Facility:	DAEC	Scenario No.: 3	Op Test No.: 2011 NRC
Examiners:		Operators:	SRO -
			RO -
			BOP -

Initial Conditions:
- 100% Reactor Power
- RCIC TS LCO 3.5.3.A. – Day 1 of 14 day LCO

Turnover:
- RCIC was operating in CST-CST for baseline vibration testing. An Engineer accidently bumped the mechanical overspeed lever and RCIC tripped. A visual inspection determined no damage to RCIC and the trip is ready to be reset and placed in standby IAW OI-150, Section 3.3. The 2nd Assistant and the System Engineer are standing by in the RCIC room to observe the reset.
- Once RCIC is back in Standby, continue the to raise power with Control Rods. RE direction is to pull two steps of rods, then wait for conditioning.

Critical Tasks:
1. With a Primary System discharging into secondary containment, insert a manual scram before any parameter reaches the Max Safe Operating Limit.
2. With a Primary System discharging into secondary containment and the same parameter exceeding the Max Safe Operating Limit in more than one area perform an Emergency Depressurization.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N - BOP N - SRO	Reset RCIC and place in Standby Readiness
2	N/A	R – RO R - SRO	Raise reactor power with control rods.
3	SW21D	C – BOP C - SRO	D Well Water Pump trip AOP 408
4	RR17B	C – RO C– SRO TS-SRO	“B” Reactor Recirc Pump speed controller fails upscale AOP 255.2 TS 3.4.1
5	RP02B	C-ALL TS-SRO	RPS “A” EPA Breaker Trip AOP 358 TS 3.3.8.2., TS 3.6.1.3 and others (in script)
6	HP05, 08 ED06C	M-ALL	Unisolable HPCI steam leak in secondary containment, Startup XFMR Lockout EOP-1, EOP-2, EOP-ED
7	STRC01	C-BOP C-SRO	RCIC Fails to auto start
8	Override DI-AD-19	C-BOP C-SRO	One ADS SRV fails to open

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

DAEC 2011 NRC Scenario #3

The scenario begins with reactor power at 90%. RCIC was operating in CST-CST for baseline vibration testing. An Engineer accidently bumped the mechanical overspeed lever and RCIC tripped. A visual inspection determined no damage to RCIC and the trip is ready to be reset and placed in standby IAW OI-150, Section 3.3.

Once RCIC is placed in standby, the crew will continue to raise reactor power with control rods. Then the "B" Recirc Pump flow controller will fail upscale and the operators will lock up the scoop tube IAW the AOP and take additional AOP actions. The SRO will address Technical Specifications (TS) for the speed mismatch and take actions if required.

An EPA breaker will trip on "A" RPS resulting in ½ scram. The crew will enter the AOP, transfer RPS to the alternate supply and the ½ scram will be reset. The SRO will address TS for the EPA trip.

The Main Turbine will experience high vibration and the crew will be required to lower reactor power. This results in lowering vibration on the Main Turbine. A leak will develop on the HPCI steam line in Secondary Containment and will not be isolable. Area temperatures will rise requiring EOP entry and a reactor scram **(CRITICAL TASK 1.0).** Additionally, as RPV level lowers RCIC will fail to initiate at its auto setpoint and must be placed in service manually for RPV level control. As area temperatures continue to rise, an Emergency Depressurization(ED) must be performed when the max safe operating limit is exceeded in more than one area (**CRITICAL TASK 2.0**). During the ED, one ADS SRV will fail to open and another SRV must be opened.

The scenario ends with the ED completed and RPV level at >170 inches.

	EXAMINATION SCENARIO GUIDE (ESG)

SITE: DAEC

RESET RCIC MECHANICAL TRIP, REACTOR POWER ADJUSTMENT, WELL WATER PUMP TRIP, RECIRC FLOW CTRL UPSCALE FAILURE, RPS EPA BKR TRIP, UNISOLABLE HPCI LEAK, RCIC AUTO START FAILURE, ONE ADS SRV FAILS TO OPEN	ESG NRC 11-03	REV 0

PROGRAM: OPERATIONS **#:**

COURSE: INITIAL LICENSED OPERATOR **#:**

TOTAL TIME: 90 MINUTES

Developed by:		
	Instructor	*Date*
Validated by:		
	SME/Instructor	*Date*
Reviewed by:		
	Operations Manager	*Date*
Approved by:		
	Training Supervisor-Operations	*Date*

GUIDE REQUIREMENTS

Goal of Training:	The goal of this scenario is to evaluate ILT students during the NRC Exam with 3 man crew.
Learning Objectives:	There are no formal learning objectives
Prerequisites:	None
Training Resources:	Simulator Simulator Booth Instructor Phone Talker Simulator Floor Instructor
References:	None
Commitments:	None
Evaluation Method:	Dynamic Simulator
Operating Experience:	None
Related PRA Information:	**Initiating Event with Core Damage Frequency:** N/A due to exam security **Important Components:** N/A due to exam security **Important Operator Actions with Task Number:** N/A due to exam security

SCENARIO SUMMARY

The scenario begins with reactor power at 90%. RCIC was operating in CST-CST for baseline vibration testing. An Engineer accidently bumped the Mechanical Trip arm and RCIC tripped. A visual inspection determined no damage to RCIC and the trip is ready to be reset and placed in standby IAW OI-150, Section 3.3.

Once RCIC is placed in standby, the crew will continue to raise reactor power with control rods. Then the "B" Recirc Pump flow controller will fail upscale and the operators will lock up the scoop tube IAW the AOP and take additional AOP actions. The SRO will address Technical Specifications (TS) for the speed mismatch and take actions if required.

An EPA breaker will trip on "A" RPS resulting in ½ scram. The crew will enter the AOP, transfer RPS to the alternate supply and the ½ scram will be reset. The SRO will address TS for the EPA trip.

A leak will develop on the HPCI steam line in Secondary Containment and will not be isolable. Area temperatures will rise requiring EOP entry and a reactor scram **(CRITICAL TASK 1.0)**.

Additionally, as RPV level lowers RCIC will fail to initiate at its auto setpoint and must be placed in service manually for RPV level control. As area temperatures continue to rise, an Emergency Depressurization(ED) must be performed when the max safe operating limit is exceeded in more than one area **(CRITICAL TASK 2.0)**. During the ED, one ADS SRV will fail to open and another SRV must be opened.

The scenario ends with the ED completed and RPV level at >170 inches.

SCENARIO OUTLINE:

BOOTH INSTRUCTOR ACTIONS

1 SIMULATOR SET UP: (perform set up per the "Simulator Setup Checklist", including entering actions items per the "Simulator Input Summary.")

Start Sim View / Data Capture Program for EXAM ONLY

1.1 General Instructions

a. Restore the IC for ILT Scenario 3 from the "Thumb Drive" that it is stored on.
b. If the thumb drive is not available, then reset to IC **20** and set the Malfunctions, Remotes, Overrides, and Triggers as per the tables below.
c. Reduce power to 90% with Recirc
d. Set up RCIC in CST to CST mode and INSERT MALFUNCTION RC01
e. Verify Pull Sheet setup matches current step and rod position
f. Place SPMET1 on a computer terminal (IAW AOP 903). Use the terminal over by the MIDAS computer.
g. Markup the following procedure:
    - AOP 903, Severe Thunderstorm Watch Section complete
    - 1C04C A-5 ARP
        - Step 3.1 circled & slashed
        - Step 3.1 a & b circled & slashed
        - Step 3.2 N/A to step 3.3
        - Step 3.3 is circled
h. Markup Pull Sheets with present rod positions
i. Provide RCIC OI 150 Attachment 4 Lineup as the last page of this scenario

1.2 EVENT TRIGGER DEFINITIONS:

Trigger No.	Trigger Logic Statement	Trigger Word Description
15	RPDIS1SHUTDOWN(1) >= 1	Mode Switch Taken to shutdown
17	ZAOFWLI4561 <= .03	GEMAC Level <160"
30	ZDITCPRSPTDECR >= 1	Pressure Set Decrease Push Button Depress

