplies To 120 VAC Vital Instrument Buses

Technical Specifications:

- 3.8.3.1 On Site Power Distribution – Operating
- 3.8.3.2 On Site Power Distribution – Shutdown

Drawings:

- Operator Aid 90-0019 Inverter 1E, PP-1E Power Supplies
- Operator Aid 90-0020 Inverter 1F, PP-1F Power Supplies

Sys	KA	Description	Value RO/SRO
062	K4.10	Knowledge of AC distribution system design features and/or interlocks which provide for uninterruptible AC power sources.	3.1/3.5
2.1	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of operation.	3.9/4.0

7. Setting:

Plant. Essential Switchgear Room.

8. Safety Considerations:

Energized electrical equipment.

9. Approximate Completion Time:

25 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Secondary NSO. You are going to simulate restart of UPS-1-EDE-I-1E(F).

B. The following information is provided to you:

1. The plant is in mode 5.
2. UPS EDE-I-1E(F) was shutdown during the previous shift to support an inspection performed by Engineering Support Staff. UPS 1-EDE-I-1E(F) was shutdown using OS1047.01, Vital Inverter Operation.

3. Vital PP-1E(F) was transferred to its maintenance supply per OS1047.02, Transferring Power Supplies To 120 VAC Vital Instrument Buses prior to inverter shutdown.
4. On the other train PP-1F(E) is energized from its inverter connected to the respective DC bus.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1047.01, Vital Inverter Operation.

E. To perform the task successfully, you must simulate all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Secondary NSO, **"Secondary NSO (or student's name), simulate restarting UPS-1-EDE-I-1E(F) using OS1047.01, Vital Inverter Operation, section 4.11 (4.12). All of the procedure prerequisites are complete."**

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: When student demonstrates the ability to obtain a controlled copy of OS1047.01, Vital Inverter Operation provide the student with OS1047.01, Vital Inverter Operation.

1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2.	S	Verify reverse transfer light on EDE-CP-1E(F), static transfer switch, is energized.	Simulates verifying reverse transfer light on EDE-CP-1E(F), static transfer switch, is energized.	_____	_____

CUE: When student simulates verifying light is energized, evaluator to student, **"The reverse transfer light is illuminated."**

*3.	S	Close the following breakers to UPS 1-EDE-I-1E(F):			

CUE: When student locates UPS-1E(F) AC supply at MCC-512(612) node DD3(DD5), evaluator to student, **"The AC supply breaker to the inverter indicates open."**

			*a. Simulates closing UPS-1E(F) AC supply at MCC-512(612) node DD3(DD5).	_____	_____

CUE: When student simulates closing UPS-1E(F) AC supply at MCC-512 (612) node DD3(DD5), evaluator to student, **"The breaker closes."**

CUE: When student locates UPS-1E(F) DC supply at DC bus 11A(B) node DM7(DN0), evaluator to student, **"The DC supply breaker to the inverter indicates open."**

			*b. Simulates closing UPS-1E(F) DC supply at DC bus 11A(B) node DM7(DN0).	_____	_____

CUE: When student simulates closing UPS-1E(F) DC supply at DC bus 11A(B) node DM7(DN0), evaluator to student, **"The breaker closes."**

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: Student should review caution prior to step 4.11.3(4.12.3). If student elects not to perform step 4.11.3(4.12.3), then next step is not required. Inverter can be placed in service without pre-charge but it is the preferred method.

CUE: If student asks if pre-charge is desired, evaluator to student,**"Pre-charge inverter 1-EDE-I-1E(F)."**

4. S Pre-charge inverter 1-EDE-I-1E(F):

a. Simulates depressing Pre-charge pushbutton. _____ _____

CUE: (If performed) When student simulates depressing Pre-charge pushbutton, evaluator to student, **"The Pre-charge pushbutton has been depressed."**

b. Waits one minute to allow DC bus capacitor to charge.

CUE: After student recognizes time requirement, evaluator to student, **"One minute has elapsed."**

*5. S Close AC input breaker (100 amp) to start UPS as follows:

*a. Simulates closing AC input breaker (100 amp) to start UPS. _____ _____

CUE: When student simulates closing AC input breaker (100 amp), evaluator to student, **"The breaker closes."**

NOTE: When the AC input breaker is shut, the rectifier and inverter sections begin startup. This JPM sets up conditions described in the note prior to step 4.11.5(4.12.5). Normally when the AC input breaker is shut, output voltage and frequency will rise. In the JPM, output voltage and frequency rise momentarily and return to the low peg. The UPS will again try to restart. Voltage and frequency rise and then fall to the low peg a second time. The UPS will "lock out" when this occurs

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
		b. Checks output voltage and frequency	_____ _____

CUE: When student checks output voltage and frequency, evaluator to student, **"Output voltage and frequency rise toward normal, and then fall off. They rise again a second time and fall off to the low peg. The following alarms are lit. at the UPS:**

- **DC INPUTOVERVOLTAGE**
- **DC INPUT BREAKER OPEN**
- **INV OUTPUT UNDERVOLTAGE**
- **FREQUENCY OUT OF LIMITS."**

NOTE: Student should review note prior to step 4.11.5(4.12.5).

6.	S	Recognize that inverter is "locked out."	Recognizes that inverter is "locked out."	_____ _____

CUE: When student determines that UPS has a "lock out" condition and section 4.13(4.14) must be used to restart the UPS, acknowledge and respond as appropriate (either as evaluator or US),**"Continue with restart of the UPS."**

*7.	S	Check open/open the following breakers on 1-EDE-I-1E(F):		
			*a. Simulates checking open/opening UPS-1E(F) AC input breaker (100 amp).	_____ _____

CUE: When student simulates opening UPS-1E(F) AC input breaker (100 amp), evaluator to student, **"The AC input breaker is open."**

			b. Simulates checking open UPS-1E(F) battery input breaker (400 amp).	_____ _____

CUE: When student simulates checking open UPS-1E(F) battery input breaker (400 amp), evaluator to student, **"The battery input breaker is open."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
8.	S	Ensure UPS-1E(F) DC supply breaker on bus 11A(B) node DM7(DN0) is closed.	Simulates ensuring UPS-1E(F) DC supply breaker on bus 11A(B) node DM7(DN0) is closed.	_____	_____

CUE: When student simulates ensuring UPS-1E(F) DC supply breaker on bus 11A(B) node DM7(DN0) is closed, evaluator to student, **"The breaker is closed."**

*9.	S	Pre-charge inverter 1-EDE-I-1E(F):			
			*a. Simulates depressing Pre-charge pushbutton.	_____	_____

CUE: When student simulates depressing Pre-charge pushbutton, evaluator to student, **"The Pre-charge pushbutton has been depressed."**

			b. Simulates verifying pre-charge LED is energized.	_____	_____

CUE: When student simulates verifying pre-charge LED is energized, evaluator to student, **"The Pre-charge LED is illuminated."**

			*c. Waits one minute to allow DC bus capacitor to charge.	_____	_____

CUE: After student recognizes time requirement, evaluator to student, **"One minute has elapsed."**

*10.	S	Close the battery input breaker (400 amp).	Simulates closing the battery input breaker (400 amp).	_____	_____

CUE: When student simulates closing UPS-1E(F) battery input breaker (400 amp), evaluator to student, **"The battery input breaker is closed."**

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
11.	S	Check UPS output voltage and frequency.	Simulates checking UPS output voltage and frequency.	_____	_____

CUE: When student simulates checking UPS output voltage and frequency, evaluator to student, **"Output is 120 volts and 60 Hz."**

12.	S	Verify LEDS are energized for the following: • AC INPUT BKR OPEN • INV FED FROM BATT • FREQ OUT OF LIMITS	Simulates verifying LEDS are energized for the following: • AC INPUT BKR OPEN • INV FED FROM BATT • FREQ OUT OF LIMITS	_____	_____

CUE: When student simulates verifying LEDS are energized, evaluator to student,**"LEDS are energized."**

*13.	S	Close the UPS AC input breaker (100 amp).	Simulates closing the UPS AC input breaker (100 amp).	_____	_____

CUE: When student simulates closing UPS AC input breaker (100 amp), evaluator to student, **"The breaker is closed."**

14.	S	Depress the alarm reset pushbutton and verify no alarm LEDs energized.	Simulates depressing the alarm reset pushbutton and verifying that no alarm LEDs are lit.	_____	_____

CUE: When student simulates depressing the alarm reset pushbutton and verifying that no alarm LEDs are lit, evaluator to student, **"All alarms are clear."**

*15.	S	Close the AC output breaker (400 amp).	Simulates closing the AC output breaker (400 amp).	_____	_____

CUE: When student simulates closing UPS AC output breaker (400 amp), evaluator to student, **"The breaker is closed."**

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT

CUE: "The JPM is complete."

16.	Stop time __________	Time to complete task ≤ 25 minutes	_____	_____
	Evaluator calculates time to complete task			
17.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Secondary NSO. You are going to simulate restart of UPS-1-EDE-I-1E(F).

B. The following information is provided to you:

1. The plant is in mode 5.
2. UPS EDE-I-1E(F) was shutdown during the previous shift to support an inspection performed by Engineering Support Staff. UPS 1-EDE-I-1E(F) was shutdown using OS1047.01, Vital Inverter Operation.
3. Vital PP-1E(F) was transferred to its maintenance supply per OS1047.02, Transferring Power Supplies To 120 VAC Vital Instrument Buses prior to inverter shutdown.
4. On the other train PP-1F(E) is energized from its inverter connected to the respective DC bus.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1047.01, Vital Inverter Operation.

E. To perform the task successfully, you must simulate all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Secondary NSO, **"Secondary NSO (or student's name), simulate restarting UPS-1-EDE-I-1E(F) using OS1047.01, Vital Inverter Operation, section 4.11 (4.12). All of the procedure prerequisites are complete."**

IN-PLANT JOB PERFORMANCE MEASURE 'B', Draft

LOCALLY CLOSE AN MSIV

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________

TRAINING SUPERVISOR

1. **Task Number and Description**

Position NSO

SBK 0400100504 Locally close an MSIV

2. **Conditions:**

A. The plant has tripped from 100% power.
B. SG B (C) pressure is decreasing in an uncontrolled manner and has been identified as faulted.
C. The US has transitioned from E-0 to E-2 step 1.
D. SG B (C) MSIV is open.

3. **Standards:**

Simulate locally closing the MSIV in accordance with OS 1090.01 Manual Operation of Remote Operated Valves.

4. **Student Materials:**

Copy of Tear Off Sheet.
Copy of OS1090.01, Manual Operation of Remote Operated Valves, Rev 15 Precautions (pages 5-9) and section 4.7 (pages 22-29).

5. **Limitations On Performance:**

Simulate all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. **References:**

Procedures:

- OS 1090.01 Manual Operation of Remote Operated Valves
- E-2 Faulted S/G Isolation.

Sys	KA	Description	Value RO/SRO
2.4	2.4.35	Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.	3.8/4.0

7. Setting:

Plant. East Pipe Chase.

8. Safety Considerations:

Pipe chases safety requirements as posted for noise and steam exposure.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Roving NSO. You are going to simulate locally closing an MSIV.

B. The following information is provided to you:

1. The plant has tripped from 100%power.
2. SG B (C) pressure is decreasing in an uncontrolled manner and has been identified as faulted.
3. The US has transitioned from E-0 to E-2 step 1.
4. SG B (C) MSIV is open.

C. You may request a peer check of your actions while performing the task.

D. Simulate the task using OS 1090.01 Manual Operation of Remote Operated Valves.

E. To perform the task successfully, you must simulate all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Roving NSO, **"Roving NSO (or student's name), using OS 1090.01 Manual Operation of Remote Operated Valves go to the East pipe chase and locally close MS-V-88 the B MSIV (or MS-V-90 the C MSIV)."**

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: When student demonstrates the ability to obtain a controlled copy of OS1090.01 Manual Operation of Remote Operated Valves provide the student with the required portions of OS1090.01 Manual Operation of Remote Operated Valves.

1. P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: Valve numbers for MS-V-88 are given. Refer to Attachment A for MS-V-90 valve numbers.

			SAT	UNSAT
2. S	Close the air isolation valves (located on MSIV):			
	a. Close MS-V-88-V-4C B MSIV IA isolation	a. Close MS-V-88-V-4C B MSIV IA isolation	_____	_____

CUE: When the student simulates CW motion to close the valve, evaluator to student, **"The valve is closed."**

			SAT	UNSAT
	b. Close MS-V-88-V-4D B MSIV IA isolation	b. Close MS-V-88-V-4D B MSIV IA isolation	_____	_____

CUE: When the student simulates CW motion to close the valve, evaluator to student, **"The valve is closed."**

NOTE: Student should review the caution and note prior to step 4.7.2.2 (4.7.3.2 for MS-V-90).

NOTE: The MSIV shuts when one solenoid is overridden, but the procedure and local operator aid has the operator override both solenoids.

NOTE: Local operator aid does not reflect recent procedure change. Noun names on tags do not match procedure noun names.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
*3. S	Manually open MS-FY-89A-2 main dump pilot solenoid valve:			
	a. Remove threaded metal cap covering override assembly	a. Removes threaded metal cap covering override assembly	_____	_____

CUE: When student simulates CCW motion to remove the cap, evaluator to student, **"The metal cap has been removed."**

	*b. Using ratchet wrench turn the manual override hex nut clockwise until the hydraulic fluid is bled off.	*b. Using ratchet wrench turns the manual override hex nut clockwise until the hydraulic fluid is bled off.	_____	_____

CUE: When the student simulates CW motion to bleed off the hydraulic fluid, evaluator to student, **"The hydraulic fluid is bleeding off. The MSIV is closing."**

	c. Reinstall threaded metal cap covering the override assembly	c. Reinstalls threaded metal cap covering the override assembly	_____	_____

CUE: When the student simulates reinstalling the metal cap, evaluator to student, **"The metal cap has been reinstalled."**

*4. S	Manually open MS-FY-89B-2 main dump pilot solenoid valve:			
	a. Remove threaded metal cap covering override assembly	a. Removes threaded metal cap covering override assembly	_____	_____

CUE: When student simulates CCW motion to remove the cap, evaluator to student, **"The metal cap has been removed."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
	*b. Using ratchet wrench turn the manual override hex nut screw clockwise until the hydraulic fluid is bled off.	*b. Using ratchet wrench turns the manual override hex nut clockwise until the hydraulic fluid is bled off.	_____	_____

CUE: When the student simulates CW motion to bleed off the hydraulic fluid, evaluator to student, **"The hydraulic fluid has bled off. The MSIV is closed."**

	c. Reinstall threaded metal cap covering the override assembly	c. Reinstalls threaded metal cap covering the override assembly	_____	_____

CUE: When the student simulates reinstalling the metal cap, evaluator to student, **"The metal cap has been reinstalled."**

5. S	Close MSIV hydraulic supply isolation valve	Simulates closing MSIV hydraulic supply isolation valve MS-V-435	_____	_____

CUE: When student correctly simulates closing MS-V-435, evaluator to student, **"MS-V-435 is closed."**

NOTE: If the student states that the MSIV hydraulic air motor should start, the hydraulic supply isolation valve was just shut, therefore, the air motor should not start.

CUE: **"The JPM is complete."**

6.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	_____	_____
7.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

IN-PLANT 'B' JPM ATTACHMENT A

MANUAL MSIV VALVES

MSIV	HYDRAULIC ISOLATION	MAIN DUMP PILOT SOL 1	MAIN DUMP PILOT SOL 2	IA ISOLATIONS
B	MS-V-435	MS-FY-89A-2	MS-FY-89B-2	MS-V-88-V4C,V4D
C	MS-V-434	MS-FY-89A-3	MS-FY-89B-3	MS-V-90-V4C,V4D

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Roving NSO. You are going to simulate locally closing an MSIV.

B. The following information is provided to you:

1. The plant has tripped from 100%power.
2. SG B (C) pressure is decreasing in an uncontrolled manner and has been identified as faulted.
3. The US has transitioned from E-0 to E-2 step 1.
4. SG B (C) MSIV is open.

C. You may request a peer check of your actions while performing the task.

D. Simulate the task using OS 1090.01 Manual Operation of Remote Operated Valves.

E. To perform the task successfully, you must simulate all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Roving NSO, **"Roving NSO (or student's name), using OS 1090.01 Manual Operation of Remote Operated Valves go to the East pipe chase and locally close MS-V-88 the B MSIV (or MS-V-90 the C MSIV)."**

NEXTera ENERGY
SEABROOK

IN-PLANT JOB PERFORMANCE MEASURE 'C', Draft

ALIGN ALTERNATE (DEMIN WATER) COOLING TO CCP LUBE OIL COOLER

Student Name: ______________________ LMS #: ____________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: ____________

APPROVED BY: ______________________ DATE: ____________
TRAINING SUPERVISOR

1. Task Number and Description

Position NSO

SBK 0040160004 Align/Remove Alternate Cooling To Charging pump Lube Oil Coolers

2. Conditions:

A. Plant is in Mode 4.
B. CS-P-2A is not available.
C. Train B PCCW has been lost.
D. The US has entered OS1212.01, PCCW System Malfunction.

3. Standards:

Simulate manually aligning alternate cooling to CS-P-2B per OS1002.02, Operation Of Letdown, Charging, and Seal Injection.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of OS1002.02, Operation Of Letdown, Charging, and Seal Injection.
Rev 38.

5. Limitations On Performance:

Simulate all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- OS1212.01, PCCW System Malfunction.
- OS1002.02, Operation Of Letdown, Charging, and Seal Injection

Sys	KA	Description	Value RO/SRO
008	A2.01	Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of PCCW pump.	3.3/3.6

7. Setting:

Plant. PAB 25 ft and PAB 7 ft.

8. Safety Considerations:

Health Physics postings and ALARA.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary NSO. You are going to simulate locally aligning Demin water (DW) as alternate cooling to CS-P-2B lube oil cooler.

B. The following information is provided to you:

1. Plant is in Mode 4.
2. CS-P-2A is not available.
3. Train B PCCW has been lost.
4. The US has entered OS1212.01, PCCW System Malfunction.
5. OS1212.01 Attachment A Shift Charging Pump/Align Cooling step 1 RNO instructs crew to align alternate cooling to charging pump lube oil cooler per OS1002.02, Operation Of Letdown, Charging, and Seal Injection.
6. The Roving NSO and a Fire Fighter have been dispatched to connect the drain hose from the Charging Pump lube oil coolers outlet to a storm drain (OS1002.02 step 4.21.2).

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1002.02, Operation Of Letdown, Charging, and Seal Injection.

E. To perform the task successfully, you must simulate all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Primary NSO, **"Primary NSO (or student's name), simulate aligning Demin water as alternate cooling to CS-P-2B lube oil cooler using OS1002.02 section 4.21. Inform the control room as soon as cooling flow has been established."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: When student demonstrates the ability to obtain a controlled copy OS1002.02, Operation Of Letdown, Charging, and Seal Injection provide the student with the required portions OS1002.02, Operation Of Letdown, Charging, and Seal Injection.

1.	P	Start time ____________	Initiating cue read	

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: Student should review CAUTION prior to step 4.21.1.

2.	S	Notify Chemistry to issue a Non-Rad release permit.	Simulates informing control room to have Chemistry issue a Non-Rad release permit.	_____ _____

CUE: When student simulates informing control room, US to NSO, **"Chemistry has generated the Non-Rad release permit and it is in the control room."**

3.	S	Connect a drain hose from Charging pump lube oil cooler outlet to the storm drain.	Simulates connecting a drain hose from Charging pump lube oil cooler outlet to the storm drain.	_____ _____

CUE: If the student inquires about the drain hose, evaluator to student, **"The drain hose has been connected by the Roving NSO and Fire Fighter."**

4.	S	Refer to listed Technical Specifications for applicability.	Simulates informing control room to refer to Technical Specifications for applicability.	_____ _____

CUE: If student informs control room to refer to Technical Specifications, US to NSO, **"All applicable Tech Specs have been entered."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
5.	S	Check that CS-P-2B is in Pull To Lock.	Simulate checking that CS-P-2B is in Pull To Lock.	_____	_____

CUE: When student checks on the status of CS-P-2B, US to NSO,**"CS-P-2B is in Pull To Lock."**

NOTE: Valves CC-V-315, CC-V-318, CC-V-1292, DM-V-793, and CC-V-1294 are all located along the wall, outside the degassifier room in the main passageway of the PAB 25 ft. across from the sampling room.

CUE: If the student requests permission to unlock and close CC-V-318, PCCW return from CS-P-2B oil cooler and CC-V315, supply to CS-P-2B oil cooler, US to NSO, **"You have permission to unlock and close CC-V-318 and CC-V-315."**

NOTE: Required keys would be on the Primary NSO key ring.

*6.	S	Unlock and close the following valves:			
			*a. Simulates unlocking and closing CC-V-318, PCCW return from CS-P-2B oil cooler.	_____	_____

CUE: When student simulates unlocking and closing CC-V-318, evaluator to student, **"The valve is unlocked. The valve is closed."**

			*b. Simulates unlocking and closing CC-V315, PCCW supply to CS-P-2B oil cooler.	_____	_____

CUE: When student simulates unlocking and closing CC-V-315, evaluator to student, **"The valve is unlocked. The valve is closed."**

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
*7.	S	Demin water is to be aligned to the CS-P-2B oil cooler. Align the following valves			
			*a. Simulates releasing locking pin and opening CC-V-1292 demin alternate cooling supply to CS-P-2B oil coolers.	_____	_____

CUE: When student simulates releasing the locking pin and opening CC-V-1292, evaluator to student, **"The locking pin releases. The valve is open."** If student does not simulate release of locking pin, cue, **"The valve does not move."**

			*b. Simulates opening DM-V-793 demin alternate cooling supply to Charging pump oil coolers.	_____	_____

CUE: When student simulates opening DM-V-793, evaluator to student, **"The valve is open."**

NOTE: Student should not perform step 4.21.7. Demin water is being used for alternate cooling.

NOTE: Student should review NOTE prior to step 4.21.8.

*8.	S	Throttle CC-V-1294 CS-P-2B oil cooler alternate cooling outlet as necessary to maintain 10-30 gpm.	Simulates releasing locking pin and throttling open CC-V-1294 CS-P-2B oil cooler alternate cooling outlet.	_____	_____

CUE: When student simulates releasing the locking pin and throttling CC-V-1294, evaluator to student, **"The locking pin releases. The valve is throttled open. You hear flow."** If student does not simulate release of locking pin, cue, **"The valve does not move."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
9.	S	Check flow on CC-FISL-2218.	Simulates checking flow on CC-FISL-2218.	_____	_____

CUE: When student simulates checking flow, evaluator to student, **"The indicator shows 25 gpm."**

10.	S	Inform control room that alternate cooling using Demin water has been established to CS-P-2B oil cooler at 25 gpm.	Simulates informing control room that alternate cooling using Demin water has been established to CS-P-2B oil cooler at 25 gpm.	_____	_____

CUE: US to NSO, **"I copy, alternate cooling using Demin water has been established to CS-P-2B oil cooler at 25 gpm. We will enter this on the Non-Rad release permit. We will monitor Charging pump temperatures."**

CUE: **"The JPM is complete."**

11.		Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes		
12.		Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary NSO. You are going to simulate locally aligning Demin water (DW) as alternate cooling to CS-P-2B lube oil cooler.

B. The following information is provided to you:

1. Plant is in Mode 4.
2. CS-P-2A is not available.
3. Train B PCCW has been lost.
4. The US has entered OS1212.01, PCCW System Malfunction.
5. OS1212.01 Attachment A Shift Charging Pump/Align Cooling step 1 RNO instructs crew to align alternate cooling to charging pump lube oil cooler per OS1002.02, Operation Of Letdown, Charging, and Seal Injection.
6. The Roving NSO and a Fire Fighter have been dispatched to connect the drain hose from the Charging Pump lube oil coolers outlet to a storm drain (OS1002.02 step 4.21.2).

C. You may request a peer check of your actions while performing the task.

D. Perform the task using OS1002.02, Operation Of Letdown, Charging, and Seal Injection.

E. To perform the task successfully, you must simulate all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Primary NSO, **"Primary NSO (or student's name), simulate aligning Demin water as alternate cooling to CS-P-2B lube oil cooler using OS1002.02 section 4.21. Inform the control room as soon as cooling flow has been established."**

NEXTera ENERGY SEABROOK

JOB PERFORMANCE MEASURE 2013 NRC EXAM RO-ADMJPM01 “Draft”

QPTR CALCULATION N42 INOP

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. **Task Number and Description**

Position RO

SBK 0150200501 Perform a Manual QPTR Calculation

2. **Conditions:**

A. Plant is now at 100% power after recovering a dropped rod at EOL.
B. The Main Plant Computer has been inoperable since yesterday (It was inoperable when the rod dropped).
C. Power Range NI N42 has failed.
D. The QPTR surveillance is required to be performed on this shift.
E. Incore/Excore calibration was performed yesterday (before the rod dropped).

3. **Standards:**

Perform a manual QPTR surveillance in accordance with RX1703 Quadrant Power Tilt Ratio Surveillance.

4. **Student Materials:**

Copy of Tear Off Sheet.
Copy of RX1703 Quadrant Power Tilt Ratio Surveillance, Rev 07 Chg 02
Copy of RE-17 Rev 1-15-07
Copy of Data Sheet for RO ADMIN JPM 01
Calculator

5. **Limitations On Performance:**

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. **References:**

Procedures:

- RX1703, Quadrant Power Tilt Ratio Surveillance, Rev 07 Chg 02.
- OS1000.05 Power Increase.
- ON1251.01 Loss of Plant Computer.

Sys	KA	Description	Value RO/SRO
015	A1.04	Ability to monitor changes in QPTR	3.5/3.7
015	K5.12	Knowledge of QPTR	3.2/3.6
015	K5.16	Definition and calculation of QPTR	2.9/3.4
	2.1.7	Ability to evaluate plant performance and make operational judgments based on the operating characteristics, reactor behavior, and instrument interpretation.	4.4/4.7

7. Setting:

Classroom.

1. Give student a copy of the data sheet for 100% power NI cabinet values.
2. Examiner must prepare a completed RX1703 Form A in advance. It shall reflect the JPM values for the NI cabinet detector currents and RE-17 100% values.
3. Use values listed in RE-17.

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to perform the QPTR surveillance.

B. The following information is provided to you:

1. The plant is now at 100% power following recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday (It was inoperable when the rod dropped).
3. Power Range NI N42 has failed.
4. The QPTR surveillance is required to be performed this shift.
5. Incore/Excore calibration was performed yesterday (before the rod dropped).

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RX1703, QPTR surveillance.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), perform the QPTR surveillance per RX1703. Discuss the results with me."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: When the student demonstrates the ability to obtain a controlled copy of RX1703, QPTR surveillance, provide the student with a copy. Student should refer to section 4.1 QPTR alarm inoperable above 50% RTP surveillance.

CUE: If student asks, **"The QPTR alarm surveillance has been entered and the work order is being generated. Continue with the QPTR surveillance."**

NOTE: Provide student with data sheet that has the values for detector currents. Detector current units are in microamps. Student should make the determination that one Power Range detector is inoperable when given the detector current data.

2.	P	Power range channel is inop. Record INOP in rows 1, 2, 3, and 5 on Form A for the inoperable channel	Records INOP in rows 1, 2, 3, and 5 for N42.	_____	_____

NOTE: Provide the student with a copy of RE-17 NIS Channel and Loop Delta-T Scaling when asked for.

3.	P	Record time, date, and RE-17 revision date on Form A.	Records time, date, and RE-17 revision date on Form A.	_____	_____

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
4.	S	Record the current output in microamperes for the operable top (A) and bottom (B) detectors of each power range channel on Form A Quadrant Power Tilt Calculation Sheet Row 1:	Records the current output in microamperes for the operable top (A) and bottom (B) detectors of each power range channel on Form A Quadrant Power Tilt Calculation Sheet Row 1:		
			N41 top (A) detector current	____	____
			N42 top (A) detector current (INOP should be recorded)	____	____
			N43 top (A) detector current	____	____
			N44 top (A) detector current	____	____
			N41 bottom (B) detector current	____	____
			N42 bottom (B) detector current (INOP should be recorded)	____	____
			N43 bottom (B) detector current	____	____
			N44 bottom (B) detector current	____	____

CUE: When the student asks for independent verification of the values recorded on Form A, provide the following cue, evaluator to student, **"Form A detector currents have been independently verified."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
5. P	Record on Form A row 2 the 100% power 0% AFD current for the operable top and bottom detectors for each power range channel using TDB Figure RE-17:	Records on Form A row 2 the 100% power 0% AFD current for the operable top and bottom detectors for each power range channel using TDB Figure RE-17:		
		N41 top (A) detector	____	____
		N42 top (A) detector (INOP should be recorded)	____	____
		N43 top (A) detector	____	____
		N44 top (A) detector	____	____
		N41 bottom (B) detector	____	____
		N42 bottom (B) detector (INOP should be recorded)	____	____
		N43 bottom (B) detector	____	____
		N44 bottom (B) detector	____	____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
6. P	Calculate the normalized detector currents by dividing each operable detector current (row 1) by its 100% power 0% AFD current (row 2) and record on Form A row 3:	Calculates the normalized detector currents by dividing each operable detector current (row 1) by its 100% power 0% AFD current (row 2) and records on Form A row 3:		
		N41 top (A) normalized detector current	_____	_____
		N42 top (A) normalized detector current (INOP should be recorded)	_____	_____
		N43 top (A) normalized detector current	_____	_____
		N44 top (A) normalized detector current	_____	_____
		N41 bottom (B) normalized detector current	_____	_____
		N42 bottom (B) normalized detector current (INOP should be recorded)	_____	_____
		N43 bottom (B) normalized detector current	_____	_____
		N44 bottom (B) normalized detector current	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
7.	P	Calculate the average normalized detector currents as follows:	Calculates the average normalized detector currents as follows:		
		a. Divide the sum of the operable top normalized detector currents by the number of operable top detectors and record on Form A row 4.	a. Divides the sum of the operable top normalized detector currents by the number of operable top detectors and records on Form A row 4.	_____	_____
		b. Divide the sum of the operable bottom normalized detector currents by the number of operable bottom detectors and record on Form A row 4.	b. Divides the sum of the operable bottom normalized detector currents by the number of operable bottom detectors and records on Form A row 4.	_____	_____
*8.	P	Calculate the QPTR for each detector as follows:	Calculates the QPTR for each detector as follows:		
		*a. Divide each operable top normalized detector current (row 3) by the top average normalized detector current (row 4) and record on Form A row 5:	*a. Divides each operable top normalized detector current (row 3) by the top average normalized detector current (row 4) and records on Form A row 5:		
			N41 top (A) detector	_____	_____
			N42 top (A) detector (INOP should be recorded)	_____	_____
			N43 top (A) detector	_____	_____
			N44 top (A) detector	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
	*b. Divide each operable bottom normalized detector current (row 3) by the bottom average normalized detector current (row 4) and record on Form A row 5.	*b. Divides each operable bottom normalized detector current (row 3) by the bottom average normalized detector current (row 4) and records on Form A row 5.		
		N41 bottom (B) detector	____	____
		N42 bottom (B) detector (INOP should be recorded)	____	____
		N43 bottom (B) detector	____	____
		N44 bottom (B) detector	____	____

NOTE: If the student expresses a rounded off value, then that value shall be compared against the standard. The only value that is critical is the out of tolerance (circled) QPTR value. The critical QPTR value is not asterisked in the JPM. See answer key for the critical QPTR value.

9. P	Indicates the maximum QPTR by circling the largest QPTR in row 5.	Circles the largest QPTR in row 5.	____	____

CUE: When the student asks for independent verification of the calculations for Form A, provide the following cue, evaluator to student, **"Form A calculations have been independently verified."**

*10. P	Determines if LCO 3.2.4 is/is not met based on maximum QPTR.		____	____
	*a. Notify US/SM that LCO 3.2.4 is/is not met.	*a. Notifies US/SM that LCO 3.2.4 is/is not met		

CUE: When US/SM notified, repeat back information provided by student concerning QPTR and LCO 3.2.4.

	*b. On Form A row 6 circle YES/NO	*b. On Form A row 6 circles YES/NO		

NOTE: Information given must agree with results shown on the key. See key for the correct item to circle in row 6.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: "The JPM is complete."

11.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	_____	_____
12.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to perform the QPTR surveillance.

B. The following information is provided to you:

1. The plant is now at 100% power following recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday (It was inoperable when the rod dropped).
3. Power Range NI N42 has failed.
4. The QPTR surveillance is required to be performed this shift.
5. Incore/Excore calibration was performed yesterday (before the rod dropped).