1.3 MALFUNCTIONS:

Time	Malf. No.	Malfunction Title	Delay	Ramp	ET	Initial Value	Final Value
Setup	SW13A	HPCI Room Cooler Flow Blockage			13	0	100
Setup	SW13B	HPCI Room Cooler Flow Blockage			13	0	100
Setup	RC01	RCIC Mechanical Overspeed Trip				Active	Active
Setup	STRC01	Trip OVRD-RCIC Fails to Auto Start				Active	Active
Setup	MS31C	Group 6 Isolation Fail to Close-MO-2238				Active	Active
Setup	MS31D	Group 6 Isolation Fail to Close-MO-2239				Active	active
Setup	STEHC02	Trip Override-B EHC Pump 1P97B Fails to Auto Start				active	active
As Dir	SW21D	Well Water Pump Trip – Pump D, 1P58D			1	Inactive	Active
As Dir	RR17B	Recirc MG Flow Controller Fails, Auto/Man Modes MG B		5 minutes 50 seconds	3	AS IS	100%
As Dir	RP02B	RPS EPA Breaker Trip- RPS B EPA Breaker			5	Inactive	Active
As Dir	HP05	HPCI Steam Supply Line Break/HPCI Room		10 minutes	13	0	15
As Dir	HP08	HPCI Steam Supply Line Break/Torus Room		10 minutes	15	0	10
AUTO	ED06C	SU Transformer Loss			17	Inactive	Active
As Dir	TC02A	EHC Hydraulic Pump Trip-Pump A			30	Inactive	Active

1.4 OVERRIDES:

Time	Override No.	Override Title	Delay	Ramp	ET	Initial Value	Final Value
Setup	DI-AD-019	HS-4406 ADS PSV4406, D MSL,1140(Auto Open)				AUTO	AUTO
Setup	DI-HP-013	HS-2238STM LINE ISOL MOV-2238				AUTO	AUTO
Setup	DI-HP-014	HS-2238STM LINE ISOL MOV-2239				AUTO	AUTO

1.5 REMOTE FUNCTIONS:

Time	Remote No.	Remote Title	Delay	Ramp	ET	Initial Value	Final Value
Setup	RP04	RPS Alternate Power Supply 1Y16 or 1Y26				1Y26	1Y26
Setup	RP01C	C RPS EPA Breaker (Trip/Reset)				TRIP	RESET
Setup	FP09	HPCI Deluge Man Isolation Valve V-33-82(Open,Close)				CLOSE	CLOSE

FLOOR INSTRUCTOR ACTIONS

Simulator Pre-brief:

2.1 Individual position assignments

2.2 Simulator training changes since last module (N/A)

2.3 Simulator hardware and software modifications/problems that may impact training

TURNOVER INFORMATION

⇒ Day of week and shift
- ♦ Today
- ♦ Day Shift

⇒ Weather conditions
- ♦ Hot, Humid
- ♦ A Severe Thunderstorm Watch is in effect for the next 3½ hours. All AOP 903 actions are complete.

⇒ (Plant power levels) ≈ 90%
- ♦ MWT ≈ 1715
- ♦ MWE ≈ 575
- ♦ CORE FLOW ≈ 46.8

⇒ Thermal Limit Problems/Power Evolutions

⇒ Plant Risk Status
- ♦ CDF 1.78 E-005
- ♦ Color Yellow

⇒ Existing LCOs, date of next surveillance
- ♦ RCIC – TS 3.5.3.A. – Day 1 of 14 day LCO

⇒ STPs in progress or major maintenance
- ♦ None

⇒ Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment
- ♦ RCIC
- ♦ Continuation of Load Line adjustment. Will need to pull all step 34 rods to position 20, then will need to stop there for RE Guidance.

⇒ Comments, evolutions, problems, core damage frequency, etc.
- ♦ RCIC was operating in CST-CST for baseline vibration testing. and RCIC tripped 40 minutes ago. ARP 1C04C (A-5) actions were addressed to Step 3.3. Then an investigation was performed the cause of the trip and condition of RCIC. The investigation determined that an Engineer accidently bumped the linkage for the Mechanical Overspeed Trip. The RCIC inspection determined no damage and ARP steps can continue beginning at Step 3.3. The 2nd Assistant and the System Engineer are standing by in the RCIC room to observe the reset.

  The RCIC Vacuum Pump 30 minute run time has been met. Torus Cooling and ESW were secured after RCIC tripped. A RCIC surveillance test will be run on the next shift.
- ♦ A Load Line Adjustment is progress. When RCIC has been placed in Standby, continue the Load Line Adjustment. The directions are to pull step 34 rods to position 20 (symmetrical). Call the RE after all the step 34 rods are at position 20. He will provide further guidance then.
- ♦ "C" Torus to Drywell Vacuum Breaker is inoperable and unavailable.

SCENARIO TIMELINE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Shift Turnover	COMPLETE TURNOVER: • Provide Shift Turnovers to the **SRO** and **RO**s. a. Review applicable current Plant Status b. Review relevant At-Power Risk status c. Review current LCOs not met and Action Requirements d. Verify crew performs walk down of control boards and reviews turnover checklists	Get familiar with plant conditions. • **SRO** will provide beginning of shift brief to coordinate the tasks that were identified on the shift turnover.
EXAMINER NOTE: Continue to next event at examiners direction		

SCENARIO TIMELINE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event #1 **Reset RCIC and place in Standby Readiness**	**Booth Instructor:** There are no actions necessary to start this event. **Booth Instructor** respond as plant personnel and respond as necessary: **Booth Instructor:** When contacted to perform the steps to reset the mechanical overspeed on RCIC **DELETE MALFUNCTION RC01** and report the steps are completed	**SRO** Directs continuation of actions in ARP 1C04C A-5. **RO** Monitors reactor power, pressure and level during the RCIC return to service evolution **BOP** • Continues actions in ARP 1C04C A-5, Step 3.3 which directs actions in OI-150 Section 7.2 as follows. • IF a manual turbine trip is desired, depress MANUAL TURBINE TRIP pushbutton HS-2460 on 1C04. • Verify the following valves closed by observing proper valve indication at 1C04: Valve Description: • MO-2405 TURBINE STOP VALVE • MO-2512 RCIC INJECT • MO-2510 MIN FLOW BYPASS • Close MO-2515 TEST BYPASS valve, if open. • After level has been restored to >119.5 inches, perform the following steps: • Depress RCIC INITIATION SEALED IN RESET pushbutton HS-2482 at 1C04, if necessary, and observe the amber RCIC INITIATION SEAL IN indicator is off. • Close MO-2404, TURBINE STEAM SUPPLY VALVE. Verify 1P-227 VACUUM PUMP is running. • Verify the following valves open as a result of closing MO-2404 • TURBINE STEAM SUPPLY:

SCENARIO TIMELINE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
		• Valve Description • CV-2436 CLOSED RADWASTE DISCH ISOL • CV-2410 RCIC STEAM LINE DRAIN ISOL • CV-2411 RCIC STEAM LINE DRAIN ISOL • Close MO-2426 LUBE OIL COOLER SUPPLY by placing the handswitch in the CLOSE position and observing proper valve position indication. • Correct the cause of the turbine trip. • After approximately 30 minutes, stop 1P-227 VACUUM PUMP by placing handswitch HS-2415 in the STOP position. • Restore the RCIC System to STANDBY/READINESS per Sections 3.3 and 3.4 as follows. IAW OI-150, Section 3.3 and 3.4 resets RCIC and places in standby as follows: • Verify Turbine Steam Supply, MO2404 is CLOSED. • Place and hold HS-2405 TURBINE STOP VALVE MOTOR CONTROL MO-2405 in CLOSE until the Motor Control indicates full closed. **PROCEDURE NOTE** If the RCIC Turbine Trip was due to a mechanical overspeed condition, neither the MO-2405 valve nor motor operator will open until reset locally at the RCIC Turbine. If the trip condition is not cleared, the valve for MO-2405 will not open, regardless of motor operator position. If the turbine trip was due to mechanical overspeed, perform the following to manually reset the mechanical trip linkage (see drawing in Appendix 2):
	Role Play: If asked, the RCIC Drain Trap Bypass Valve V-24-62 is closed. **EXAMINER NOTE:** The operator continues in Section 3.4. The first step is to complete Att.4. **The lineup is attached to the end of this scenario.** Once the attachment is completed, the next event may begin.	

SCENARIO TIMELINE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
		Contacts 2nd Assistant to perform the next two steps 1. Move the spring loaded emergency connecting rod against the spring force, moving the emergency head lever away from the emergency tappet and tappet nut. _____ 2. Ensure the emergency tappet moves in the downward direction and the tappet nut locates in the "trip reset" position on the head bracket to hold the emergency connecting rod in position under spring tension. • Place and hold HS-2405 in the OPEN position until the Motor Operator Control indicates full open. • Verify Turbine Stop Valve MO-2405 indicates full open. • Verify RCIC MO-2405 TURBINE TRIP (1C04C, A-5) annunciator is clear. **PROCEDURE NOTE** Following a Turbine run, oil level may require an hour, after turbine shutdown, to return to standby/shutdown conditions. • If the RCIC turbine trip is being reset during RCIC testing or other maintenance evolutions, the CRS may decide to mark the following step N/A. Unless directed by the CRS, continue with Section 3.4, FINAL RETURN TO STANDBY READINESS (otherwise, mark this step N/A). Complete the RCIC System Control Panel Lineup (Attachment 4).
EXAMINER NOTE: Continue to next event at examiners direction		

SCENARIO TIMELINE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event #2 Load Line Adjustment	**Booth Instructor:** respond as plant personnel and respond as necessary:	**SRO** Give crew Reactivity brief to withdraw control rods. **RO** • Withdraws control rods in Step 34 to position 20. • Monitors Reactor Power, Pressure and Level during power change **BOP** • Provides Peer Check to RO during reactivity change • Monitors Balance of plant equipment
EXAMINER NOTE: Continue to next event at examiners direction		

SCENARIO TIMELINE

Event #3 "D" Well Water Pump trip	**Booth Instructor:** When directed by the Chief Examiner: **INSERT EVENT TRIGGER 1** This inserts **SW21D**, the D Well Water trip. **Booth Instructor:** respond as plant personnel and respond as necessary: **Role Play:** When contacted by control room, acknowledge request to check out "D" well house. Report back after 5 minutes that a ground fault is indicated on the VSD and nothing else abnormal was observed at the well house. **Examiner Note**: May use QRC to start ESW pumps	**CREW** Responds to Annunciator 1C23C (F-1) - "D" Well Water Pump High/Low Flow **SRO** • Enters AOP 408 "WELL WATER SYSTEM ABNORMAL OPERATION" • Directs starting of additional Well Water pump and restores system parameters • Directs monitoring of Drywell pressure & temperature • Notifies Duty Manager **RO** • Monitors reactor power pressure and level • Monitors Drywell pressure & temperature **BOP** Per AOP 408 immediate actions: • Ensures an ESW pump(s) is running to provide cooling to the Control Building Chillers and to reduce demand on the Well Water System. • Starts a standby Well Water Pump, and adjusts flow at the back panel. • May take the running Well Water Pump controller to zero
EXAMINER NOTE: Continue to next event at examiners direction		

SCENARIO TIMELINE

Event #4
"B" Reactor Recirc Pump speed controller fails.
	Booth Instructor, at the direction of the Chief Examiner:
	INSERT EVENT TRIGGER: 3
	RR17B to 100 over 5 minutes 50 sec
	This will cause the "B" Recirc M-G speed controller to ramp up slowly
	Booth Instructor respond as plant personnel and respond as necessary:
	Respond that you will look at the MOORE controller logic for speed control and get back to them soon.
	Report that you will call in a licensed operator to take manual control of the locked up recirc scoop tube but it will be about an hour.
	Go along with what the crew wants to do, and tell them that ERT will take over the repairs of the "B" speed control problem.
	
	Examiner Note: Depending on when the scoop tube is locked up will determine whether or not the TS loop speed mismatch requirements for the Recirc Pumps will be exceeded
		Crew
		Diagnoses event: Rising APRM power and "B" Recirc Pump speed
		
		SRO
		Directs entry to AOP 255.2:
		• Take any necessary steps to bring the reactor power/reactivity transient under control, including, but not limited to:
		  ○ Lockup of the Scoop Tube Lockup
		• Determines IF the recirc pump speed mismatch will put them out of compliance with the LPCI Loop Select limits using STP 3.4.2-01, Daily Jet Pump Operability Test, Sect. 7.1, Recirc Pump Speed Mismatch Check.
		  • TS SR 3.4.1.1 states that the speed of the faster pump shall be ≤ 122% of the speed of the slower pump when operating at ≥ 69.4% RTP.
		  • Based on the calculation, the SRO will determine if he is in compliance with TS 3.4.1 Condition C. If not, then has 2 hours to restore the mismatch within limits, or Trip one of the recirc pumps.
		  • Plot the current position on the power to flow map.
		.
		• **IF the Recirc Flow is outside of the Mismatch limits**, crew will discuss how they will restore the mismatch to within it's limits.
		  • Either raise the speed of the unlocked Recirc Pump to match the locked Recirc Pump. **OR**
		  • Send a licensed operator to the Recirc M-G Set room and take manual control of the locked Recirc Pump and lower it to within the limits.

Event #4 (cont)		**RO** Determines that power is going up by itself, and that the "B" Recirc M-G speed controller is ramping up by itself. Takes the following actions to stop the run away:

SCENARIO TIMELINE

		• Lock the scoop tube of the "B" recirc M-G speed controller Acknowledge/Respond to 1C04A, C-5, • Enter AOP 255.2, "Power/Reactivity Abnormal Change." **BOP** Monitors balance of plant equipment and parameters
EXAMINER NOTE: Continue to next event at examiners direction		

SCENARIO TIMELINE

Event #5 RPS EPA Breaker Trip	**Booth Instructor:** When directed by the Chief Examiner: **INSERT EVENT TRIGGER 5** This inserts **RP02B**, which will trip the "B" RPS MG Set. **Booth Instructor:** respond as plant personnel and respond as necessary: **Role Play:** When contacted by control room to investigate, wait 2 minutes and report that: • The B RPS MG set is running • B1 EPA has tripped free – no lights, smells bad (acrid), no fire or smoke **Role Play:** When contacted by the control room to check the bus, Call as the CRS after 2 minutes (state time compression is being used) and state that the electricians report that a fault is not suspected on the RPS bus. **ROLE PLAY: If required, a**s the in-plant operator report that alternate RPS is aligned to 1B42	**CREW** • Recognizes ½ scram on "B" side – Multiple Annunciators including, • Annunciator 1C05B (B-2) – "B" RPS Auto Scram • Diagnoses Loss of RPS **SRO** • Enters AOP 358 "Loss of RPS AC Power" • Directs operator to investigate the trip. • Refers to TS 3.3.8.2. Condition A – 72 hours to remove in service power supply (condition met with EPA tripped) • Enters TS 3.6.1.3 Condition A – 4 hr LCO for Primary Cont. Isolation Valves **NOTE:** The affected valves are already in their required (closed) position due to the loss off RPS. The action has been met. • Enters TRM 3.3.4 Condition A - for Reactor Water conductivity monitoring • Enters TS 3.4.5, Conditions A & B & C – RCS Leak Detection Instrumentation, since all DW sumps are incapable of being pumped. • Enters TS 3.6.4.3 Condition A - SBGT **IF** the Group 3 isolation is reset. • Directs transferring RPS to alternate power supply • Contacts Duty Manager • Directs OI 358 RPS Appendix 4, RPS POWER SUPPLY TRANSFER HALF SCRAM RECOVERY CHECKLIST. • Directs placing S583B, CV4371A Group 3 override switch in override open at 1C35. (Defeat 11) **BOP** • Places S583B, CV4371A Group 3 override switch in override open at 1C35.
Event #5 (cont)	**Booth Instructor:** Move to next event when the operator is addressing the RWCU isolation	Transfers "B" RPS to alternate power supply per AOP 358 as follows: • **IF:** an alternate RPS power supply is available as indicated by observing B-MG or ALT XFMR white light ON at 1C17 • **THEN:** place handswitch C71B-S1B RPS ALTERNATE POWER TRANSFER switch to B-MG **OR** ALT position as required and verify selected position white light remains on.