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RX1703, QPTR surveillance.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), perform the QPTR surveillance per RX1703. Discuss the results with me."**

KEY 2013 NRC RO ADMIN JPM 1

Form A: Quadrant Power Tilt Calculation Sheet

Detector Current at: TIME PRESENT DATE TODAY RE-17 Revision 01-15-07

CAUTION

Record all detector currents in units of microamps.

	TOP (A) DETECTORS				BOTTOM (B) DETECTORS			
	N41	N42	N43	N44	N41	N42	N43	N44
(1) DETECTOR CURRENT 0-500 MICRO	223	INOP	217	210	197	INOP	220	211
(2) 100% RTP, 0% AFD DETECTOR CURRENT FROM RE-17	183.88	INOP	193.37	186.01	198.60	INOP	218.06	207.51
(3) NORMALIZED DETECTOR CURRENT = (1)/(2)	1.21	INOP	1.12	1.13	0.99	INOP	1.01	1.02
(4) AVE. NORMALIZED DETECTOR CURRENT	1.15				1.01			
(5) QUADRANT POWER TILT RATIO (QPTR) = (3)/(4)	1.05 *	INOP	0.97	0.98	0.98	INOP	1.00	1.01
(6) LCO 3.2.4 Met? YES / NO								

Detector Current Obtained by: ______ Date: ______

Detector Current Independently Verified by: ______ Date: ______

Calculations Performed by: ______ Date: ______

Calculations Independently Verified by: ______ Date: ______

* 1.04 to 1.06 Acceptable Range

DATA SHEET FOR 2013 NRC RO ADMIN JPM '1'

Time Present Time   Date Today's Date Detector Current data obtained

DETECTOR CURRENT DATA for POWER RANGE NUCLEAR INSTRUMENTATION		
DETECTOR	TOP (A) DETECTOR	BOTTOM (B) DETECTOR
N41	223	197
N42	0	0
N43	217	220
N44	210	211

Units are microamps

RE-17 NIS CHANNEL and LOOP DELTA-T SCALING

Values Shown Below Indicate 100% Values

Channel	Top (μamps)	Bottom (μamps)	MPCS Constant	Amp. Gain (C*-0231)
N41	183.88	198.60	18.09	2.000
N42	176.05	219.00	18.09	2.000
N43	193.37	218.06	18.09	2.000
N44	186.01	207.51	18.09	2.000

Loop	Full Power ΔT	ΔT Gain (C*-0223)	ΔT Alarm Time Delay	T_{AVG} Dev. Alarm Time Delay
1	61.232	1.3065	60 sec.	60 sec.
2	62.539	1.2792	60 sec.	60 sec.
3	60.314	1.3264	60 sec.	60 sec.
4	61.411	1.3027	60 sec.	60 sec.

Channel	IR Full Power Current (μamps)
N35	362.059
N36	341.937

RE Dept. Supervisor — Paul V. Orey — 5/15/12

Operations Manager — [signature] — 5/15/12

Signature — Date

Revision
01-15-07

Revision Summary:
Updated 100% power, zero AFD NI currents and MPCS Constants for In/Ex Cal.

JOB PERFORMANCE MEASURE 2013 NRC EXAM RO-ADMJPM02 “Draft”

SHUTDOWN MARGIN CALCULATION (MODE 3)

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK 0010100401 Perform Shutdown Margin Calculation

2. Conditions:

A. The plant is in Mode 3 at 557°F following a trip from 100% 9 hours ago.
B. An inadvertent dilution has occurred.

3. Standards:

Using RX1707 Shutdown Margin Surveillance calculate the boron concentration required to satisfy SDM for the present conditions using the figures from the Primary Tech Data Book provided by the instructor.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of RX1707, Shutdown Margin Surveillance Rev 7 Chg 7.
Copy of Primary TDB, Figure RE-2 Shutdown Boron Concentration vs. Temperature. Rev 01-15-15.
Copy of Primary TDB, Figure RE-18 Shutdown Margin Values Rev. 01-15-00.
Calculator.

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- RX1707, Shutdown Margin Surveillance.

Technical Specifications:

- 3.1.1.1 Shutdown Margin greater than 200°F.

Manuals:

- Primary TDB, Figure RE-2 Shutdown Boron Concentration vs. Temperature.
- Primary TDB, Figure RE-18 Shutdown Margin Values.

Sys	KA	Description	Value RO/SRO
192002	K1.13	Calculate SDM using procedures and given plant parameters.	3.5/3.7
	2.2.12	Knowledge of Surveillance Procedures	3.7/4.1

7. Setting:

Use the simulator or the classroom. A key must be setup using RE curves (RE curves may not be the latest revision). The required RE curves are included in the student material package and must be given to the student when reaching for the Primary Tech Data Book. Failure to do this will cause unrealistic numbers for the student. Since an inadvertent dilution has occurred, pick a value for the current boron concentration that is below the value required by RE-2. SDM may or may not be adequate depending on the value selected (i.e., how large the dilution was).

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. An inadvertent dilution has occurred. The chemist has sampled the RCS and will have the current boron concentration shortly. Determine the boron concentration required, taking credit for xenon, to satisfy the SDM. State if the shutdown margin is adequate or not.

B. The following information is provided to you:

   1. The plant is in Mode 3 at 557°F following a trip from 100% 9 hours ago.
   2. An inadvertent dilution has occurred.
   3. Cycle burnup is 16000 MWD/MTU.

D. You may request a peer check of your actions while performing the task.

E. Perform the task using RX1707, Shutdown Margin Surveillance.

F. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

G. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

H. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), an inadvertent dilution has occurred. Determine the required boron concentration to satisfy SDM requirements for the current RCS conditions taking credit for xenon. Using RX1707, determine if SDM is satisfactory. The chemist will have the current RCS boron concentration shortly."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT

NOTE: When student demonstrates the ability to obtain a controlled copy of RX1707, Shutdown Margin Surveillance provide the student with RX1707, Shutdown Margin Surveillance.

1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2.	P	For the existing RCS temperature, obtain the required shutdown boron concentration from Primary TDB, Figure RE-2 Shutdown Boron Concentration vs. Temperature.	For the existing RCS temperature, obtains the required shutdown boron concentration from Primary TDB, Figure RE-2 Shutdown Boron Concentration vs. Temperature.	_____	_____

NOTE: See key for all values that student should enter on Form A line 1.

*3.	P	Record RCS T_{avg} and the corresponding RE-02 required shutdown boron concentration value (A) on Form A Shutdown Margin Determination - Modes 3, 4, and 5.	Records RCS T_{avg} and the corresponding RE-02 required shutdown boron concentration value (A) on Form A Shutdown Margin Determination - Modes 3, 4, and 5.	_____	_____
4.	P	Obtain xenon worth from the MPCS point C0036 or from Reactor Engineering. Record the xenon worth value (B) on Form A.	Obtains xenon worth from the MPCS point C0036 or from Reactor Engineering. Record the xenon worth value (B) on Form A.	_____	_____

CUE: When the student asks about xenon worth, evaluator to student, **"Xenon worth is 5850 pcm."**

*5.	P	Obtain the correct value of differential boron worth (DBW) from Primary TDB, Figure RE-18 Shutdown Margin Values. Record the DBW value (C) on Form A.	Obtains the correct value of differential boron worth (DBW) from Primary TDB, Figure RE-18 Shutdown Margin Values. Records the DBW value (C) on Form A.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
*6.	P	Using the equation as shown on Form A calculate the shutdown boron concentration (xenon credit) value (D). Record the calculated value (D) on Form A. If number is negative record zero.	Using the equation as shown on Form A calculates the shutdown boron concentration (xenon credit) value (D). Record the calculated value (D) on Form A. If number is negative records zero.	_____	_____

CUE: Provide the following cue, **"Chemistry reports that the RCS boron concentration is [see key value (E) line 1] ppm."**

NOTE: SDM may or may not be adequate depending on the value of the current RCS boron concentration determined by the evaluator in the setup and required shutdown boron concentration obtained from RE-2.

7.	P	Record the existing RCS boron concentration value (E) on Form A.	Records the existing RCS boron concentration value (E) on Form A.	_____	_____
*8.	P	Check if existing RCS boron value (E) is greater than the shutdown boron concentration (xenon credit) (D). Mark the associated block yes or no as applicable.	Checks if existing RCS boron value (E) is greater than the shutdown boron concentration (xenon credit) (D). Marks the associated block yes or no as applicable.	_____	_____

CUE: If student asks for independent verification, provide the following cue, **"Form A has been independently verified. Please continue."**

9.	P	If existing RCS boron is less than shutdown boron concentration (xenon credit) (D), notify SM/US that the shutdown margin surveillance is not being satisfied.	If existing RCS boron is less than shutdown boron concentration (xenon credit) (D), notifies SM/US that the shutdown margin surveillance is not being satisfied.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: "The JPM is complete."

10.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	
11.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____ _____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. An inadvertent dilution has occurred. The chemist has sampled the RCS and will have the current boron concentration shortly. Determine the boron concentration required, taking credit for xenon, to satisfy the SDM. State if the shutdown margin is adequate or not.

B. The following information is provided to you:

   1. The plant is in Mode 3 at 557°F following a trip from 100% 9 hours ago.
   2. An inadvertent dilution has occurred.
   3. Cycle burnup is 16000 MWD/MTU.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RX1707, Shutdown Margin Surveillance.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), an inadvertent dilution has occurred. Determine the required boron concentration to satisfy SDM requirements for the current RCS conditions taking credit for xenon. Using RX1707, determine if SDM is satisfactory. The chemist will have the current RCS boron concentration shortly."**

KEY 2013 NRC RO ADMIN JPM 2

Form A: Shutdown Margin Determination MODEs 3, 4 And 5

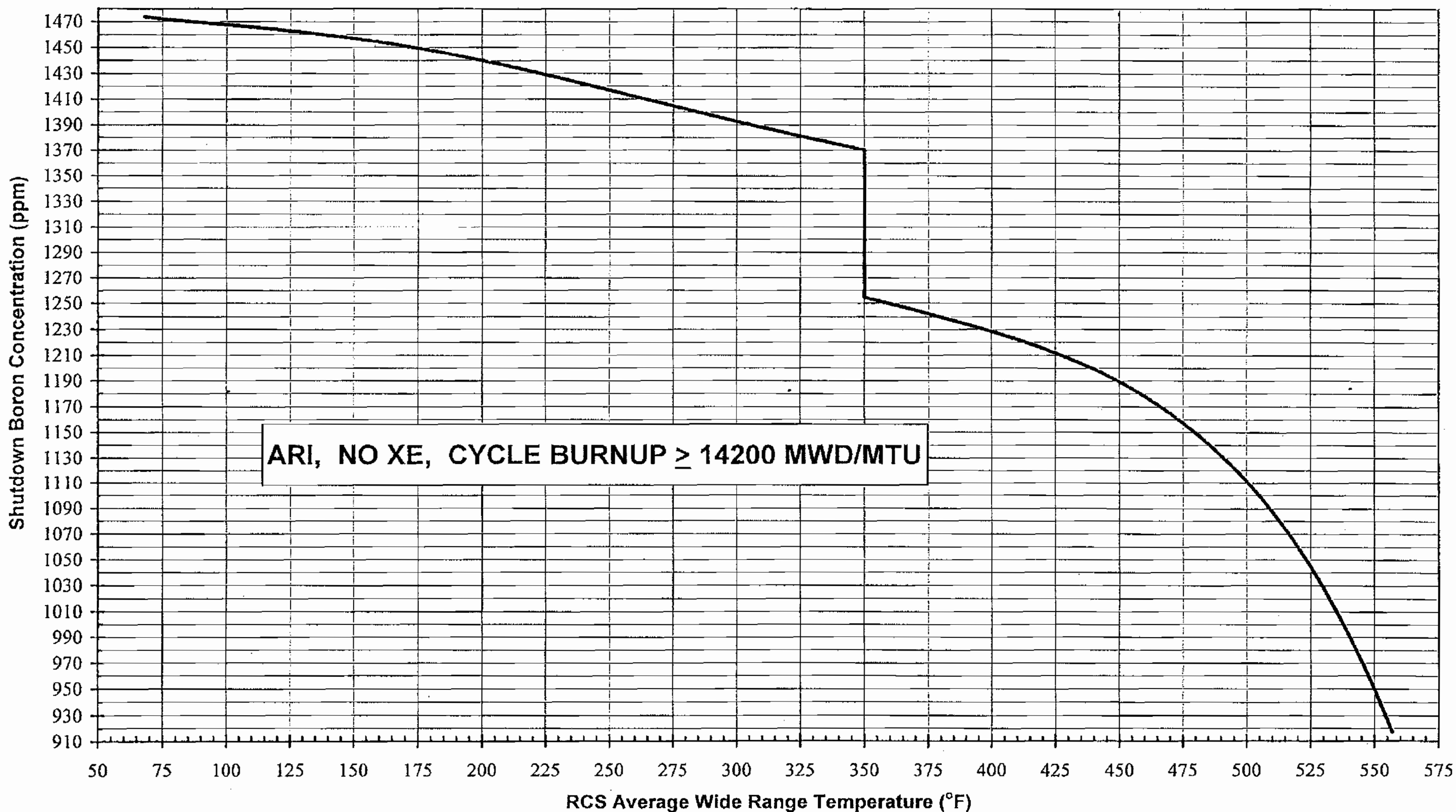
TIME/DATE	RCS TAVG (°F)	(A) SHUTDOWN BORON (From RE-2) (PPM)	(B) XENON WORTH (C0036 or RE) (PCM)	(C) DIFFERENTIAL BORON WORTH (From RE-18) (PCM/PPM)	(D) SHUTDOWN BORON CONCENTRATION (XENON CREDIT) (A - (B/C)) (PPM)	(E) EXISTING RCS BORON (PPM)	RCS BORON GREATER THAN REQUIRED (YES/NO)	INITIALS
Date: TODAY / /	557	915	5850	8.501	227 *	500	YES	Performed by:
Time PRESENT :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:

US Review ______________________ Date ______________

SM Review ______________________ Date ______________

* 222 - 232 Acceptable Range

RE-2 Shutdown Boron Concentration vs. Temperature



Rev 01-15-15

RE Dept Supervisor [signature] Date 7/5/12

Operations Manager [signature] Date 7/5/12

RE-18 SHUTDOWN MARGIN VALUES

(Sheet 1 of 2)

PART A: Reactivity Values For RX 1707

Maximum Worth of Individual Immovable, Untrippable or Dropped Rod	=	1004 pcm
Total Control and Shutdown Rod Worth Minus Stuck Rod and Less 10% Uncertainty	=	5578 pcm
Boron Equivalent of Worst Case Immovable or Untrippable Rod	=	177 ppm
Differential Boron Worth (Xenon credit in shutdown margin determination). Use the appropriate RCS Average Temperature Range as follows:		
Less than 530 °F	=	12.324 pcm/ppm
Greater Than or Equal to 530 °F	=	8.501 pcm/ppm

PART B: Rapid Boration Termination Criteria for Two or More Stuck Rods

2400 gallons per rod from the BAT

OR

62000 gallons per rod from the RWST

OR

RCS Boron > 3044 ppm

OR

RCS Boron > 1151 ppm above the requirement of RE-02

PART C: Rapid Boration Termination Criteria for ES-0.1 Loss of DRPI

RCS Boron > 3044 ppm

OR

RCS Boron > 1151 ppm above the requirement of RE-02

RE-18 SHUTDOWN MARGIN VALUES

(Sheet 2 of 2)

PART D: Fire/Safe Shutdown Shutdown Margin Criteria for OS1200.01 and OS1200.02

The RCS boron sample obtained during cooldown must be at least 724 ppm greater then the boron sample obtained prior to cooldown.

If RCS Shutdown Margin is **NOT** verified by RCS Boron sample, then ensure greater than 12,650 gallons of at least 7000 ppm is injected into the RCS.

PART E: Rods Out Shutdown Value

RCS Boron > 1151 ppm above the requirement of RE-02 - for all rod banks out

RCS Boron > 210 ppm above the requirement of RE-02 - for a single rod bank out (BOC only)

PART F: Steam Generator Tube Leak Rapid Boration Flow for OS1227.02

Rapid boration flow to obtain adequate shutdown margin for cooldown > 70 gpm

RE Dept Supervisor	Paul V. Orum Signature	4/12/11 Date
Operations Manager	[signature] Signature	4/12/11 Date

Revision 01-15-00

JOB PERFORMANCE MEASURE 2013 NRC EXAM RO-ADMJPM03 “Draft”

SPENT FUEL POOL BLENDED MAKEUP CALCULATION

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. **Task Number and Description**

Position RO

SBK 0040100601 Perform a boron change calculation.