SCENARIO TIMELINE

	Booth Instructor: Move to next event when the operator is addressing the RWCU isolation	**BOP (cont)**
		• May open the Cleanup Demin Bypass, MO-2723 due to the loss of RWCU
		• Perform OI 358 RPS Appendix 4, RPS POWER SUPPLY TRANSFER HALF SCRAM RECOVERY CHECKLIST as follows.
		  • At Panel 1C36, reset the fuel pool exhaust radiation monitor RIS-4131A[B].
		  • At Panel 1C36, reset the carbon bed vault radiation monitor RM-4138.
		• May Reset Group 3 isolation (back panel)
		
		RO
		Resets the ½ scram per ARP 1C-05B B2 – Step 4.1.b (OR P&L in OI 358) - Resets the half scram when the failure has been repaired and/or the trip signal has cleared.
		  • Turn the REACTOR SCRAM RESET switch C71A-S5 first to Group 1 and 4 [Group 2 and 3] then to Group 2 and 3 [Group 1 and 4] to reset the scram signal.
		  Verify the following:
		  • The eight white SCRAM GROUP indicating lights are ON.
		  • "A" RPS MANUAL SCRAM (1C05A, A-3) annunciator is reset.
		  • "B" RPS MANUAL SCRAM (1C05B, A-3) annunciator is reset.
		  • Annunciator 1C05A, E-4 is reset.
		  • Annunciator 1C05B, E-4 is reset.
		
		Momentarily press the PCIS DIV 1 RESET and DIV 2 RESET pushbutton switches A71B-S32 and A71B-S33 and verify the following annunciators are reset:
		  • PCIS GROUP “1” ISOLATION INITIATED (1C05B, A-8)
		  • PCIS GROUP “2” ISOLATION INITIATED (1C05B, B-8)
		  • PCIS GROUP "4" ISOLATION INITIATED (1C05B, D-8)
		  • PCIS GROUP "5" ISOLATION INITIATED (1C05B, E-8)

EXAMINER NOTE: Continue to next event when the ½ scram is reset and the operator is addressing the RWCU isolation		

SCENARIO TIMELINE

SCENARIO TIMELINE

Events 6, 7 & 8
 	
Unisolable HPCI leak in secondary containment, one ADS SRV fails to open
 	
S/U XFMR Lockout, RCIC Auto-Start Failure
	Booth Instructor: When directed by the Chief Examiner:
	INSERT EVENT TRIGGER: 13
	This starts the HPCI Steam Line leak and subsequent failure to isolate, also blocks the HPCI room cooler tubes.
	Verify **Event Trigger 17** goes active when GEMAC level reaches bottom peg. This inserts a loss of the S/U XFMR.
	Booth Instructor: respond as plant personnel and respond as necessary:
	
	Role Play: If sent to investigate in the HPCI room, report back the door is hot and you will not enter the room
	Booth Instructor:
	VERIFY EVENT TRIGGER 15 goes active 3 minutes after the mode switch is placed in shutdown
	VERIFY EVENT TRIGGER 30 goes active when the EHC Pressure Set PB is depressed
		CREW
		Respond to Annunciator:
		• 1C07A (A-11), HVAC Panel 1C23 Trouble
		• 1C04B (B-4), Steam Leak detection High Ambient temperature
		• 1C23A & B (C-2) HPCI Room Cooler Outlet Air HI/LO Temp
		• Diagnoses HPCI failed to isolate on valid isolation signal
		
		SRO
		• Directs ARP 1C23A & B (C-2) Actions
		  • Directs dispatching an operator to the HPCI room to check cooler
		  • Directs checking back panel indication to verify temperatures
		• Directs closing HPCI Steam Isolation Valves MO-2238 and MO-2239
		• Enters EOP 3 – Secondary Containment – due to HPCI Room Temperature exceeding Max Norm Value of 175°F
		  • Directs operating available coolers in affected area
		  • Directs operating Main Plant Exhaust and Supply fans
		  • Directs entry to EOP-1
		• **Directs reactor scram IAW EOP-3 (CRITICAL TASK #1)**
		• Directs entry to IPOI-5
		• Directs an RPV level Band of 170 to 211 inches (RCIC will be required because of SU XFMR Loss)
		• **Directs Emergency Depressurization. Open 4 SRVs (CRITICAL TASK #2)**
		
		RO
		• Monitors critical plant parameters
		• As directed, **Inserts manual scram (CRITICAL TASK #1)**
		• Takes IPOI 5 “Reactor Scram” Actions
		• Initiates a backup manual reactor scram.

Events #6 & 7 (cont.)	**Booth Instructor:** When HPCI Room achieves Max Safe Temperature, **STOP** HP05 from getting	

SCENARIO TIMELINE

	larger. Manual change HP05 to maintain HPCI above Max Safe.
	When Torus Room achieves Max Safe Temperature, **STOP** HP08 from getting larger. Manual change HP08 to maintain Torus above Max Safe.
		• Place THE MODE SWITCH in the SHUTDOWN position.
		• Verify <u>all</u> control rods fully inserted by one or both of the following means:
		• Verifies the Refuel One Rod Select Permissive:
		  ○ Position THE MODE SWITCH to REFUEL.
		  ○ Turn Rod Select Power off and then on.
		  ○ Verify the white Refuel Select Permissive light is lit.
		  ○ Return THE MODE SWITCH to SHUTDOWN.
		• On the FULL CORE DISPLAY, verify the green FULL IN light for each rod is on.
		
		RO/BOP
		• Dispatches an operator to the HPCI room to check cooler
		• Checks back panel indication to verify temperatures
		• Maintains RPV level as directed using CRD and RCIC
		• Diagnoses RCIC auto start failure and places RCIC in service manually
		• Diagnoses S/U XFMR Lockout
		
		BOP
		• Attempts to close HPCI valves MO-2238 and MO-2239
		• Reports to CRS that the valves failed to close
		• Monitors reactor pressure and maintains in the band directed by the SRO
		
		When Directed attempts to open 4 ADS SRVs to emergency depressurize and recognizes that only 3 opened. Then takes action to open an additional LLS SRV
		(CRITICAL TASK #2)
		
		• Informs SRO when 4 SRVs are open
		• Monitors and controls RPV level as he depressurization occurs

SCENARIO TIMELINE

	Scenario Termination Criteria	**ED complete and RPV level >170 inches**
	Event Classification	**SAE - FS1 – RCS Barrier Potential Loss and Primary Containment Barrier Loss**

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

SEG Validation Checklist

2011 NRC Exam Scenario #3

- ☐ Correct IC or plant status identified.
- ☐ Shift turnover forms filled out (both CRS/OSM and NSOE) if required.
- ☐ Additional documents are prepared (STPs, Work Orders, LCO Paperwork).
- ☐ Tasks and Objectives have been verified to be correct.
- ☐ Plant PRA initiating events, important equipment and important tasks are identified.
- ☐ SOMS tags identified and included in setup instructions.
- ☐ Special setup instructions identified; handswitch manipulations, procedure markups, alarm borders, 3D case available, computer points substituted, etc.
- ☐ Setup files correctly called out.
- ☐ Malfunction list is accurate.
- ☐ Override list is accurate.
- ☐ Remote function list is accurate.
- ☐ Event triggers are accurate.
- ☐ Time/Notes section is accurate and includes all reasonable cues that may be given to initiate an action. Cues are unambiguous and provide a definitive moment to take action.

Instructor Activity section is accurate and complete:

- ☐ Actions are clearly defined for Booth or Floor instructor.
- ☐ Role-playing is clearly noted.
- ☐ The sequence of events is completely and concisely narrated even if it takes no instructor action.
- ☐ Automatic actions that require verification are noted.
- ☐ Reasonable alternate paths are considered and included.
- ☐ Event trigger activation is distinguished from narrative text (**Bold font**)
- ☐ Noun descriptions of actions that occur on event trigger initiation are complete, for example "…set **ET 3** to **TRUE** which activates malfunction **SW21C** resulting in a loss of the C Well Water Pump."
- ☐ Other simulator control actions are clearly distinguished from narrative text, for example "…after drywell temperature reaches 280 deg. F **SNAP** the simulator to **IC 0**."
- ☐ Student and Instructor copies of worksheets or other training activities are verified correct and electronically attached to the file if appropriate.

SEG Validation Checklist

2011 NRC Exam Scenario #3

Expected Student Response Section is accurate and complete:

- ☐ Critical tasks are accurate and clearly identified. Probable critical tasks are also listed with logical connection to the scenario; for example "If the crew fails to get all the rods inserted before ED the critical task becomes…" (N/A as appropriate)
- ☐ Tasks are clearly noted and properly numbered as appropriate.
- ☐ Knowledge objectives are clearly noted and properly numbered as appropriate.
- ☐ Expected as well as probable student responses are listed with logical connection to the scenario. (N/A as appropriate)
- ☐ Actions are appropriately delineated by position(s); OSM, CRS, STA, RO, NSOE, Fire Brigade Leader, At the Controls Operator, etcetera. (N/A as appropriate)
- ☐ Success paths are procedurally driven unless specific training not requiring procedures is desired and delineated. Procedural discrepancies are identified and corrected before training is given.
- ☐ Responses for all communications to simulated personnel outside the Control Room are included, based on procedural guidance and standard operating practices.
- ☐ Actions are listed using a logical order; by position and chronology. (N/A as appropriate)
- ☐ Operating Experience, Human Performance Tools and Operator Fundamentals topics are included when appropriate.
- ☐ Crew Performance Criteria follow the same chronology as the student responses, are complete and accurate. (For ESGs only)
- ☐ For Walkthrough and Training Mode Scenarios with pre-planned pauses, sufficient information is presented to allow the instructor to meet the goal of the training.

Turnover information (as required) is correct:

- ☐ Day and shift are appropriate.
- ☐ Weather conditions do not conflict with malfunctions.
- ☐ Power levels are correct.
- ☐ Thermal limit problems and power evolutions are realistic and include a reason for any downpower.
- ☐ Existing LCOs include start date, remaining time and actions.
- ☐ Plant Risk Assessment (CDF and Color).
- ☐ STPs are appropriate for day and shift.
- ☐ Core Damage Frequency has been properly calculated and listed to 3 decimal places.
- ☐ Maintenance is realistic for plant conditions.
- ☐ Comments, evolutions, problems, etc, includes extra personnel (licensed/non-licensed if necessary), any condition that affects the flow of the scenario and any condition that does not fit in another category.

SME/Instructor	Date
SME/Instructor	Date

SEG Validation Checklist

2011 NRC Exam Scenario #3

Crew:		Instructors:	
OSM	_____	Booth	_____
CRS	_____	Floor	_____
STA	_____	Extra	_____
1C05	_____		
1C03	_____		
BOP	_____		

Crew Comment:

Resolution:

Crew Comment:

Resolution:

NOTE: Following approval of SEGs, this page may be discarded.

SEG Validation Checklist

2011 NRC Exam Scenario #3

Crew Comment:

Resolution:

Crew Comment:

Resolution:

Crew Comment:

Resolution:

NOTE: Following approval of SEGs, this page may be discarded.

SEG Validation Checklist

2011 NRC Exam Scenario #3

OI 150A4
RCIC SYSTEM
CONTROL PANEL LINEUP

Device Number	Panel	Description	Discrep.	Wvd./ Rstr.	Init.	Req'd. Pos.
MO-2400	1C04	RCIC INBD STEAM LINE ISOL				AUTO/ OP
MO-2401	1C04	RCIC OUTBD STEAM LINE ISOL				AUTO/ OP
MO-2404	1C04	TURBINE STEAM SUPPLY				AUTO/ CL
MO-2405	1C04	TURBINE STOP VALVE MO-2405				OP
MO-2405	1C04	TURBINE STOP VALVE MOTOR CONTROL				NORM/ OP
HV-2406	1C04	TURBINE CONTROL VALVE HV2406				OP
CV-2410	1C04	RCIC STEAM LINE DRAIN ISOL				AUTO/ OP
CV-2411	1C04	RCIC STEAM LINE DRAIN ISOL				AUTO/ OP
MO-2516	1C04	INBD TORUS SUCTION				AUTO/ CL
MO-2517	1C04	OUTBD TORUS SUCTION				AUTO/ CL
MO-2500	1C04	CST SUCTION				AUTO/ OP
1P-228	1C04	CONDENSATE PUMP 1P-228 HS-2417				AUTO/ OFF
CV-2435	1C04	CLOSED RADWASTE DISCH ISOL				AUTO/ CL
CV-2436	1C04	CLOSED RADWASTE DISCH ISOL				AUTO/ OP
MO-2426	1C04	LUBE OIL COOLER SUPPLY				AUTO/ CL
1P-227	1C04	VACUUM PUMP 1P-227 HS-2415				AUTO/ OFF

SEG Validation Checklist

2011 NRC Exam Scenario #3

Device Number	Panel	Description	Discrep.	Wvd./ Rstr.	Init.
MO-2510	1C04	MIN FLOW BYPASS			
HS-2462C	1C04	TURBINE SPEED TEST SELECT			
HS-2462B	1C04	AC POWER TO TURBINE SPEED TEST CKT			
HS-2483	1C04	TEST MODE TURBINE SPEED ADJUST			
FIC-2509	1C04	FLOW CONTROL			
MO-2511	1C04	PUMP DISCHARGE			
MO-2512	1C04	RCIC INJECT			
MO-2515	1C04	TEST BYPASS			
MO-2290A	1C03	HPCI/RCIC TURB EXHAUST VACUUM BKR.			
MO-2290B	1C03	HPCI/RCIC TURB EXHAUST VACUUM BKR.			
MO-2316	1C03	REDUNDANT SHUTOFF			
HS-7122A	1C23	RCIC ROOM CLG. UNIT 1V-AC-15A			
HS-7122B	1C23	RCIC ROOM CLG. UNIT 1V-AC-15B			
HS-2518	1C39	MO2516/MO2517 SUCTION SWAP BYPASS ON CST LO LEVEL			

Facility:	DAEC	Scenario No.: 4	Op Test No.: 2011 NRC
Examiners:		Operators:	SRO -
			RO -
			BOP -

Initial Conditions:
- Plant shutdown for refueling outage in progress
- Currently in IPOI-3, Section 5.0 Step (8)
- Step 31 of the Pull Sheet, 2 Rods at position 30
- Reactor Power 59%

Turnover:
- Perform STP 3.3.1.1-17 – MSIV Function Test
- Continue lowering power as directed with control rods
- Secure the second Feedwater and Condensate pumps at 50% power

Critical Tasks:
1. Following a LOOP, manually start the "B" SBDG to re-power the Essential Bus.
2. Recover RPV level prior to an Emergency Depressurization required.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N - BOP N - SRO	MSIV Trip/Close Functional test
2	Override DI-MS-058	TS-SRO	MSIV fails closed TS 3.6.1.3
3	N/A	R-RO R-SRO	Lower power with Control Rods
4	NM08C	C – RO C– SRO TS	"C" APRM Upscale, ½ Scram Briefly in TS 3.3.1.1
5	Overrides An1c03b(2)	C-BOP C-SRO TS	"A" RHR pump start, fails to trip on overcurrent
6	ED08A	C – ALL TS	Loss of Bus 1A1 AOP304.1, AOP 264 TS – 3.4.1
7	FW02B RP05A OVERRIDE S	C-RO C-SRO	Loss of Condensate/Feedwater – Reactor Scram – RPS PB Failure IPOI-5, EOP-1
8	ED01A,B,C RR15B DG02A STDG02	M - ALL	Loss of Offsite Power, "A" SBDG Output breaker will not close, "B" SBDG fails to Auto-Start, Small Recirc Break EOP-1, EOP-2
9	RC05 HP03	C – BOP C – SRO	RCIC Fails, HPCI Controller fails in auto

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

DAEC 2011 NRC Scenario #4

The scenario begins with the reactor at 60% power and a shutdown in progress. The crew will perform the MSIV Trip/Close Functional Test. During the test, one MSIV will fail closed. The SRO will address Technical Specifications (TS) for the valve failure.

The crew will continue the shutdown by inserting control rods. While moving control rods, an APRM will fail upscale and the crew will take procedural actions to bypass the APRM and reset the ½ scram. Then, a RHR pump will spuriously start and its minimum flow valve will fail to open. The SRO will address TS and direct removing the pump from service. Once TS are addressed, a loss of Non Essential 4160v Bus 1A1 will occur. The crew will take actions IAW the AOP and address the resultant Recirc Pump trip and also swap bus power supplies. The SRO will address TS for single loop operation.

Then, the condensate pumps will trip causing a loss of Feedwater. The crew will insert a manual scram and the SRO will enter IPO-5 due to the scram and EOP-1 due to low RPV level. After the initial scram actions are performed, a LOOP will occur with a small drywell leak. The output breaker on the "A" SBDG will fail to close and cannot be closed. The "B" SBDG will fail to start and must be started manually to power an Essential Bus **(CRITICAL TASK 1.0).** As the operators attempt to recover RPV level, RCIC will fail and the HPCI flow controller must be operated in manual to permit level recovery before an Emergency Depressurization is required **(CRITICAL TASK 2.0)**.