2. **Conditions:**

A. A manual blended makeup to the Spent Fuel Pool is required to raise pool level.

3. **Standards:**

Calculate the required flow controller and totalizer setpoints for a 550 gallon manual blended makeup to the Spent Fuel Pool.

4. **Student Materials:**

Copy of Tear Off Sheet
Copy of RS1735, Reactivity Calculations, Rev 6
Daily Chemistry Report
Calculator

5. **Limitations On Performance:**

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. **References:**

Procedures:

- RS1735, Reactivity Calculations, Rev 6

Sys	KA	Description	Value RO/SRO
	2.1.37	Knowledge of procedures, guidelines, or limitations associated with reactivity management.	4.3/4.6

7. Setting:

Classroom.
1. Use values listed in Daily Chemistry Report.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to perform calculations for a 550 gallon blended makeup to the Spent Fuel Pool.

B. The following information is provided to you:

   1. A 550 gallon manual blended makeup to the Spend Fuel Pool is required for pool inventory addition.
   2. Makeup total flow rate will be 50 gpm.
   3. The makeup boron concentration will be at the current Spent Fuel Pool boron concentration.
   4. 'A' Boric Acid Storage Tank will be used for the blended makeup.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RS1735, Reactivity Calculations.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), determine the required flow controller and totalizer setpoints for a 550 gallon manual blended makeup to the Spent Fuel Pool."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step		STANDARD * denotes a critical step		EVALUATION SAT	UNSAT
1. P	Start time ____________		Initiating cue read			

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: When the student demonstrates the ability to obtain a controlled copy of RS1735, Reactivity Calculations, provide the student with a copy. Student should refer to section 4.4 Blended Makeup Calculation (Form E, Blended Makeup Worksheet) and the Daily Chemistry Report to determine Spent Fuel Pool (SFP) and boric acid storage tank boron concentration.

D=Discuss P=Perform S=Simulate	ELEMENT/STEP		STANDARD		SAT	UNSAT
2. P	Determine the required flow controller and totalizer setpoints for a 550 gallon manual blended makeup to the Spent Fuel Pool					
	1.	ENTER the desired makeup boron concentration (C_{MU}).	1.	Enters the desired makeup boron concentration (C_{MU}) for the SFP from the Daily Chemistry Report in step 1 of Form E. (2512 ppm)	_____	_____
	2.	ENTER the desired makeup flow rate SETPOINT: FIQ-111 (F_{TOT}).	2.	Enters the desired makeup flow rate SETPOINT: FIQ-111 (F_{TOT}) in step 2 of Form E. (50 gpm)	_____	_____
	3.	ENTER the actual Boric Acid Storage Tank concentration (C_{BAST}).	3.	Enters the actual Boric Acid Storage Tank concentration (C_{BAST}) from the Daily Chemistry Report in step 3 of Form E. (7361 ppm)	_____	_____
	4.	ENTER the desired makeup quantity TARGET: FIQ-111 (G_{TOT}).	4.	Enters the desired makeup quantity TARGET: FIQ-111 (G_{TOT}) in step 4 of Form E. (550 gallons)	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
	*5. CALCULATE the boric acid flow rate SETPOINT: FIQ-111 (F_{BA}):	*5. Enters the values from steps 1, 2 & 3 in the equation and calculates the boric acid flow rate SETPOINT: FIQ-111 (F_{BA}).	____	____
	*6. CALCULATE the boric acid quantity TARGET: FIQ-111 (G_{BA}):	*6. Enters the values from steps 1, 3 & 4 in the equation and calculates the boric acid quantity TARGET: FIQ-111 (G_{BA}).	____	____

CUE: If the student asks for the type and quantity of water currently present in the makeup line at any time during the JPM respond, **"The makeup line contains a blend from a previous SFP makeup based on the same SFP and BAST values. Please continue with the task."**

	7. Calculated By signature and Date.	7. Signs and dates the Calculated By signature and Date line.	____	____

CUE: If the student asks for an Independent Verification of Form E during the JPM respond, **"For the purpose of this JPM an independent verification will not be performed."**

CUE: **"The JPM is complete."**

3.	Stop time __________	Time to complete task ≤15 minutes	____	____
	Evaluator calculates time to complete task			
4.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		____	____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to perform calculations for a 550 gallon blended makeup to the Spent Fuel Pool.

B. The following information is provided to you:

1. A 550 gallon manual blended makeup to the Spend Fuel Pool is required for pool inventory addition.
2. Makeup total flow rate will be 50 gpm.
3. The makeup boron concentration will be at the current Spent Fuel Pool boron concentration.
4. 'A' Boric Acid Storage Tank will be used for the blended makeup.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RS1735, Reactivity Calculations.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), determine the required flow controller and totalizer setpoints for a 550 gallon manual blended makeup to the Spent Fuel Pool."**

KEY 2013 NRC RO Admin JPM 3

Form E: Blended Makeup Worksheet

(Sheet 1 of 1)

---

1. Desired Makeup Boron Concentration (C_{MU}) 2512 ppm
2. Desired Makeup Flow Rate SETPOINT: FIQ-111 (F_{TOT}) 50 gpm
3. Boric Acid Storage Tank Concentration (C_{BAST}) 7361 ppm
4. Desired Makeup Quantity TARGET: FIQ-111 (G_{TOT}) 550 gals
5. Boric Acid Flow Rate SETPOINT: FIQ-111 (F_{BA})

$$F_{BA} = \frac{(C_{MU})(F_{TOT})}{C_{BAST}} = \frac{(\ 2512\ )(\ 50\ )}{(\ 7361\ )} = 17 \text{ gpm}$$

6. Boric Acid Quantity TARGET: FIQ-111 (G_{BA})

$$G_{BA} = \frac{(C_{MU})(G_{TOT})}{C_{BAST}} = \frac{(\ 2512\ )(\ 550\ )}{(\ 7361\ )} = 188 \text{ gal}$$

NOTE

The Blended Makeup Worksheet does not account for the type and quantity of water currently present in the makeup line.

Calculated By: ______________________ Date: __________

Independently Verified By: ______________________ Date: __________

SRO Approval By: ______________________ Date: __________

Chemistry Report for 2013 NRC RO Admin JPM 3

Seabrook Daily Chemistry Status Report

5/17/2013 9:31

Chemistry Effectiveness Indicator (CEI)

Monthly	0
18 Month Avg	1.21

Reactor Coolant System

Parameter	AL 1	AL 2	AL 3	Actual	Sampled On
Boron, ppm	Per COLR	N/A	N/A	1367	05/16/2013 09:00
Lithium, ppm	Control Band	N/A	N/A	3.51	05/16/2013 09:00
Chloride, ppm	> 0.050	≥ 0.150	> 1.50	0.00441	05/16/2013 09:00
Fluoride, ppm	> 0.050	> 0.150	> 1.50	0.00278	05/16/2013 09:00
Sulfate, ppm	> 0.025	> 0.150	> 1.50	0.00033	05/15/2013 09:00
Oxygen, ppm	> 0.005	≥ 0.100	> 1.00	<0.0001	05/16/2013 09:00
Hydrogen, cc/kg	< 25 OR > 50	< 15	< 5	33.8	05/16/2013 09:00
DEI-131, uCi/g			> 1.0	4.35e-05	05/14/2013 08:55
Gross Activity, uCi/g			77.5	1.23e-01	05/16/2013 09:00

Primary Systems

System	AL	Boron, ppm	Sampled On
BAT A	< 7000 or > 7700	7361	05/16/2013 01:50
BAT B	< 7000 or > 7700	7314	05/09/2013 00:13
RWST	Per COLR	2485	05/16/2013 08:40
SFP	< 2000	2512	05/13/2013 08:45

Condensate / Feedwater

Parameter	AL	Actual	Sampled On
CO O_2, ppb	> 10	3.43	05/16/2013 08:30
FW O_2, ppb	> 5	0.68	05/16/2013 08:30
FW N_2H_4, ppb	< 8xCO O_2 or < 20	79	05/16/2013 08:30

Generator Stator Cooling

Parameter	AL	Actual	Sampled On
SLMS Oxygen, ppm	< 3.0	4.56	05/16/2013 08:30
Backup Oxygen, ppm	< 3.0	4.49	05/16/2013 08:30
Grab Oxygen, ppm	< 3.0	4.5	05/14/2013 15:35
SLMS Hydrogen, %	≥ 3.0	0.15	05/16/2013 08:30
Backup Hydrogen, %	≥ 3.0	NIS	05/16/2013 08:30
S/C in, uS/cm	≥ 0.5	NIS	05/16/2013 08:30
Grab S/C in, uS/cm	≥ 0.5	0.09	05/16/2013 08:30
S/C out, uS/cm	≥ 0.5	0.083	05/16/2013 08:30
Grab S/C out, uS/cm	≥ 0.5	0.07	03/17/2013 07:00
Copper, ppb	> 20	12.6	05/14/2013 22:44

Discharge Transition Structure

Parameter	AL	Actual	Sampled On
TRO, ppm	> 0.20	0.07	05/16/2013 08:20

Secondary Data

Primary-to-Secondary Leak Rate	0.796 gpd	
Secondary DEI-131, uCi/g	ND	04/22/2013 08:25

Steam Generators

Parameter	AL 1	AL 2	AL 3	A S/G	B S/G	C S/G	D S/G
Sodium, ppb	> 5	> 50	> 250	0.28	0.28	0.24	0.27
Chloride, ppb	> 10	> 50	> 250	0.28	<0.2	0.22	0.24
Sulfate, ppb	> 10	> 50	> 250	0.34	0.33	0.25	0.3
Cat. Cond. uS/cm		> 1.2	> 4.2	0.274	0.272	0.257	0.265

In Spec	WHITE
Exceeds AL 1	GREEN
Exceeds AL 2	
Exceeds AL 3 or AL	RED

JOB PERFORMANCE MEASURE 2013 NRC EXAM RO-ADMJPM04 “Draft”

INITIATE A LIQUID EFFLUENT WASTE SAMPLE REQUEST

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK

2. Conditions:

A. The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
B. WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
C. WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
D. WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
E. Projected release start time is normally 8 hours after placing the tank on recirc.

3. Standards:

Using CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation, initiate the following:

- Form CP4.1A, Liquid Effluent Waste Sample Request

4. Student Materials:

Calculator
Copy of Tear Off Sheet.
Copy of CP-4.1, Effluent Sampling Program
Copy of ON1018.07, Waste Test Tank Recirculation

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- CP-4.1, Effluent Sampling Program
- ON1018.07, Waste Test Tank Recirculation

Sys	KA	Description	Value RO/SRO
	2.3.11	Ability to control radiation releases.	3.8/4.3

7. Setting:

Simulator or Classroom.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to initiate a Liquid Effluent Waste Sample Request.

B. The following information is provided to you:

1. The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
2. WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
3. WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
4. WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
5. Projected release start and time is normally 8 hours after placing the tank on recirc.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

H. The evaluator will act as the Unit Supervisor and provide the cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

Unit Supervisor to Primary Operator, **"Primary Operator (or students name), initiate a Liquid Effluent Waste Sample Request for WL-TK-63A, 'A' Waste Test Tank."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT

NOTE: When the student demonstrates the ability to obtain a controlled copy of CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation, provide the student with the required document(s).

1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: It is assumed that the student will use CP 4.1 to process through the verification and check ON1018.07 to verify the tank volumes and recirculation flow rate. The student may choose to verify the tank volume and recirculation rate prior to referring to CP 4.1. These steps can be performed in any order as long as all steps are completed correctly.

*2.	P	Complete section 1 of CP 4.1A.			
		a. Name of tank, sump, or SG demin vessel to be sampled.	a. Enters WTT 'A'.	_____	_____

CUE: If the student wants to verify the amount of liquid in the 'A' Waste Test Tank using the Main Plant Computer, tell them that the MPCS indicates 18,000 gallons.

		b. Total tank or sump volume to be discharged or transferred.	b. Verifies and enters 18,000 gallons for total tank or sump volume.	_____	_____

NOTE: The recirculation rate for WTT 'A' is 150 gpm.

		c. Recirculation rate.	*c. Enters the recirculation rate of 150 gpm and calculates the recirculation required time to be 240 minutes.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
	d. Recirculation starting time and date.	d. Enters 0800 and today's date.	_____ _____
	e. Sample date and time,	*e. Enters 1200 and today's date.	_____ _____
	f. Disposition of tank.	f. Enters DISCHARGE as disposition.	_____ _____
	g. The projected CW and SW pump combination for the discharge.	g. Enters 2 CW pumps and 2 SW pumps.	_____ _____
	h. Projected release start date and time.	h. Enters 2000 and today's date.	_____ _____
	i. Date, time of request, and initials of originator.	i. Enters time, date and initials are.	_____ _____
	j. Date, time, and initials of individual that performed verification of operational data.	j. Hands form to Unit Supervisor for verification.	_____ _____

CUE: "The JPM is complete."

3.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 15 minutes	_____ _____
4.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____ _____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to initiate a Liquid Effluent Waste Sample Request.

B. The following information is provided to you:

   1. The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
   2. WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
   3. WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
   4. WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
   5. Projected release start time is normally 8 hours after placing the tank on recirc.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

K. I will inform you when the JPM is complete.

L. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

M. We will begin after the Initiating Cue is read.

H. The evaluator will act as the Unit Supervisor and provide the cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, **"Primary Operator (or students name), initiate a Liquid Effluent Waste Sample Request for WL-TK-63A, 'A' Waste Test Tank."**

KEY 2013 NRC RO ADmin JPm 4

Liquid Effluent Waste Sample Request

Section I — Operational Data (Completed by Operations Department)

Tank, Sump, S/G, CPS or SG Demin. Vessel: A WTT

Disposition: X Discharge ____ Recycle

Tank, Sump, or S/G Volume: 18000 gallons

Recirculate Rate: 150 gpm

Minimum Recirc. Time* = 2 x Tank Vol. / Recirc. Rate = 240 min.

Recirc. Start Date and Time: Today / 0800

Sample Date and Time: Today / 1200

NOTE

CW-V-40 position cannot change once this form is submitted to Chemistry.

Project CW and SW pump combination for discharge: CW 2 SW 2

Project Release Start Date and Time: Today / 2000

Originator ____________ Date ________ Time ________

Verified By ____________ Date ________ Time ________

Section II — Chemistry Data (Completed by Chemistry Department)

____________ / ____________ ____________

Sample Date / Sample Time / Sample Collected by (Initials)

Sample Identification No. ____________

LEW Permit Number: ____________

Dilution Water Flow Rate: ____________ gpm

Volume Discharged: ____________ gallons

Composite Volume: ____________ mls

Composite Updated by: ____________ (Initials)

* or as directed by supervision

SEABROOK

JOB PERFORMANCE MEASURE 2013 NRC EXAM SRO-ADMJPM01 "Draft"

VERIFY QPTR CALCULATION N42 INOP

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. Task Number and Description

Position SRO

SBK 1190202602 Review Results of Surveillance Tests

2. Conditions:

A. Plant is now at 100% power after recovering a dropped rod at EOL.
B. The Main Plant Computer has been inoperable since yesterday (It was inoperable when the rod dropped).
C. Power Range NI N42 has failed.
D. The QPTR surveillance is required to be performed on this shift.
E. Incore/Excore calibration was performed yesterday (before the rod dropped).
F. The Primary Operator has completed the QPTR surveillance.
G. The Secondary Operator has completed the independent verification.
H. The Secondary Operator has given the completed forms to you for your verification.

3. Standards:

Verify a manual QPTR surveillance in accordance with RX1703 Quadrant Power Tilt Ratio Surveillance.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of RX1703, Quadrant Power Tilt Ratio Surveillance, Rev 07 Chg 02
Copy of RE-17 Rev 1-15-07
Copy of Data Sheet for SRO ADMIN JPM 01
Copy of completed QPTR surveillance form.
Calculator

5. Limitations On Performance:

Verify all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- RX1703, Quadrant Power Tilt Ratio Surveillance, Rev 07 Chg 02.
- OS1000.05 Power Increase.
- ON1251.01 Loss of Plant Computer.