The scenario may be terminated when the "B" essential bus is recovered and RPV level is >170inches.

	EXAMINATION SCENARIO GUIDE (ESG)

SITE: DAEC

MSIV TRIP/CLOSE FUNCTIONAL TEST, MSIV FAILS CLOSED, LOWER POWER WITH CONTROL RODS, APRM UPSCALE, RHR PUMP START/FAILS TO TRIP ON OVERCURRENT, LOSS OF 4160V BUS 1A1, LOSS OF CONDENSATE, RPS PB FAILURE, LOOP, SBDG FAIL TO START, SMALL RECIRC LEAK, HPCI/RCIC FAILURES	ESG NRC 11-04	REV 0

PROGRAM: OPERATIONS **#:**

COURSE: INITIAL LICENSED OPERATOR **#:**

TOTAL TIME: 90 MINUTES

Developed by:		
	Instructor	*Date*
Validated by:		
	SME/Instructor	*Date*
Reviewed by:		
	Operations Manager	*Date*
Approved by:		
	Training Supervisor-Operations	*Date*

GUIDE REQUIREMENTS

Goal of Training:	The goal of this scenario is to evaluate ILT students during the NRC Exam with 3 man crew.
Learning Objectives:	There are no formal learning objectives
Prerequisites:	None
Training Resources:	Simulator Simulator Booth Instructor Phone Talker Simulator Floor Instructor
References:	None
Commitments:	None
Evaluation Method:	Dynamic Simulator
Operating Experience:	None
Related PRA Information:	**Initiating Event with Core Damage Frequency:** N/A due to exam security **Important Components:** N/A due to exam security **Important Operator Actions with Task Number:** N/A due to exam security

SCENARIO SUMMARY

The scenario begins with the reactor at ~60% power and a shutdown in progress. The crew will perform the MSIV Trip/Close Functional Test. During the test, one MSIV will fail closed. The SRO will address Technical Specifications (TS) for the valve failure.

The crew will continue the shutdown by inserting control rods. While moving control rods, an APRM will fail upscale and the crew will take procedural actions to bypass the APRM and reset the ½ scram. Then, a RHR pump will spuriously start, with indications of pump overload on the motor ammeter. The pump will fail to trip. The SRO will address TS and direct removing the pump from service. Once TS are addressed, a loss of Non Essential 4160v Bus 1A1 will occur. The crew will take actions IAW the AOP and address the resultant Recirc Pump trip and also swap bus power supplies. The SRO will address TS for single loop operation.

Then, the condensate pumps will trip causing a loss of Feedwater. The crew will insert a manual scram and the SRO will enter IPOI-5 due to the scram and EOP-1 due to low RPV level. After the initial scram actions are performed, a LOOP will occur with a small drywell leak. The output breaker on the "A" SBDG will fail to close and cannot be closed. The "B" SBDG will fail to start and must be started manually to power an Essential Bus **(CRITICAL TASK 1.0).** As the operators attempt to recover RPV level, RCIC inverter will fail, which prevents RCIC from injecting and the HPCI flow controller will fail in AUTOMATIC, so it must be operated in manual to permit level recovery BEFORE an Emergency Depressurization is required **(CRITICAL TASK 2.0)**.

The scenario may be terminated when the "B" essential bus is recovered and RPV level is >170inches.

SCENARIO OUTLINE:

BOOTH INSTRUCTOR ACTIONS

1 SIMULATOR SET UP: (perform set up per the "Simulator Setup Checklist", including entering actions items per the "Simulator Input Summary.")

Start Sim View / Data Capture Program for EXAM ONLY

1.1 General Instructions

a. Restore the IC for ILT Scenario 4 from the "Thumb Drive" that it is stored on.
b. If the thumb drive is not available, then reset to IC 13, Raise power using control rods to approx. 59% and set the Malfunctions, Remotes, Overrides, and Triggers as per the tables below.
c. Verify Pull Sheet setup matches current step and rod position (BOL pull sheet)
d. Place SPMET1 on a computer terminal (IAW AOP 903).
e. Mark up the following procedures:
   - AOP 903, marked up so all actions are complete for severe thunderstorm watch
   - IPOI-3, Section 5.0, Step 1 – Leave blank, 6a is N/A, Steps 6b through 6.4 are N/A, Step 7 is complete
   - OI 646, Step 1 is N/A, Steps (2)(d)1 & 2 are N/A then complete through Step (6)
   - STP 3.3.1.1-17 – MSIV Trip/Close Functional Test

1.2 EVENT TRIGGER DEFINITIONS:

Trigger No.	Trigger Logic Statement	Trigger Word Description
1	ZDIMSHS4418B(1) >= 1	When CV 4418 is taken to test
10	RPDIS1SHUTDOWN(1) >= 1	When Mode Switch taken to shutdown
12	ZDIDGDG2(4) >= 1	When B SBDG started
14	RCNT >= 400	RCIC Turbine at 400 rpm
16	HPNT >= 400	HPCI Turbine at 400 rpm
22	ZDIRHHS2014(1) >= 1	A RHR Hand Switch Taken to Stop

Schedule Files Needed:

Setup schedule file to Delete:

- Malfunction AN1C03B(2) - (A-02) 'A' RHR Pump 1P229A Trip OR Motor Overload
- Override AO-RH-01 - 1P-229A RHR Pump Ammeter

when **EVENT TRIGGER 22** goes TRUE.

1.3 MALFUNCTIONS:

Time	Malf. No.	Malfunction Title	Delay	Ramp	ET	Initial Value	Final Value
Setup	DG02A	1G31 A Diesel Gen Breaker Auto-Close Circuit Failure in Auto-DG A				Active	Active
Setup	STDG02	Trip Override-B SBDG 1G21 Fails to start				Active	Active
As Dir	ED08A	4.16kv/480V Bus Fault-Bus-1A1			5	Inactive	Active
As Dir	NM08C	APRM Channel Fails-APRM C		8 seconds	3	AS IS	100
As Dir	FW02B	Condensate Pump Trip- Pump B			7	Inactive	Active
As Dir	RP05A	RPS Scram Circuit (ATWS) Auto Scram Failure			9	Inactive	Active
As Dir	ED01A	Loss of Off Site Power Sources – BKR M	1 minute		10	Inactive	Active
As Dir	ED01B	Loss of Off Site Power Sources – BKR J	1 minute		10	Inactive	Active
As Dir	ED01C	Loss of Off Site Power Sources – BKR K	1 minute		10	Inactive	Active
As Dir	RR15B	Recirc Loop RUPT Design Basis LOCA-LOOP B		4 minutes	12	0	10
As Dir	RC05	RCIC Inverter trouble	1 minute		14	Inactive	Active
As Dir	HP03	HPCI Flow Controller fails	1 minute		16	0	0
As Dir	AN1C03B(2)	(A-02) 'A' RHR Pump 1P229A Trip OR Motor Overload **NOTE: Delete this on schedule file when ET 22 True**			18	Crywolf	ON
As Dir	AN1C03B(2)	(A-02) 'A' RHR Pump 1P229A Trip OR Motor Overload (NEW)			30	CRYWOLF	ON

OVERRIDES:

Time	Override No.	Override Title	Delay	Ramp	ET	Initial Value	Final Value
Setup	DI-DG-002	152-311 DSL GEN 1G31 Output Breaker				NAT	NAT
Setup	DI-RP-029	C71AS3B Reactor manual Scram System B				OFF	OFF
Setup	DI-RP-028	C71AS3A Reactor manual Scram System A				OFF	OFF
As Dir	DI-MS-058	HS-4418B C INBD MSIV TST CV-4418			1	NORM	TEST
As Dir	DI-RH-092	HS-2014 RHR Pump 1P-229A **NOTE: Delete 2 seconds after inserting**			18	NASP	START

Time	Override No.	Override Title	Delay	Ramp	ET	Initial Value	Final Value
As Dir	AO-RH-001	1P-229A RHR Pump Ammeter **NOTE: Delete this on schedule file when ET 22 True**		1 sec	18	0	100
	DO-RH-157	HS-2014(1) RHR PP 1P-229A LITES (GREEN)			30	ON	OFF
	DO-RH-158	HS-2014(2) RHR PP 1P-229A LITES (WHITE)			30	ON	OFF
	DO-RH-159	HS-2014(3) RHR PP 1P-229A LITES (RED)			30	OFF	OFF
	DO-RH-160	HS-2014(4) RHR PP 1P-229A LITES (AMBER)			30	OFF	OFF
	DI-RH-092	HS-2014 RHR PUMP 1P-229A (NEW)			30	NASP	STOP

1.5 REMOTE FUNCTIONS:

Time	Remote No.	Remote Title	Delay	Ramp	ET	Initial Value	Final Value
As Dir	MC03	COOLING TOWER A OUTLET INLET VALVE MO-4249			25	100	0
As Dir	MC04	COOLING TOWER A OUTLET INLET VALVE MO-4250			25	100	0

FLOOR INSTRUCTOR ACTIONS

Simulator Pre-brief:

2.1 Individual position assignments

2.2 Simulator training changes since last module (N/A)

2.3 Simulator hardware and software modifications/problems that may impact training

TURNOVER INFORMATION

⇒ Day of week and shift
- ♦ Today
- ♦ Day Shift

⇒ Weather conditions
- ♦ Warm, Humid
- ♦ A Severe Thunderstorm Watch is in effect for the next 3½ hours. All AOP 903 actions are complete.

⇒ (Plant power levels) ≈ 58%
- ♦ MWT ≈ 1108
- ♦ MWE ≈ 344
- ♦ CORE FLOW ≈ 38.1 mlbm/hr

⇒ Thermal Limit Problems/Power Evolutions

⇒ Plant Risk Status
- ♦ CDF Baseline
- ♦ Color Green

⇒ Existing LCOs, date of next surveillance: None

⇒ STPs in progress or major maintenance: None

⇒ Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment
- ♦ As the IPOI directs

⇒ Comments, evolutions, problems, core damage frequency, etc.
- ♦ Plant shutdown is in progress for upcoming refueling outage
- ♦ "C" Torus to Drywell Vacuum Breaker is inoperable and unavailable.
- ♦ Currently in IPOI-3, Section 5.0 Step (8)
- ♦ Step 31 of the Pull Sheet, with Rods at position 30
- ♦ Perform the following in the sequence listed:
  1. Perform STP 3.3.1.1-17 – MSIV Function Test
  2. Continue lowering power with control rods by inserting Step 31 rods to position 14 at 3 to 5 mwe/minute then contact the RE for further guidance.
  3. Secure the "A" train Feedwater and Condensate pumps at 50% power
- ♦ Containment purge will be commenced after the first condensate and feed pump are secured

SCENARIO TIMELINE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Shift Turnover	COMPLETE TURNOVER: • Provide Shift Turnovers to the **SRO** and **RO**s. a. Review applicable current Plant Status b. Review relevant At-Power Risk status c. Review current LCOs not met and Action Requirements d. Verify crew performs walk down of control boards and reviews turnover checklists	Get familiar with plant conditions. • **SRO** will provide beginning of shift brief to coordinate the tasks that were identified on the shift turnover.
EXAMINER NOTE: Continue to next event at examiners direction		

SCENARIO TIMELINE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

Events 1 & 2
 	
MSIV trip closure functional test STP 3.3.1.1-17
 	
INBD MSIV Failure
	Role Play: It will be necessary to role play the personnel in the back panels for verifying the relay contacts are open at 1C15 and 1C17.
	
	Booth Operator:
	Verify **TRIGGER 1** goes TRUE when the "C" Inboard MSIV handswitch is repositioned.
	
	EXAMINER CUE; If asked, tell the candidate the relay contacts for C71A-K11A are open
		SRO
		• Briefs Crew and verifies the prerequisites are met
		• Directs the BOP to perform STP 3.3.1.1-17 MSIV trip closure functional test
		
		BOP
		Reviews STP, then performs the following:
		<u>FUNCTIONAL TEST OF A MSL MSIVs (CV-4412 and CV-4413)</u>
		• Verifies RPS Trip channel A1 – B Line MSIV 90% open relay is energized at 1C15
		• Verifies RPS Trip channel B1 – C Line MSIV 90% open relay is energized at 1C17
		• At 1C15, verify relay **C71A-K11A** contacts are open
		• Ensures station personal are stationed at 1C15 and 1C17 for the STP.
		• At 1C03, take A INBD MSIV TEST CV-4412 handswitch HS-4412B to TEST and release.
		• Verifies CV-4412 goes partially closed, and then opens
		• Contacts 1C15 person, and verifies:
		  ○ Relay coil de-energized and then re-energized
		  ○ Contact 1-2 and 2-4 opened and then closed
		• At 1C04, take A OUTBD MSIV CV-4413 handswitch HS-4413B to TEST and release. Notices the "A" OUTBD MSIV goes closed (slowly)
		• Verifies CV-4413 goes partially closed, and then opens
		
		BOP (cont)
		• Contacts 1C15 & 1C17 person, and verifies:

SCENARIO TIMELINE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Events 1 & 2 (cont)	**EXAMINER CUE; If asked, tell the candidate the relay contacts for C71A-K11B are open** **Booth Operator:** If asked whether the relays operated properly for the "C" INBD MSIV, state that the relays K3C and K3F are NOT re-energized. **EXAMINER CUE;** If asked, tell the candidate the relay contacts for C71A-K11A are open **Role Play:** As Duty Manager, Acknowledge problem with MSIV and tell SRO to continue with the power reduction and Event Response Team will investigate.	○ Relay coil de-energized and then re-energized <u>FUNCTIONAL TEST OF C MSL MSIVs (CV-4418 and CV-4419)</u> • Verifies RPS Trip channel A2 – D Line MSIV 90% open relay is energized at 1C15 • Verifies RPS Trip channel B1 – A Line MSIV 90% open relay is energized at 1C17 • At 1C17, verify relay **C71A-K11B** contacts are open • Ensures station personal are stationed at 1C15 and 1C17 for the STP. • At 1C03, take C INBD MSIV TEST CV-4418 handswitch HS-4418B to TEST and release. • Notices that CV-4418 goes fully closed and does not open • Notifies the CRS the "C" INBD MSIV is SHUT • When directed takes the handswitch for the "C" Inboard MSIV to CLOSE **CRS** • Halts the STP • Refers to TS and determines: • TS 3.6.1.3 condition A (isolate affected flowpath, verify isolated) and an 8 hour LCO, re-verify 31 days • May order the OUTBOARD MSIV CLOSED, may decide to wait for management guidance. • Refers to IPOI-3 Section 6.0 for operation with one main steam line isolated (or OI 683) • May enter AOP 255.2 • Contacts Duty Manager
EXAMINER NOTE: Continue IAW turnover guidance		

SCENARIO TIMELINE

Event #3 Insert control rods to continue shutdown	**Booth Instructor:** respond as plant personnel and respond as necessary: **Examiner Note:** One individual will stand in as a Reactivity Management SRO. This individual will provide NO specific direction	**SRO** Directs RO to lower reactor power with control rods per RE guidance **RO** • Using RE guidance and Pull Sheet at Step 31, inserts control rods • Monitors NI indications for response • Monitors reactor level and pressure **BOP** Monitors balance of plant equipment
EXAMINER NOTE: Continue to next event at examiners direction but prior to reaching 50% power		

SCENARIO TIMELINE

Event #4 "C" APRM Upscale, ½ Scram	**Booth Instructor:** At the direction of evaluator: **INSERT EVENT TRIGGER 3.** This inserts the "C" APRM Upscale. **Booth Instructor:** respond as plant personnel and respond as necessary: **Booth Instructor:** After the ½ scram is reset: **INSERT EVENT TRIGGER 9.** This inserts the Auto Scram Failure	**CREW** Responds to the following Annunciators: 1C05A-A-2, A RPS AUTO SCRAM 1C05A-B-2, APRM UPSCALE TRIP OR INOP 1C05A-C-2, APRM UPSCALE **SRO** Directs bypassing APRM Directs reset of ½ scram Discusses Technical Specifications – Briefly in TS 3.3.1.1. Condition A (RPS Instrumentation) and TRM 3.3.2. Condition A (Control Rod Block Instrumentation) while unbypassing "A" APRM until "C" APRM is bypassed. **RO/BOP** Bypasses the APRM IAW OI 878.4 as follows: (1) If an APRM is currently bypassed, perform the following for the bypassed APRM, otherwise N/A this step: (a) Verify the APRM channel Mode Selector Switch on Panel 1C37 is in OPERATE. (b) Verify the APRM upscale, inoperative, and if greater than 5% reactor power, downscale trips on Panel 1C37 are reset. (c) Verify the IRM/APRM recorders on Panel 1C05 indicate approximately the same average power for the bypassed APRM as they do for the other APRM channels in operation. (d) Place the APRM BYPASS switch C51B-S3 or C51B-S6 on Panel 1C05 in the neutral (unbypassed) position.
Event #4 (cont)		**RO (cont)** (e) Observe that the bypass light on Panel 1C05 and/or that the bypass light on Panel 1C37 is/are OFF.