Sys	KA	Description	Value RO/SRO
015	A1.04	Ability to monitor changes in QPTR	3.5/3.7
015	K5.12	Knowledge of QPTR	3.2/3.6
015	K5.16	Definition and calculation of QPTR	2.9/3.4
	2.1.7	Ability to evaluate plant performance and make operational judgments based on the operating characteristics, reactor behavior, and instrument interpretation.	4.4/4.7

7. Setting:

Classroom.

1. Give student a copy of the data sheet for 100% power NI cabinet values.
2. Examiner must prepare a completed RX1703 Form A in advance. It shall reflect the JPM values for the NI cabinet detector currents and RE-17 100% values.
3. Use values listed in RE-17.

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Unit Supervisor. You are going to verify the QPTR surveillance.

B. The following information is provided to you:

1. The plant is now at 100% power following recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday (It was inoperable when the rod dropped).
3. Power Range NI N42 has failed.
4. The QPTR surveillance is required to be performed this shift.
5. Incore/Excore calibration was performed yesterday (before the rod dropped).

6. The Primary Operator has completed the QPTR surveillance.
7. The Secondary Operator has completed the independent verification.
8. The Secondary Operator has given the completed forms to you for your verification.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RX1703, QPTR surveillance.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Shift Manager and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

Shift Manager to Unit Supervisor, **"Unit Supervisor (or student's name), verify the QPTR surveillance per RX1703. Discuss the results with me."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
1. P	Start time _______	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: When the student demonstrates the ability to obtain a controlled copy of RX1703, QPTR surveillance, provide the student with a copy. Student should refer to section 4.1 QPTR alarm inoperable above 50% RTP surveillance.

CUE: If student asks, **"The QPTR alarm surveillance has been entered and the work order is being generated. Continue with the QPTR surveillance."**

NOTE: Provide student with data sheet that has the values for detector currents. Detector current units are in microamps. Student should make the determination that one Power Range detector is inoperable when given the detector current data.

2. P	Power range channel is inop. Record INOP in rows 1, 2, 3, and 5 on Form A for the inoperable channel	Verifies that INOP in rows 1, 2, 3, and 5 for N42 has been recorded.	_____	_____

NOTE: Provide the student with a copy of RE-17 NIS Channel and Loop Delta-T Scaling when asked for.

3. P	Record time, date, and RE-17 revision date on Form A.	Verifies time, date, and RE-17 revision date on Form A.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
4.	S	Record the current output in microamperes for the operable top (A) and bottom (B) detectors of each power range channel on Form A Quadrant Power Tilt Calculation Sheet Row 1:	Verifies the current output in microamperes for the operable top (A) and bottom (B) detectors of each power range channel on Form A Quadrant Power Tilt Calculation Sheet Row 1 have been recorded:		
			N41 top (A) detector current	_____	_____
			N42 top (A) detector current (INOP should be recorded)	_____	_____
			N43 top (A) detector current	_____	_____
			N44 top (A) detector current	_____	_____
			N41 bottom (B) detector current	_____	_____
			N42 bottom (B) detector current (INOP should be recorded)	_____	_____
			N43 bottom (B) detector current	_____	_____
			N44 bottom (B) detector current	_____	_____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
5. P	Record on Form A row 2 the 100% power 0% AFD current for the operable top and bottom detectors for each power range channel using TDB Figure RE-17:	Verifies on Form A row 2 the 100% power 0% AFD current for the operable top and bottom detectors for each power range channel using TDB Figure RE-17 have been recorded:		
		N41 top (A) detector	____	____
		N42 top (A) detector (INOP should be recorded)	____	____
		N43 top (A) detector	____	____
		N44 top (A) detector	____	____
		N41 bottom (B) detector	____	____
		N42 bottom (B) detector (INOP should be recorded)	____	____
		N43 bottom (B) detector	____	____
		N44 bottom (B) detector	____	____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
6. P	Calculate the normalized detector currents by dividing each operable detector current (row 1) by its 100% power 0% AFD current (row 2) and record on Form A row 3:	Verifies calculation for the normalized detector currents by dividing each operable detector current (row 1) by its 100% power 0% AFD current (row 2) and verifies values have been recorded on Form A row 3:	
		N41 top (A) normalized detector current	_____ _____
		N42 top (A) normalized detector current (INOP should be recorded)	_____ _____
		N43 top (A) normalized detector current	_____ _____
		N44 top (A) normalized detector current	_____ _____
		N41 bottom (B) normalized detector current	_____ _____
		N42 bottom (B) normalized detector current (INOP should be recorded)	_____ _____
		N43 bottom (B) normalized detector current	_____ _____
		N44 bottom (B) normalized detector current	_____ _____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
7. P	Calculate the average normalized detector currents as follows:	Verifies calculations for the average normalized detector currents as follows:	
	a. Divide the sum of the operable top normalized detector currents by the number of operable top detectors and record on Form A row 4.	a. Divides the sum of the operable top normalized detector currents by the number of operable top detectors and verifies values have been recorded on Form A row 4.	____ ____
	b. Divide the sum of the operable bottom normalized detector currents by the number of operable bottom detectors and record on Form A row 4.	b. Divides the sum of the operable bottom normalized detector currents by the number of operable bottom detectors and verifies values have been recorded on Form A row 4.	____ ____
*8. P	Calculate the QPTR for each detector as follows:	Verifies calculations for the QPTR for each detector as follows:	
	*a. Divide each operable top normalized detector current (row 3) by the top average normalized detector current (row 4) and record on Form A row 5:	*a. Divides each operable top normalized detector current (row 3) by the top average normalized detector current (row 4) and verifies values have been recorded on Form A row 5:	
		N41 top (A) detector	____ ____
		N42 top (A) detector (INOP should be recorded)	____ ____
		N43 top (A) detector	____ ____
		N44 top (A) detector	____ ____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
	*b. Divide each operable bottom normalized detector current (row 3) by the bottom average normalized detector current (row 4) and record on Form A row 5.	*b. Verifies calculations that divide each operable bottom normalized detector current (row 3) by the bottom average normalized detector current (row 4) and verifies values have been recorded on Form A row 5.		
		N41 bottom (B) detector	_____	_____
		N42 bottom (B) detector (INOP should be recorded)	_____	_____
		N43 bottom (B) detector	_____	_____
		N44 bottom (B) detector	_____	_____

NOTE: If the student expresses a rounded off value, then that value shall be compared against the standard. The only value that is critical is the out of tolerance (circled) QPTR value. The critical QPTR value is not asterisked in the JPM. See answer key for the critical QPTR value.

9. P	Indicates the maximum QPTR by circling the largest QPTR in row 5.	Verifies that the largest QPTR in row 5 has been circled.	_____	_____
*10. P	Determines if LCO 3.2.4 is/is not met based on maximum QPTR.		_____	_____
	*a. Notify US/SM that LCO 3.2.4 is/is not met.	*a. Notifies SM that LCO 3.2.4 is/is not met		

CUE: When SM notified, repeat back information provided by student concerning QPTR and LCO 3.2.4.

	*b. On Form A row 6 circle YES/NO	*b. Verifies on Form A row 6 YES/NO has been circled.		

NOTE: Information given must agree with results shown on the key. See key for the correct item to circle in row 6.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: "The JPM is complete."

11.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	____	____
12.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		____	____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. You are going to perform the QPTR surveillance.

B. The following information is provided to you:

1. The plant is now at 100% power following recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday (It was inoperable when the rod dropped).
3. Power Range NI N42 has failed.
4. The QPTR surveillance is required to be performed this shift.
5. Incore/Excore calibration was performed yesterday (before the rod dropped).
6. The Primary Operator has completed the QPTR surveillance.
7. The Secondary Operator has completed the independent verification.
8. The Secondary Operator has given the completed forms to you for your verification.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RX1703, QPTR surveillance.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Shift Manager and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Shift Manager to Unit Supervisor, **"Unit Supervisor (or student's name), verify the QPTR surveillance per RX1703. Discuss the results with me."**

KEY 2013 NRC SRO ADM 1 JPM 1

Form A: Quadrant Power Tilt Calculation Sheet

Detector Current at: TIME PRESENT DATE TODAY RE-17 Revision 01-15-07

CAUTION

Record all detector currents in units of microamps.

	TOP (A) DETECTORS				BOTTOM (B) DETECTORS			
	N41	N42	N43	N44	N41	N42	N43	N44
(1) DETECTOR CURRENT 0-500 MICRO	223	INOP	217	210	197	INOP	220	211
(2) 100% RTP, 0% AFD DETECTOR CURRENT FROM RE-17	183.88	INOP	193.37	186.01	198.60	INOP	218.06	207.51
(3) NORMALIZED DETECTOR CURRENT = (1)/(2)	1.21	INOP	1.12	1.13	0.99	INOP	1.01	1.02
(4) AVE. NORMALIZED DETECTOR CURRENT	1.15				1.01			
(5) QUADRANT POWER TILT RATIO (QPTR) = (3)/(4)	1.05 *	INOP	0.97	0.98	0.98	INOP	1.00	1.01
(6) LCO 3.2.4 Met? YES / NO								

Detector Current Obtained by: __________ Date: __________

Detector Current Independently Verified by: __________ Date: __________

Calculations Performed by: __________ Date: __________

Calculations Independently Verified by: __________ Date: __________

* 1.04 to 1.06 Acceptable Range

DATA SHEET FOR 2013 NRC SRO ADMIN JPM '1'

Time Present Time   Date Today's Date Detector Current data obtained

DETECTOR CURRENT DATA for POWER RANGE NUCLEAR INSTRUMENTATION		
DETECTOR	TOP (A) DETECTOR	BOTTOM (B) DETECTOR
N41	223	197
N42	0	0
N43	217	220
N44	210	211

Units are microamps

COMPLETED DATA SHEET 2013 NRC SRO ADMIN JPM 1

Form A: Quadrant Power Tilt Calculation Sheet

Detector Current at: TIME PRESENT DATE TODAY RE-17 Revision 01-15-07

C A U T I O N

Record all detector currents in units of microamps.

	TOP (A) DETECTORS				BOTTOM (B) DETECTORS			
	N41	N42	N43	N44	N41	N42	N43	N44
(1) DETECTOR CURRENT 0-500 MICRO	223	INOP	217	210	197	INOP	220	2.11
(2) 100% RTP, 0% AFD DETECTOR CURRENT FROM RE-17	183.88	INOP	193.37	186.01	198.60	INOP	218.06	207.51
(3) NORMALIZED DETECTOR CURRENT = (1)/(2)	1.21	INOP	1.12	1.13	0.99	INOP	1.01	1.02
(4) AVE. NORMALIZED DETECTOR CURRENT	1.15				1.01			
(5) QUADRANT POWER TILT RATIO (QPTR) = (3)/(4)	1.05	INOP	0.97	0.98	0.98	INOP	1.00	1.01
(6) LCO 3.2.4 Met? YES / NO								

Detector Current Obtained by: Primary Operator Date: Today

Detector Current Independently Verified by: Secondary Operator Date: Today

Calculations Performed by: Primary Operator Date: Today

Calculations Independently Verified by: Secondary Operator Date: Today

RE-17 NIS CHANNEL and LOOP DELTA-T SCALING

Values Shown Below Indicate 100% Values

Channel	Top (μamps)	Bottom (μamps)	MPCS Constant	Amp. Gain (C*-0231)
N41	183.88	198.60	18.09	2.000
N42	176.05	219.00	18.09	2.000
N43	193.37	218.06	18.09	2.000
N44	186.01	207.51	18.09	2.000

Loop	Full Power ΔT	ΔT Gain (C*-0223)	ΔT Alarm Time Delay	T_{AVG} Dev. Alarm Time Delay
1	61.232	1.3065	60 sec.	60 sec.
2	62.539	1.2792	60 sec.	60 sec.
3	60.314	1.3264	60 sec.	60 sec.
4	61.411	1.3027	60 sec.	60 sec.

Channel	IR Full Power Current (μamps)
N35	362.059
N36	341.937

	Signature	Date
RE Dept. Supervisor	Paul V. Green	5/15/12
Operations Manager	[signature]	5/15/12

Revision
01-15-07

Revision Summary:
Updated 100% power, zero AFD NI currents and MPCS Constants for In/Ex Cal.

JOB PERFORMANCE MEASURE 2013 NRC EXAM SRO-ADMJPM02 “Draft”

REVIEW SHUTDOWN MARGIN CALCULATION (MODE 3)

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________

TRAINING SUPERVISOR

1. **Task Number and Description**

Position SRO

SBK 1190202602 Review Results of Surveillance Tests

2. **Conditions:**

A. The plant is in Mode 3 at 557°F following a trip from 100% 9 hours ago.
B. An inadvertent dilution has occurred.
C. Cycle burnup is 16000 MWD/MTU.
D. The board operators have performed and independently verified a Shutdown Margin Surveillance per RX1707, Shutdown Margin Surveillance.

3. **Standards:**

Using RX1707, Shutdown Margin Surveillance, review the boron concentration required to satisfy SDM for the present conditions using the figures from the Primary Tech Data Book provided by the instructor.

4. **Student Materials:**

Copy of Tear-Off Sheet
Copy of RX1707, Shutdown Margin Surveillance Rev 7 Chg 7
Completed RX1707, Shutdown Margin Surveillance Form A
Copy of Primary TDB, Figure RE-2, Shutdown Boron Concentration vs. Temperature
Copy of Primary TDB, Figure RE-18, Shutdown Margin Values
Calculator

5. **Limitations On Performance:**

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. **References:**

Procedures:
- RX1707, Shutdown Margin Surveillance.

Technical Specifications:
- 3.1.1.1 Shutdown Margin greater than 200°F.

Manuals:
- Primary TDB, Figure RE-2 Shutdown Boron Concentration vs. Temperature.
- Primary TDB, Figure RE-18 Shutdown Margin Values.

Sys	KA	Description	Value RO/SRO
192002	K1.13	Calculate SDM using procedures and given plant parameters.	3.5/3.7
	2.2.12	Knowledge of Surveillance Procedures	3.7/4.1

7. Setting:

Use the simulator or the classroom. A key must be setup using RE curves (RE curves may not be the latest revision). The required RE curves are included in the student material package and must be given to the student when reaching for the Primary Tech Data Book. Failure to do this will cause unrealistic numbers for the student. Since an inadvertent dilution has occurred, pick a value for the current boron concentration that is below the value required by RE-2. SDM may or may not be adequate depending on the value selected (i.e., how large the dilution was).

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Unit Supervisor. An inadvertent dilution has occurred. Review the completed RX1707, Shutdown Margin Surveillance Form A. State if the shutdown margin is adequate or not.

B. The following information is provided to you:

1. The plant is in Mode 3 at 557°F following a trip from 100% 9 hours ago.
2. An inadvertent dilution has occurred.
3. Cycle burnup is 16000 MWD/MTU.
4. The board operators have performed and independently verified a Shutdown Margin Surveillance per RX1707, Shutdown Margin Surveillance.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RX1707, Shutdown Margin Surveillance.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Shift Manager and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

Shift Manager to Unit Supervisor, **"Unit Supervisor (or student's name), an inadvertent dilution has occurred. Review the completed RX1707, Shutdown Margin Surveillance Form A. State if the shutdown margin is adequate or not.**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: When student demonstrates the ability to obtain a controlled copy of RX1707, Shutdown Margin Surveillance provide the student with RX1707, Shutdown Margin Surveillance.

		ELEMENT/STEP	STANDARD	SAT	UNSAT
1.	P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

		ELEMENT/STEP	STANDARD	SAT	UNSAT
2.	P	For the existing RCS temperature, obtain the required shutdown boron concentration from Primary TDB, Figure RE-2 Shutdown Boron Concentration vs. Temperature.	For the existing RCS temperature, obtains the required shutdown boron concentration from Primary TDB, Figure RE-2 Shutdown Boron Concentration vs. Temperature.	_____	_____

NOTE: See key for all values that student should enter on Form A line 1.

		ELEMENT/STEP	STANDARD	SAT	UNSAT
*3.	P	Record RCS T_{avg} and the corresponding RE-02 required shutdown boron concentration value (A) on Form A Shutdown Margin Determination - Modes 3, 4, and 5.	Verifies RCS T_{avg} and the corresponding RE-02 required shutdown boron concentration value (A) recorded on Form A Shutdown Margin Determination - Modes 3, 4, and 5.	_____	_____
4.	P	Obtain xenon worth from the MPCS point C0036 or from Reactor Engineering. Record the xenon worth value (B) on Form A.	Obtains xenon worth from the MPCS point C0036 or from Reactor Engineering. Verifies xenon worth value (B) recorded on Form A.	_____	_____

CUE: When the student asks about xenon worth, evaluator to student, **"Xenon worth is 5850 pcm."**

		ELEMENT/STEP	STANDARD	SAT	UNSAT
*5.	P	Obtain the correct value of differential boron worth (DBW) from Primary TDB, Figure RE-18 Shutdown Margin Values. Record the DBW value (C) on Form A.	Obtains the correct value of differential boron worth (DBW) from Primary TDB, Figure RE-18 Shutdown Margin Values. Verifies DBW value (C) recorded on Form A.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
*6. P	Using the equation as shown on Form A calculate the shutdown boron concentration (xenon credit) value (D). Record the calculated value (D) on Form A. If number is negative record zero.	Using the equation as shown on Form A calculates the shutdown boron concentration (xenon credit) value (D). Verifies the calculated value (D) on Form A. If number is negative verifies zero.	_____	_____

CUE: Provide the following cue, **"The RCS boron concentration value is correct."**

NOTE: SDM may or may not be adequate depending on the value of the current RCS boron concentration determined by the evaluator in the setup and required shutdown boron concentration obtained from RE-2.

7. P	Record the existing RCS boron concentration value (E) on Form A.	Verifies the existing RCS boron concentration value (E) on Form A.	_____	_____
*8. P	Check if existing RCS boron value (E) is greater than the shutdown boron concentration (xenon credit) (D). Mark the associated block yes or no as applicable.	Checks if existing RCS boron value (E) is greater than the shutdown boron concentration (xenon credit) (D). Verifies the associated block yes or no as applicable.	_____	_____
9. P	If existing RCS boron is less than shutdown boron concentration (xenon credit) (D), notify SM/US that the shutdown margin surveillance is not being satisfied.	If existing RCS boron is less than shutdown boron concentration (xenon credit) (D), notifies SM that the shutdown margin surveillance is not being satisfied.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: "The JPM is complete."

10.	Stop time ___________ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	
11.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____ _____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Primary Operator. An inadvertent dilution has occurred. The chemist has sampled the RCS and will have the current boron concentration shortly. Determine the boron concentration required, taking credit for xenon, to satisfy the SDM. State if the shutdown margin is adequate or not.

B. The following information is provided to you:

1. The plant is in Mode 3 at 557°F following a trip from 100% 9 hours ago.
2. An inadvertent dilution has occurred.
3. Cycle burnup is 16000 MWD/MTU.
4. The board operators have performed and independently verified a Shutdown Margin Surveillance per RX1707, Shutdown Margin Surveillance.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RX1707, Shutdown Margin Surveillance.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Shift Manager and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Shift Manager to Unit Supervisor, **"Unit Supervisor (or student's name), an inadvertent dilution has occurred. Review the completed RX1707, Shutdown Margin Surveillance Form A. State if the shutdown margin is adequate or not.**

KEY 2013 NRC SRO ADMIN JPM 2

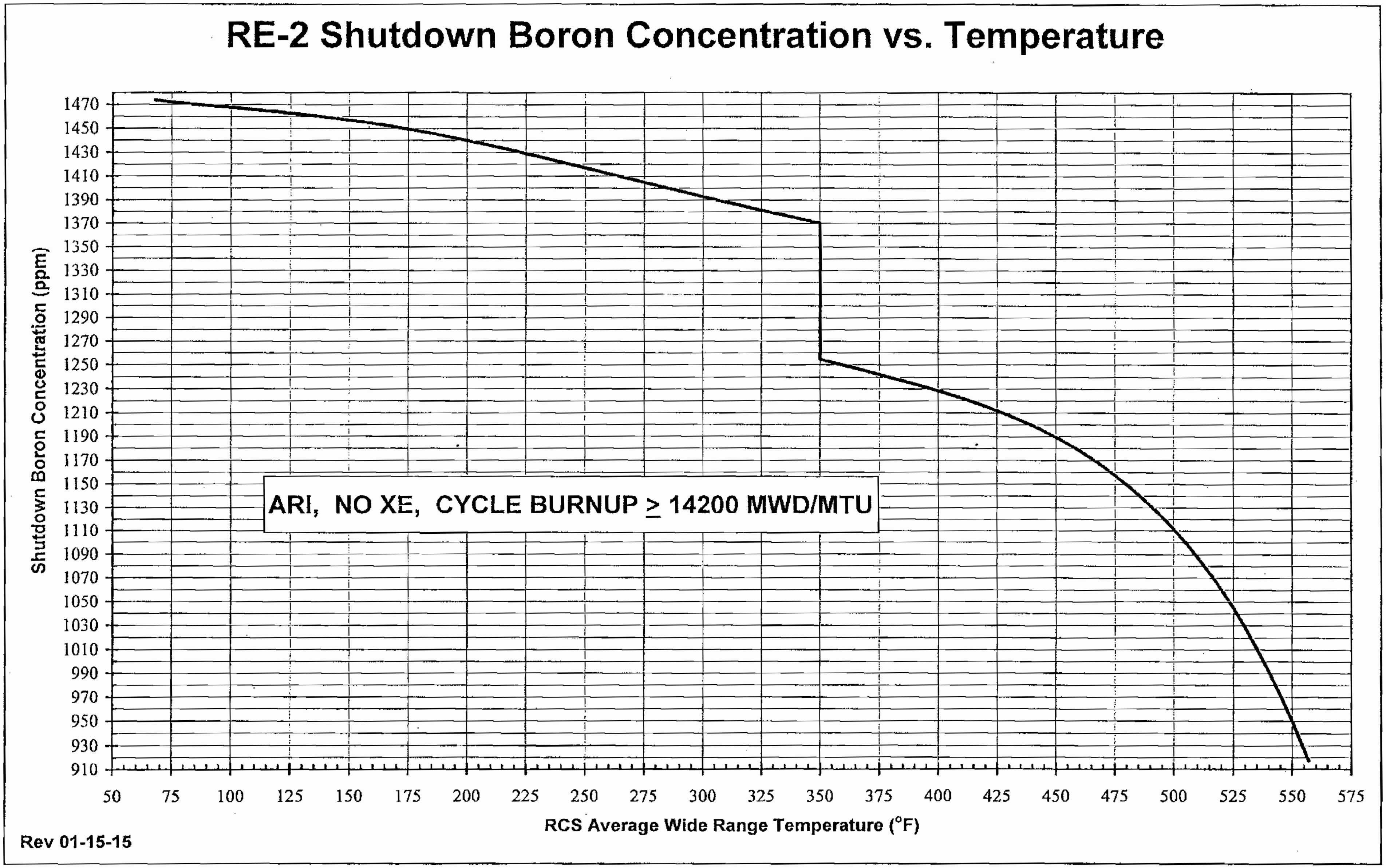
Form A: Shutdown Margin Determination MODEs 3, 4 And 5

TIME/DATE	RCS TAVG (°F)	(A) SHUTDOWN BORON (From RE-2) (PPM)	(B) XENON WORTH (C0036 or RE) (PCM)	(C) DIFFERENTIAL BORON WORTH (From RE-18) (PCM/PPM)	(D) SHUTDOWN BORON CONCENTRATION (XENON CREDIT) (A - (B/C)) (PPM)	(E) EXISTING RCS BORON (PPM)	RCS BORON GREATER THAN REQUIRED (YES/NO)	INITIALS
Date: TODAY / /	557	915	5850	8.501	227 *	500	YES	Performed by:
Time PRESENT :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:

US Review ____________________ Date ____________________

SM Review ____________________ Date ____________________

* 222 - 232 Acceptable Range



RE Dept Supervisor [signature] Date 7/5/12

Operations Manager [signature] Date 7/5/12

RE-18 SHUTDOWN MARGIN VALUES

PART A: Reactivity Values For RX 1707

Maximum Worth of Individual Immovable, Untrippable or Dropped Rod	=	1004 pcm
Total Control and Shutdown Rod Worth Minus Stuck Rod and Less 10% Uncertainty	=	5578 pcm
Boron Equivalent of Worst Case Immovable or Untrippable Rod	=	177 ppm
Differential Boron Worth (Xenon credit in shutdown margin determination). Use the appropriate RCS Average Temperature Range as follows:		
Less than 530 °F	=	12.324 pcm/ppm
Greater Than or Equal to 530 °F	=	8.501 pcm/ppm

PART B: Rapid Boration Termination Criteria for Two or More Stuck Rods

2400 gallons per rod from the BAT
OR
62000 gallons per rod from the RWST
OR
RCS Boron > 3044 ppm
OR
RCS Boron > 1151 ppm above the requirement of RE-02

PART C: Rapid Boration Termination Criteria for ES-0.1 Loss of DRPI

RCS Boron > 3044 ppm
OR
RCS Boron > 1151 ppm above the requirement of RE-02

RE-18 SHUTDOWN MARGIN VALUES

(Sheet 2 of 2)

PART D: Fire/Safe Shutdown Shutdown Margin Criteria for OS1200.01 and OS1200.02

The RCS boron sample obtained during cooldown must be at least 724 ppm greater then the boron sample obtained prior to cooldown.

If RCS Shutdown Margin is **NOT** verified by RCS Boron sample, then ensure greater than 12,650 gallons of at least 7000 ppm is injected into the RCS.

PART E: Rods Out Shutdown Value

RCS Boron > 1151 ppm above the requirement of RE-02 - for all rod banks out

RCS Boron > 210 ppm above the requirement of RE-02 - for a single rod bank out (BOC only)

PART F: Steam Generator Tube Leak Rapid Boration Flow for OS1227.02

Rapid boration flow to obtain adequate shutdown margin for cooldown > 70 gpm

RE Dept Supervisor	Paul V. Guny Signature	4/12/11 Date
Operations Manager	[signature] Signature	4/12/11 Date

COMPLETED DATA SHEET 2013 NRC SRO ADMIN JPM 2

Form A: Shutdown Margin Determination MODEs 3, 4 And 5

TIME/DATE	RCS TAVG (°F)	(A) SHUTDOWN BORON (From RE-2) (PPM)	(B) XENON WORTH (C0036 or RE) (PCM)	(C) DIFFERENTIAL BORON WORTH (From RE-18) (PCM/PPM)	(D) SHUTDOWN BORON CONCENTRATION (XENON CREDIT) (A - (B/C)) (PPM)	(E) EXISTING RCS BORON (PPM)	RCS BORON GREATER THAN REQUIRED (YES/NO)	INITIALS
Date: TODAY / /	557	915	5850	8.501	227	500	YES	Performed by: Primary Operator
Time PRESENT :								Independently Verified by: secondary operator
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:
Date: / /								Performed by:
Time :								Independently Verified by:

US Review ____________________ Date ____________

SM Review ____________________ Date ____________

JOB PERFORMANCE MEASURE 2013 NRC EXAM SRO-ADMJPM03 "Draft"

APPROVE SPENT FUEL POOL BLENDED MAKEUP CALCULATION

Student Name: ______________________ LMS #: __________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: __________

APPROVED BY: ______________________ DATE: __________
TRAINING SUPERVISOR

1. **Task Number and Description**

Position RO

SBK 0040100601 Perform a boron change calculation.

2. **Conditions:**

A. A manual blended makeup to the Spent Fuel Pool is required to raise pool level.

3. **Standards:**

Approve a calculation of the required flow controller and totalizer setpoints for a 550 gallon manual blended makeup to the Spent Fuel Pool.

4. **Student Materials:**

Copy of Tear Off Sheet
Copy of RS1735, Reactivity Calculations, Rev 6
Copy of RS1735, Reactivity Calculations completed Form E
Daily Chemistry Report
Calculator

5. **Limitations On Performance:**

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. **References:**

Procedures:

- RS1735, Reactivity Calculations, Rev 6

Sys	KA	Description	Value RO/SRO
	2.1.37	Knowledge of procedures, guidelines, or limitations associated with reactivity management.	4.3/4.6

7. Setting:

Classroom.
1. Give student a copy of the RS1735, Reactivity Calculations completed Form E.
2. Examiner must prepare a completed RS1735, Reactivity Calculations, Form E in advance. It shall reflect the JPM values for the values listed in Daily Chemistry Report.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Unit Supervisor. You are going to approve calculations for a 550 gallon blended makeup to the Spent Fuel Pool on RS1735, Reactivity Calculations, Form E.

B. The following information is provided to you:

   1. A 550 gallon manual blended makeup to the Spend Fuel Pool is required for pool inventory addition.
   2. Makeup total flow rate will be 50 gpm.
   3. The makeup boron concentration will be at the current Spent Fuel Pool boron concentration.
   4. 'A' Boric Acid Storage Tank will be used for the blended makeup.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RS1735, Reactivity Calculations.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

K. I will act as the Shift Manager and provide cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

Shift Manager to Unit Supervisor, **"Unit Supervisor (or student's name), approve calculations for a 550 gallon blended makeup to the Spent Fuel Pool on RS1735, Reactivity Calculations, Form E."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
1. P	Start time ____________	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: When the student demonstrates the ability to obtain a controlled copy of RS1735, Reactivity Calculations, provide the student with a copy. Student should refer to section 4.4 Blended Makeup Calculation (Form E, Blended Makeup Worksheet) and the Daily Chemistry Report to determine Spent Fuel Pool (SFP) and boric acid storage tank boron concentration.

2. P	Approve calculations for a 550 gallon blended makeup to the Spent Fuel Pool on RS1735, Reactivity Calculations, Form E.			
	1. ENTER the desired makeup boron concentration (C_{MU}).	1. Verifies the desired makeup boron concentration (C_{MU}) for the SFP from the Daily Chemistry Report in step 1 of Form E.	____	____
	2. ENTER the desired makeup flow rate SETPOINT: FIQ-111 (F_{TOT}).	2. Verifies the desired makeup flow rate SETPOINT: FIQ-111 (F_{TOT}) in step 2 of Form E. (50 gpm)	____	____
	3. ENTER the actual Boric Acid Storage Tank concentration (C_{BAST}).	3. Verifies the actual Boric Acid Storage Tank concentration (C_{BAST}) from the Daily Chemistry Report in step 3 of Form E.	____	____
	4. ENTER the desired makeup quantity TARGET: FIQ-111 (G_{TOT}).	4. Verifies the desired makeup quantity TARGET: FIQ-111 (G_{TOT}) in step 4 of Form E. (550 gallons)	____	____
	*5. CALCULATE the boric acid flow rate SETPOINT: FIQ-111 (F_{BA}):	*5. Verifies the values from steps 1, 2 & 3 are entered in the equation and the calculated value for the boric acid flow rate SETPOINT: FIQ-111 (F_{BA}) is correct.	____	____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
	*6. CALCULATE the boric acid quantity TARGET: FIQ-111 (G_{BA}):	*6. Verifies the values from steps 1, 3 & 4 are entered in the equation and calculated value for the boric acid quantity TARGET: FIQ-111 (G_{BA}) is correct.	_____ _____

CUE: If the student asks for the type and quantity of water currently present in the makeup line at any time during the JPM respond, **"The makeup line contains a blend from a previous SFP makeup based on the same SFP and BAST values. Please continue with the task."**

	7. SRO Approval By signature and Date.	7. Signs and dates the Approval By signature and Date line.	_____ _____

CUE: "The JPM is complete."

3.	Stop time __________	Time to complete task ≤15 minutes	_____ _____
	Evaluator calculates time to complete task		
4.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____ _____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Unit Supervisor. You are going to approve calculations for a 550 gallon blended makeup to the Spent Fuel Pool on RS1735, Reactivity Calculations, Form E.

B. The following information is provided to you:

1. A 550 gallon manual blended makeup to the Spend Fuel Pool is required for pool inventory addition.
2. Makeup total flow rate will be 50 gpm.
3. The makeup boron concentration will be at the current Spent Fuel Pool boron concentration.
4. 'A' Boric Acid Storage Tank will be used for the blended makeup.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using RS1735, Reactivity Calculations.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator (LORT only).

J. We will begin after the Initiating Cue is read.

K. I will act as the Shift Manager and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Shift Manager to Unit Supervisor, **"Unit Supervisor (or student's name), approve calculations for a 550 gallon blended makeup to the Spent Fuel Pool on RS1735, Reactivity Calculations, Form E."**

KEY 2013 NRC SRO ADmin JPm 3

Form E: Blended Makeup Worksheet

(Sheet 1 of 1)

---

1. Desired Makeup Boron Concentration (C_{MU}) 2512 ppm

2. Desired Makeup Flow Rate SETPOINT: FIQ-111 (F_{TOT}) 50 gpm

3. Boric Acid Storage Tank Concentration (C_{BAST}) 7361 ppm

4. Desired Makeup Quantity TARGET: FIQ-111 (G_{TOT}) 550 gals

5. Boric Acid Flow Rate SETPOINT: FIQ-111 (F_{BA})

$$F_{BA} = \frac{(C_{MU})(F_{TOT})}{C_{BAST}} = \frac{(\ 2512\ )(\ 50\ )}{(\ 7361\ )} = 17 \text{ gpm}$$

6. Boric Acid Quantity TARGET: FIQ-111 (G_{BA})

$$G_{BA} = \frac{(C_{MU})(G_{TOT})}{C_{BAST}} = \frac{(\ 2512\ )(\ 550\ )}{(\ 7361\ )} = 188 \text{ gal}$$

> **NOTE**
>
> The Blended Makeup Worksheet does not account for the type and quantity of water currently present in the makeup line.

Calculated By: ______________________ Date: __________

Independently Verified By: ______________________ Date: __________

SRO Approval By: ______________________ Date: __________

Chemistry Report for 2013 NRC SRO ADMIN JPM 3

NEXTera ENERGY SEABROOK

Seabrook Daily Chemistry Status Report

5/17/2013 9:31

Chemistry Effectiveness Indicator (CEI)

Monthly	0
18 Month Avg	1.21

Reactor Coolant System

Parameter	AL 1	AL 2	AL 3	Actual	Sampled On
Boron, ppm	Per COLR	N/A	N/A	1367	05/16/2013 09:00
Lithium, ppm	Control Band	N/A	N/A	3.51	05/16/2013 09:00
Chloride, ppm	> 0.050	≥ 0.150	> 1.50	0.00441	05/16/2013 09:00
Fluoride, ppm	> 0.050	> 0.150	> 1.50	0.00278	05/16/2013 09:00
Sulfate, ppm	> 0.025	> 0.150	> 1.50	0.00033	05/15/2013 09:00
Oxygen, ppm	> 0.005	≥ 0.100	> 1.00	<0.0001	05/16/2013 09:00
Hydrogen, cc/kg	< 25 OR > 50	< 15	< 5	33.8	05/16/2013 09:00
DEI-131, uCi/g			> 1.0	4.35e-05	05/14/2013 08:55
Gross Activity, uCi/g			77.5	1.23e-01	05/16/2013 09:00

Primary Systems

System	AL	Boron, ppm	Sampled On
BAT A	< 7000 or > 7700	7361	05/16/2013 01:50
BAT B	< 7000 or > 7700	7314	05/09/2013 00:13
RWST	Per COLR	2485	05/16/2013 08:40
SFP	< 2000	2512	05/13/2013 08:45

Condensate / Feedwater

Parameter	AL	Actual	Sampled On
CO O2, ppb	> 10	3.43	05/16/2013 08:30
FW O2, ppb	> 5	0.68	05/16/2013 08:30
FW N2H4, ppb	< 8xCO O2 or < 20	79	05/16/2013 08:30

Generator Stator Cooling

Parameter	AL	Actual	Sampled On
SLMS Oxygen, ppm	< 3.0	4.56	05/16/2013 08:30
Backup Oxygen, ppm	< 3.0	4.49	05/16/2013 08:30
Grab Oxygen, ppm	< 3.0	4.5	05/14/2013 15:35
SLMS Hydrogen, %	≥ 3.0	0.15	05/16/2013 08:30
Backup Hydrogen, %	≥ 3.0	NIS	05/16/2013 08:30
S/C in, uS/cm	≥ 0.5	NIS	05/16/2013 08:30
Grab S/C in, uS/cm	≥ 0.5	0.09	05/16/2013 08:30
S/C out, uS/cm	≥ 0.5	0.083	05/16/2013 08:30
Grab S/C out, uS/cm	≥ 0.5	0.07	03/17/2013 07:00
Copper, ppb	> 20	12.6	05/14/2013 22:44

Discharge Transition Structure

Parameter	AL	Actual	Sampled On
TRO, ppm	> 0.20	0.07	05/16/2013 08:20

Secondary Data

Primary-to-Secondary Leak Rate	0.796 gpd	
Secondary DEI-131, uCi/g	ND	04/22/2013 08:25

Steam Generators

Parameter	AL 1	AL 2	AL 3	A S/G	B S/G	C S/G	D S/G
Sodium, ppb	> 5	> 50	> 250	0.28	0.28	0.24	0.27
Chloride, ppb	> 10	> 50	> 250	0.28	<0.2	0.22	0.24
Sulfate, ppb	> 10	> 50	> 250	0.34	0.33	0.25	0.3
Cat. Cond. uS/cm		> 1.2	> 4.2	0.274	0.272	0.257	0.265

In Spec	WHITE
Exceeds AL 1	GREEN
Exceeds AL 2	
Exceeds AL 3 or AL	RED

Completed Data Sheet 2013 NRC SRO Admin JPM 3

Form E: Blended Makeup Worksheet

(Sheet 1 of 1)

---

1. Desired Makeup Boron Concentration (C_{MU}) 2512 ppm
2. Desired Makeup Flow Rate SETPOINT: FIQ-111 (F_{TOT}) 50 gpm
3. Boric Acid Storage Tank Concentration (C_{BAST}) 7361 ppm
4. Desired Makeup Quantity TARGET: FIQ-111 (G_{TOT}) 550 gals
5. Boric Acid Flow Rate SETPOINT: FIQ-111 (F_{BA})

$$F_{BA} = \frac{(C_{MU})(F_{TOT})}{C_{BAST}} = \frac{(2512)(50)}{(7361)} = 17 \text{ gpm}$$

6. Boric Acid Quantity TARGET: FIQ-111 (G_{BA})

$$G_{BA} = \frac{(C_{MU})(G_{TOT})}{C_{BAST}} = \frac{(2512)(550)}{(7361)} = 188 \text{ gal}$$

> **NOTE**
>
> The Blended Makeup Worksheet does not account for the type and quantity of water currently present in the makeup line.

Calculated By: ______________________ Date: __________

Independently Verified By: ______________________ Date: __________

SRO Approval By: ______________________ Date: __________

NEXTera ENERGY SEABROOK

JOB PERFORMANCE MEASURE 2013 NRC EXAM SRO-ADMJPM04 “Draft”

VERIFY A LIQUID EFFLUENT WASTE SAMPLE REQUEST

Student Name: ______________________ LMS #: ____________

Evaluator Name: ______________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ______________________ DATE: ____________

APPROVED BY: ______________________ DATE: ____________

TRAINING SUPERVISOR

1. Task Number and Description

Position SRO

SBK 0690301502 Authorize a release of liquid waste.

2. Conditions:

A. The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
B. WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
C. WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
D. WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
E. Projected release start time is normally 8 hours after placing the tank on recirc.
F. The Primary Operator has completed Section 1 of CP 4.1A, Liquid Effluent Waste Sample Requests.

3. Standards:

Using CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation, verify the following:

- Form CP4.1A, Liquid Effluent Waste Sample Request

4. Student Materials:

Calculator
Copy of Tear Off Sheet.
Copy of CP-4.1, Effluent Sampling Program
Copy of ON1018.07, Waste Test Tank Recirculation
Copy of completed Form CP4.1A, Liquid Effluent Waste Sample Request

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- CP-4.1, Effluent Sampling Program
- ON1018.07, Waste Test Tank Recirculation

Sys	KA	Description	Value RO/SRO
	2.3.11	Ability to control radiation releases.	3.8/4.3

7. Setting:

Simulator or Classroom.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Unit Supervisor. You are going to perform the verification of a Liquid Effluent Waste Sample Request, using the information provided.

B. The following information is provided to you:

1. The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
2. WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
3. WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
4. WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
5. Projected release start time is normally 8 hours after placing the tank on recirc.
6. The Primary Operator has completed Section 1 of CP 4.1A, Liquid Effluent Waste Sample Request.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

H. The evaluator will act as the Primary Operator and provide the cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

Primary Operator to Unit Supervisor, **"Unit Supervisor (or student's name), Section 1 of Form CP 4.1A is complete. Please perform the verification."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT

NOTE: When the student demonstrates the ability to obtain a controlled copy of CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation, provide the student with the required document(s).

1.	P	Start time ____________	Initiating cue read	

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: It is assumed that the student will use CP 4.1 to process through the verification and check ON1018.07 to verify the tank volumes and recirculation flow rate. The student may choose to verify the tank volume and recirculation rate prior to referring to CP 4.1. These steps can be performed in any order as long as all steps are completed correctly.

*2.	P	Section 1 of CP 4.1A is completed by Operations and provides the following information:			
		a. Name of tank, sump, or SG demin vessel to be sampled.	a. Verifies WTT "A" is entered.	_____	_____

CUE: If the student wants to verify the amount of liquid in the "A" Waste Test Tank using the Main Plant Computer, tell them that the MPCS indicates 18,000 gallons.

		b. Total tank or sump volume to be discharged or transferred.	b. Notes 18,000 gallons are consistent with initial conditions and indications.	_____	_____

NOTE: The recirculation rate for WTT A is actually 150 gpm. Waste Holdup Sump recirculation rate is 400 gpm. The student must correct this mistake to ensure adequate tank recirculation prior to sampling.

CUE: If the Primary Operator (Evaluator) is informed that the recirculation rate is incorrect, say **"I must have been thinking about the Waste Holdup Sump recirculation rate."**

CUE: If the student (Unit Supervisor gives the form back to the evaluator (Primary Operator) to correct, say: **"Use your corrected values and complete the verification."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
	c. Recirculation rate.	*c. Corrects the recirculation rate to 150 gpm and the recirculation required time to be 240 minutes.	_____	_____
	d. Recirculation starting time and date.	d. Verifies 0800 and today's date.	_____	_____
	e. Sample date and time,	*e. Corrects sample time to 1200.	_____	_____
	f. Disposition of tank.	f. Verifies DISCHARGE as disposition.	_____	_____
	g. The projected CW and SW pump combination for the discharge.	g. Verifies 2 CW pumps and 2 SW pumps entered.	_____	_____
	h. Projected release start date and time.	h. Corrects projected start time to 2000.	_____	_____
	i. Date, time of request, and initials of originator.	i. Verifies time, date and initials are entered.	_____	_____
	j. Date, time, and initials of individual that performed verification of operational data.	j. Enters date, time, and initials.	_____	_____

CUE: "The JPM is complete."

3.	Stop time __________	Time to complete task ≤ 15 minutes	_____	_____
	Evaluator calculates time to complete task			
4.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR SRO ADMIN JPM 04

Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. You are the Unit Supervisor. You are going to perform the verification of a Liquid Effluent Waste Sample Request, using the information provided.

B. The following information is provided to you:

1. The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
2. WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
3. WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
4. WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
5. Projected release start time is normally 8 hours after placing the tank on recirc.
6. The Primary Operator has completed Section 1 of CP 4.1A, Liquid Effluent Waste Sample Request.

C. You may request a peer check of your actions while performing the task.

D. Perform the task using CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

K. I will inform you when the JPM is complete.

L. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

M. We will begin after the Initiating Cue is read.

H. The evaluator will act as the Primary Operator and provide the cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Primary Operator to Unit Supervisor, **"Unit Supervisor (or student's name), Section 1 of Form CP 4.1A is complete. Please perform the verification."**

KEY 2013 NRC SRO Admin JPM 4

Liquid Effluent Waste Sample Request

Section I **Operational Data (Completed by Operations Department)**

Tank, Sump, S/G, CPS or SG Demin. Vessel: A WT

Disposition: X Discharge ____ Recycle

Tank, Sump, or S/G Volume: 18000 gallons

Recirculate Rate: 150 gpm

Minimum Recirc. Time* = 2 x Tank Vol. / Recirc. Rate = 240 min.

Recirc. Start Date and Time: Today / 0800

Sample Date and Time: Today / 1200

NOTE

CW-V-40 position cannot change once this form is submitted to Chemistry.

Project CW and SW pump combination for discharge: CW 2 SW 2

Project Release Start Date and Time: Today / 2000

Originator ____ Date ____ Time ____

Verified By ____ Date ____ Time ____

Section II **Chemistry Data (Completed by Chemistry Department)**

____ / ____ ____

Sample Date | Sample Time | Sample Collected by (Initials)

Sample Identification No. ____

LEW Permit Number: ____

Dilution Water Flow Rate: ____ gpm

Volume Discharged: ____ gallons

Composite Volume: ____ mls

Composite Updated by: ____ (Initials)

* or as directed by supervision

DATA 2013 NRC SRO ADMIN JPM 4

Liquid Effluent Waste Sample Request

Section I **Operational Data (Completed by Operations Department)**

Tank, Sump, S/G, CPS or SG Demin. Vessel: A WTT

Disposition: X Discharge ____ Recycle

Tank, Sump, or S/G Volume: 18000 gallons

Recirculate Rate: 400 gpm

Minimum Recirc. Time* = 2 x Tank Vol. / Recirc. Rate = 90 min.

Recirc. Start Date and Time: Today / 0800

Sample Date and Time: Today / 0930

NOTE

CW-V-40 position cannot change once this form is submitted to Chemistry.

Project CW and SW pump combination for discharge: CW 2 SW 2

Project Release Start Date and Time: Today / 1730

Originator [signature] Date Today Time 0830

Verified By ____ Date ____ Time ____

Section II **Chemistry Data (Completed by Chemistry Department)**

____ / ____ ____

Sample Date / Sample Time / Sample Collected by (Initials)

Sample Identification No. ____

LEW Permit Number: ____

Dilution Water Flow Rate: ____ gpm

Volume Discharged: ____ gallons

Composite Volume: ____ mls

Composite Updated by: ____ (Initials)

* or as directed by supervision

JOB PERFORMANCE MEASURE 2013 NRC EXAM SRO-ADMJPM05 "Draft"

GENERAL EMERGENCY PROTECTIVE ACTION REQUIREMENTS (PARS) DETERMINATION

Student Name: ____________________ LMS #: __________

Evaluator Name: ____________________

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2013 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: ____________________ DATE: __________

APPROVED BY: ____________________ DATE: __________

TRAINING SUPERVISOR

1. Task Number and Description

Position SRO

SBK 1190402003 Perform Required Notification of On-Site and Off-Site Personnel for Emergency Events

2. Conditions:

A. The plant has tripped from 100% power due to a LOP today at 1300.
B. The US has transitioned from E-0 to ECA-0.0.
C. No Emergency Diesel Generators or SEPS Diesels are available.
D. The event has been classified as a General Emergency based on EAL SG1, Prolonged loss of both AC emergency buses. Restoration of either emergency bus is not expected within 4 hours.
E. The time of E-Plan declaration was 1323.
F. A release has not occurred.
G. The Remote Monitoring Area (RMA) has not been activated.
H. Form ER 2.0B, State Notification Fact Sheet is complete and the states were notified at 1333.
I. There is a 10 mph wind.
J. LOWER wind direction is coming FROM 285 degrees.
K. UPPER wind direction is coming FROM 305 degrees.
L. The appropriate PAR Group A has been recommended to the states.
M. At 1355 the Shift Manager is re-assessing plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 11, Follow up PAR Assessment.
N. Critical Safety Functions (CSF) have been verified and are as follows:
   - CORE COOLING (C) ORANGE Path – go to FR-C.2
   - HEAT SINK (H) RED Path – go to FR-H.1
   - CONTAINMENT (Z) RED Path – go to FR-Z.1
   - INVENTORY (I) YELLOW Path – go to FR-H.1

3. Standards:

- The student will start in ER 1.2, Emergency Plan Activation, Form D, General Emergency Checklist – STED, Step 11.
- The student will transition to ER 1.2G, General Emergency PAR Worksheet, to determine if upgraded protective action recommendations are warranted.
- The student will notify the STED of the PAR recommendation within 15 minutes.

4. Student Materials:

Copy of Tear-Off Sheet
Copy of Form ER 2.0B, State Notification Fact Sheet
Copy of ER 1.2, Emergency Plan Activation

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- ER 1.2, Emergency Plan Activation
- ER 2.0, Emergency Notification Documentation Forms Procedure

Sys	KA	Description	Value RO/SRO
	2.4.44	Knowledge of emergency plan protective action recommendations.	2.4/4.4

7. Setting:

Simulator or Classroom

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. This is a TIME CRITICAL task. You are the Work Control Supervisor. The STED directs you to re-assess plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 11, Follow up PAR Assessment, to determine if upgraded protective action recommendations are warranted. If upgraded PARs are warranted, inform the STED of your upgraded PAR recommendation at the completion of ER 1.2G, step 4.

B. The following information is provided to you:

1. The plant has tripped from 100% power due to a LOP today at 1300.
2. The US has transitioned from E-0 to ECA-0.0.
3. No Emergency Diesel Generators or SEPS Diesels are available.
4. The event has been classified as a General Emergency based on EAL SG1, Prolonged loss of both AC emergency buses. Restoration of either emergency bus is not expected within 4 hours.
5. The time of E-Plan declaration was 1323.
6. A release has not occurred.
7. The Remote Monitoring Area (RMA) has not been activated.
8. Form ER 2.0B, State Notification Fact Sheet is complete and the states were notified at 1333.
9. There is a 10 mph wind.
10. LOWER wind direction is coming FROM 285 degrees.
11. UPPER wind direction is coming FROM 305 degrees.
12. The appropriate PAR Group A has been recommended to the states.
13. At 1355 the Shift Manager is re-assessing plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 11, Follow up PAR Assessment.
14. Critical Safety Functions (CSF) have been verified and are as follows:
    - CORE COOLING (C) ORANGE Path – go to FR-C.2
    - HEAT SINK (H) RED Path – go to FR-H.1
    - CONTAINMENT (Z) RED Path – go to FR-Z.1
    - INVENTORY (I) YELLOW Path – go to FR-H.1

C. You may request a peer check of your actions while performing the task.

D. Perform the task using ER 1.2, Emergency Plan Activation and ER 2.0, Emergency Notification Documentation Forms Procedure.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

H. I will inform you when the JPM is complete.

I. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator.

J. We will begin after the Initiating Cue is read.

H. The evaluator will act as the Short Term Emergency Director (STED) and provide the cues and communications for this JPM. Do you have any questions?

11. Initiating Cue:

STED to Work Control Supervisor, **"Work Control Supervisor (or student's name), re-assess plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 11, Follow up PAR Assessment, to determine if a PARs upgrade is warranted. If upgraded PARs are warranted, inform me of your upgraded PAR recommendation at the completion of ER 1.2G, step 4. This is a TIME CRITICAL task."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: This is a TIME CRITICAL task. A new PAR recommendation is required within 15 minutes of starting the JPM.

1.	P	Start time ____________	Initiating cue read	

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2.	P	Student starts at with ER 1.2D, General Emergency Checklist – STED, Step 11, Follow up PAR Assessment to determine if a PARs upgrade is warranted.	Student transitions to form ER 1.2G, General Emergency PAR Worksheet.	_____	_____
3.	P	Using form ER 1.2G, General Emergency PAR Worksheet, student determines if upgraded protective action recommendations are warranted.			
		1. Block 1: GENERAL EMERGENCY	1. Student recognizes the plant is in a GENERAL EMERGENCY.	_____	_____
		2. Block 2: IS THE CORE COOLING CSFST PROCEEDING ALONG A RED PATH?	2. Student recognizes that NO, CORE COOLING CSFST is ORANGE.	_____	_____
		3. Block 3: IS THE CONTAINMENT CSFST PROCEEDING ALONG A RED PATH?	3. Student recognizes that YES, CONTAINMENT CSFST is RED.	_____	_____
		*4. PAR GROUP B GO TO PAGE 2 OF THIS FORM	*4. Student identifies transition to PAR Group B and goes to page 2 of Form G.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
3.	P	For a PAR Group B selection, the student uses the following instructions and table to determine Protective Action Recommendations.			
		1. If a release is in progress from the plant vent, enter the current upper wind.	1. Student identifies no release is in progress from the plant vent.	_____	_____
		2. If a release from the plant vent is NOT in progress, enter the current lower wind direction.	2. Student enters the current lower wind direction of 285 degrees.	_____	_____
		3. Identify the appropriate PAR GROUP B column based on the above wind direction to determine the towns to be evacuated and sheltered.	3. Student identifies the correct PAR GROUP B column based on the above wind direction and determines the towns to be evacuated and sheltered.	_____	_____
		4. Check off the evacuated and sheltered towns and evacuated and closed beaches on form ER 2.0B, Block 4.	4. Student checks off the evacuated and sheltered towns and evacuated and closed beaches on form ER 2.0B, Block 4.	_____	_____
		5. Check off "Implement KI plans for the general public" on form ER 2.0B, Block 4.	5. Student checks off "Implement KI plans for the general public" on form ER 2.0B, Block 4.	_____	_____
4.	*P	Student informs STED of new PAR recommendation. End time ____________	Time to complete task ≤ 15 minutes	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: "The JPM is complete."

5.	Stop time __________ Evaluator calculates time to complete task	Time to complete task ≤ 15 minutes	_____	_____
6.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Directions To The Student:

Evaluator gives Tear Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

Student:

1. Ensure task is done correctly.
2. You may be asked follow up questions to confirm knowledge of the task.

A. This is a TIME CRITICAL task. You are the Work Control Supervisor. The STED directs you to re-assess plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 11, Follow up PAR Assessment, to determine if upgraded protective action recommendations are warranted. If upgraded PARs are warranted, inform the STED of your upgraded PAR recommendation at the completion of ER 1.2G, step 4.

B. The following information is provided to you:

1. The plant has tripped from 100% power due to a LOP today at 1300.
2. The US has transitioned from E-0 to ECA-0.0.
3. No Emergency Diesel Generators or SEPS Diesels are available.
4. The event has been classified as a General Emergency based on EAL SG1, Prolonged loss of both AC emergency buses. Restoration of either emergency bus is not expected within 4 hours.
5. The time of E-Plan declaration was 1323.
6. A release has not occurred.
7. The Remote Monitoring Area (RMA) has not been activated.
8. Form ER 2.0B, State Notification Fact Sheet is complete and the states were notified at 1333.
9. There is a 10 mph wind.
10. LOWER wind direction is coming FROM 285 degrees.
11. UPPER wind direction is coming FROM 305 degrees.
12. The appropriate PAR Group A has been recommended to the states.
13. At 1355 the Shift Manager is re-assessing plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 11, Follow up PAR Assessment.
14. Critical Safety Functions (CSF) have been verified and are as follows:
    - CORE COOLING (C) ORANGE Path – go to FR-C.2
    - HEAT SINK (H) RED Path – go to FR-H.1
    - CONTAINMENT (Z) RED Path – go to FR-Z.1
    - INVENTORY (I) YELLOW Path – go to FR-H.1

C. You may request a peer check of your actions while performing the task.

D. Perform the task using ER 1.2, Emergency Plan Activation and ER 2.0, Emergency Notification Documentation Forms Procedure.

E. To perform the task successfully, you must perform all critical steps correctly and verbalize all your actions to the evaluator. Practicing STAR techniques and using the station communication standard will safeguard successful completion of the task. OP9.2 section 4.11 Human Performance Tool Use During Transients would apply during performance of time critical actions. STAR, three way communication, and procedure use and placekeeping are the three Human Performance tools that must be used at all times.

F. (Statement optional for multiple JPMs)
During the course of walkthrough examination, there may be some tasks you will be asked to perform that may require you to implement an alternative method directed by plant procedures in order to complete the assigned task. You are expected to make decisions and take actions based on the facility's procedural guidance and the indications available.

G. (Statement optional for multiple JPMs)
Failure to perform or simulate a critical element within the prescribed standard will result in a failure of the task.

K. I will inform you when the JPM is complete.

L. After completing the JPM, return the Tear Off sheet and supporting material to the evaluator (LORT only).

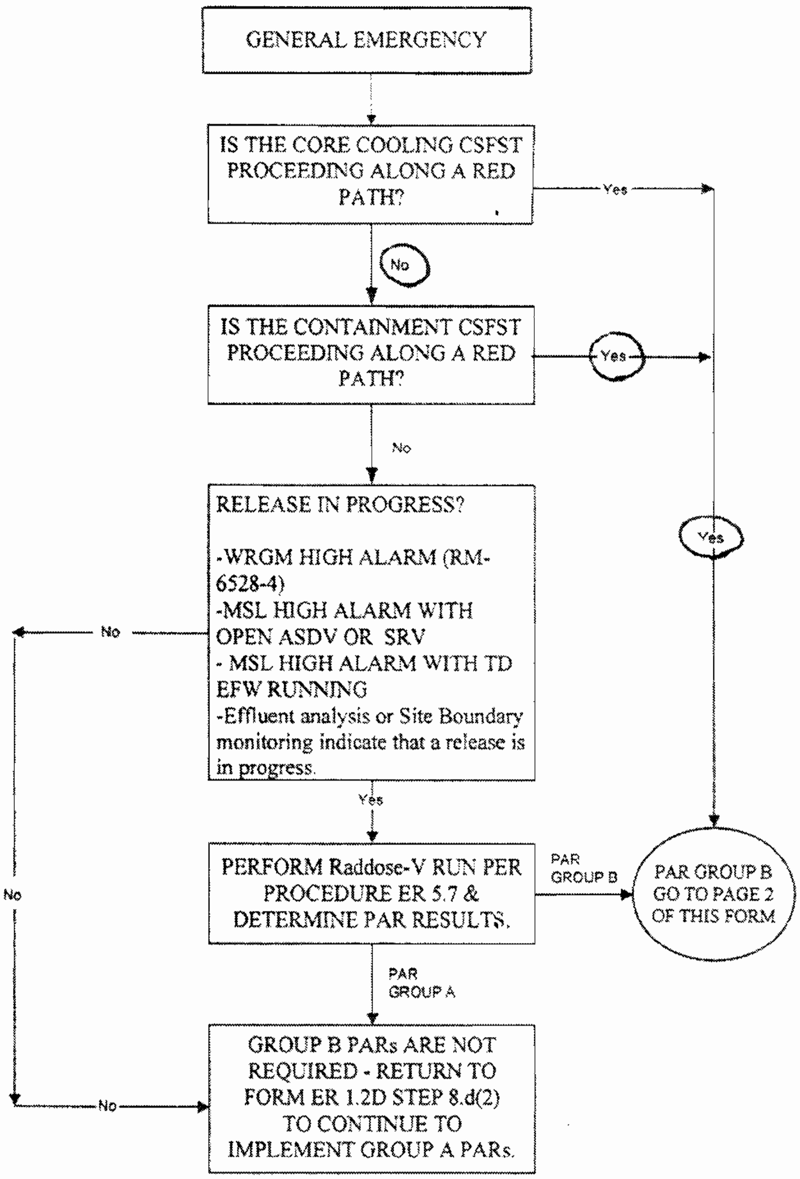
M. We will begin after the Initiating Cue is read.

H. The evaluator will act as the Short Term Emergency Director (STED and provide the cues and communications for this JPM. Do you have any questions?

Initiating Cue:

STED to Work Control Supervisor, **"Work Control Supervisor (or student's name), re-assess plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 11, Follow up PAR Assessment, to determine if a PARs upgrade is warranted. If upgraded PARs are warranted, inform me of your upgraded PAR recommendation at the completion of ER 1.2G, step 4. This is a TIME CRITICAL task."**

GENERAL EMERGENCY PAR WORKSHEET



GENERAL EMERGENCY PAR WORKSHEET
(Continued)

For a PAR Group B selection, use the following instructions and table to determine Protective Action Recommendations.

~~1.~~ If a release is in progress from the plant vent, enter the current upper wind direction - FROM ______ degrees. NO

~~2.~~ If a release from the plant vent is NOT in progress, enter the current lower wind direction – FROM 285 degrees. YES

2. Identify the appropriate PAR GROUP B column based on the above wind direction to determine the towns to be evacuated and sheltered.

3. Check off the evacuated and sheltered towns and evacuated and closed beaches on form ER 2.0B, Block 4.

		PAR GROUP B (Evacuate 5 Mile Radius and 10 Miles Downwind-Shelter All Others)					
		WIND DIRECTION FROM (Degrees)					
ERPA	TOWN	303-33.9	34-100.9	101-122.9	123-191.4	191.5-258.9	259-302.9
A	Seabrook	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
	Hampton Falls	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
C	Kensington	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
	South Hampton	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
D	Hampton	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
	North Hampton	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
F	Brentwood	Shelter	Evacuate	Evacuate	Evacuate	Shelter	Shelter
	East Kingston	Shelter	Evacuate	Evacuate	Evacuate	Shelter	Shelter
	Exeter	Shelter	Evacuate	Evacuate	Evacuate	Shelter	Shelter
	Newfields	Shelter	Evacuate	Evacuate	Evacuate	Shelter	Shelter
	Newton	Shelter	Evacuate	Evacuate	Evacuate	Shelter	Shelter
	Kingston	Shelter	Evacuate	Evacuate	Evacuate	Shelter	Shelter
G	Greenland	Shelter	Shelter	Shelter	Evacuate	Evacuate	Shelter
	Stratham	Shelter	Shelter	Shelter	Evacuate	Evacuate	Shelter
	Rye	Shelter	Shelter	Shelter	Evacuate	Evacuate	Shelter
	New Castle	Shelter	Shelter	Shelter	Evacuate	Evacuate	Shelter
	Portsmouth	Shelter	Shelter	Shelter	Evacuate	Evacuate	Shelter
B	Amesbury	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
	Salisbury	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
E	Merrimac	Evacuate	Evacuate	Shelter	Shelter	Shelter	Shelter
	Newburyport	Evacuate	Evacuate	Shelter	Shelter	Shelter	Shelter
	Newbury	Evacuate	Evacuate	Shelter	Shelter	Shelter	Shelter
	West Newbury	Evacuate	Evacuate	Shelter	Shelter	Shelter	Shelter
New Hampshire Beaches		Evacuate	Evacuate	Evacuate	Evacuate	Evacuate	Evacuate
Massachusetts Beaches		Close	Close	Close	Close	Close	Close

4. Check off "Implement KI plans for the general public" on form ER 2.0B, Block 4.

5. Return to form ER 1.2D, Step 8(e).

Seabrook Station State Notification Fact Sheet

Time Notification Initiated: NH ________ MA ________

Block 1: This is: ____________________ ____________________ at Seabrook Station.
Name Title

Block 2: Time Declared: ________ [ ] Unusual Event [ ] Alert [ ] Site Area Emergency [ ] General Emergency **OR** Time Terminated: ________

Block 3: The emergency initiating condition is ____________________.

Block 4: We recommend the following protective actions:

[ ] None [✓] As follows

New Hampshire

ERPA	Town	Shelter	Evacuate
A.	Seabrook	[ ]	[✓]
	Hampton Falls	[ ]	[✓]
C.	Kensington	[ ]	[✓]
	S. Hampton	[ ]	[✓]
D.	Hampton	[ ]	[✓]
	N. Hampton	[ ]	[✓]
F.	Brentwood	[✓]	[ ]
	E. Kingston	[✓]	[ ]
	Exeter	[✓]	[ ]
	Newfields	[✓]	[ ]
	Newton	[✓]	[ ]
	Kingston	[✓]	[ ]
G.	Greenland	[✓]	[ ]
	Stratham	[✓]	[ ]
	Rye	[✓]	[ ]
	New Castle	[✓]	[ ]
	Portsmouth	[✓]	[ ]

Massachusetts

ERPA	Town	Shelter	Evacuate
B.	Amesbury	[ ]	[✓]
	Salisbury	[ ]	[✓]
E.	Merrimac	[✓]	[ ]
	Newburyport	[✓]	[ ]
	Newbury	[✓]	[ ]
	West Newbury	[✓]	[ ]

Beaches

Evacuate

[✓] Seabrook Beach
[✓] Hampton Beach

Close

[✓] Parker River National Wildlife Refuge
[✓] Plum Island Beach
[✓] Salisbury Beach

Potassium Iodide (General Emergency only)

[✓] Implement KI plans for the general public

Block 5: A radiological release [ ] Has not occurred
[ ] Has occurred and is continuing
[ ] Occurred but has been terminated

Block 6: Authorized by: ____________________ ____________ ____________
STED / SED / RM Date Time

Block 7: Acknowledge receipt of this message with your name.

New Hampshire: ____________________ Massachusetts: ____________________
Name of Dispatcher Name of Dispatcher