SCENARIO TIMELINE

		(2) Verify the two remaining APRM channels in the RPS trip system are operable and not BYPASSED, otherwise comply with Tech Specs for inoperable RPS instrumentation. (3) Place the APRM BYPASS switch C51B-S3 (C51B-S6) on Panel 1C05 in the A, C, or E (B, D, or F) position for the channel to be bypassed. (4) Observe that the bypass lights for the bypassed channel on Panel 1C37 and/or Panel 1C05 is/are ON. Resets the ½ scram IAW OI 358 as follows: (1) Turn the REACTOR SCRAM RESET switch C71A-S5 first to Group 1 and 4 [Group 2 and 3] then to Group 2 and 3 [Group 1 and 4] to reset the scram signal. Verify the following: (2) The eight white SCRAM GROUP indicating lights are ON. (3) "A" RPS MANUAL SCRAM (1C05A, A-3) annunciator is reset. (4) "B" RPS MANUAL SCRAM (1C05B, A-3) annunciator is reset. (5) Annunciator 1C05A, E-4 is reset. (6) Annunciator 1C05B, E-4 is reset. **BOP** Monitors balance of plant equipment
EXAMINER NOTE: Continue to next event when the ½ scram is reset		

SCENARIO TIMELINE

Event #5 A RHR Pump Spurious start / Fails to trip on overcurrent	**Booth Instructor:** When directed by the Chief Examiner: **Insert Event Trigger 18** This starts the A RHR Pump **Role Play:** When contacted to investigate, acknowledge request as 2nd Assistant and Aux Operator. SE Corner Room – nothing abnormal, no one in the room. 1A3 Switchgear Room – nothing abnormal, no one in the room.	**Crew** Diagnoses A RHR Pump start. Ann: 1C03A (B-6) ADS Core Spray RHR Pump Running Permissive Ann: 1C03B (A-2) A RHR Pump 1P-229A Trip Or Motor Overload **SRO** • When informed of RHR pump start and after assessing the situation, directs the BOP to stop the pump • Directs contacting 2nd Assistant and Aux Operator to investigate • Refers to TS LCO 3.5.1 Condition A. – 30 days to restore RHR pump to operable status • May discuss if associated instrumentation is affected. Then refer to TS 3.3.5.1 – ECCS Instrumentation • Enters TS 3.6.2.3. Condition A – 30 day LCO for Torus Cooling **RO** • Monitors reactor power, level and pressure **BOP** • Recognizes the A RHR pump is running and amps are high and pump should have tripped • Reports condition to SRO • As directed, secures the RHR pump
EXAMINER NOTE: Continue to next event at examiners direction		

SCENARIO TIMELINE

Event #6
LOSS OF 4160V BUS 1A1
	Booth Instructor: When directed by the Chief Examiner:
	INSERT EVENT TRIGGER 5
	This inserts the Bus 1A1 Lockout.
	
	Role Play: When contacted to investigate 1A1 loss, Report back in 5 minutes that the bus has a lockout and BKR 1A101 has an overcurrent flag
	
	Booth Instructor: respond as plant personnel and respond as necessary:
		CREW
		Responds to Annunciator
		1C08A A2 - BUS 1A1 LOCKOUT TRIP OR LOSS OF VOLTAGE
		SRO
		• Directs actions IAW ARP
		• Enters AOP 304.1 – Loss of Non essential Bus
		• Enters AOP 255.2 – Power/reactivity Abnormal Power Change
		• Reviews Power/Flow Map and determines NOT in the Buffer or Exclusion Region
		• Enters AOP 264 – Loss of Recirc Pump
		• Contacts Duty Manager
		• Refers to TS 3.4.1 Condition D – single loop surveillance within 24 hours
		• Depending on how long the event continues may enter AOP 691- High Back Pressure
		RO
		• Monitors critical plant parameters
		• Responds to the Recirc Pump trip IAW AOP 264
		• For the Recirc Pump that tripped, performs the following:
		  • Verify open A[B] RECIRC PUMP DISCH BYP valve MO-4629[4630].
		  • Close A[B] RECIRC PUMP DISCHARGE valve MO-4627[4628].
		  • After 5 minutes, reopen A[B] RECIRC PUMP DISCHARGE valve MO-4627[4628] (unless the A[B] Pump has to be isolated).
		
		BOP
		For LOSS of 1A1 ONLY, perform the following:
		<u>Crosstie 1B1 and 1B2 by performing the following:</u>

SCENARIO TIMELINE

		• Momentarily place control switch FEEDER BREAKER 1B101 XFMR 1X11 to LC 1B1 to the TRIP position. • Momentarily place control switch TIE BREAKER 1B107 LC 1B1/1B2 in the CLOSE position. <u>Crosstie 1B5 and 1B6 by performing the following:</u> • Momentarily place control switch FEEDER BREAKER 1B501 XFMR 1X51 to LC 1B5 to the TRIP position. • Momentarily place control switch TIE BREAKER 1B505 LC 1B5/1B6 in the CLOSE position. • Place BUS 1A1 TRANSFER switch in MANUAL. • Verify Offgas Closed Cooling Water Pump 1P-105A[B] in service. • Start Offgas Glycol Pump 1P-243A[B].
EXAMINER NOTE: When Duty Manager is contacted to discuss event, go to next event		

SCENARIO TIMELINE

Event #7
Condensate Pumps Trip, Reactor Scram (RPS PBs Fail)
	Booth Instructor: When directed by the Chief Examiner:
	Insert Event Trigger 7
	This will trip the only running condensate pump
	
	Booth Instructor:
	When the Mode Switch is taken to shutdown and after a 1 minute delay, **Event Trigger 10** will become active. This results in a LOOP
	
	Examiner Note:
	1 minute after the Mode switch is placed in Shutdown, a LOOP will occur. Actions for the LOOP are described in the next event.
		SRO:
		• Identifies the loss of FW
		• Orders manual reactor scram
		• Enters EOP 1 due to <170" RPV water level
		• Orders RPV level and pressure be controlled IAW EOP 1
		• Directs Defeat 11 to maximize drywell cooling
		
		RO:
		• Identifies the loss of FW
		• SCRAMS the reactor when directed and carries out IPOI-5 actions
		  • Scrams the reactor using both RPS Pushbuttons
		  • Places Mode Switch to Shutdown
		  • Verifies <u>all</u> control rods fully inserted by one or both of the following means:
		  1. Verify the Refuel One Rod Select Permissive:
		  • Position THE MODE SWITCH to REFUEL.
		  • Turn Rod Select Power off and then on.
		  • Verify the white Refuel Select Permissive light is lit.
		  • Return THE MODE SWITCH to SHUTDOWN.
		  2. On the FULL CORE DISPLAY, verify the green FULL IN light for each rod is on.

Event #7 (cont)		**BOP:** • Sends field operator to investigate condensate pump trips • Verifies Turbine Trip and Generator Lockout • Monitors BOP equipment and containment parameters • If Directed, Implements Defeat 11 to maximize drywell cooling as follows:

SCENARIO TIMELINE

		• At Panel 1C35, place CV-4371A GROUP 3 OVERRIDE keylock switch S583B in OVERRIDE OPEN position and confirm amber light is ON. • Confirm CV-4371A opens by observing valve position indicating lights on 1C35 (red light is ON and the green light is OFF).
EXAMINER NOTE: LOOP with SBDG Complications / LOCA actions are in next section		

SCENARIO TIMELINE

Event #8 & 9 LOOP, A DG Output BKR FAILS and will not close. B DG Fails To Start but CAN be manually started. Small Recirc Leak RCIC Inverter Failure, HPCI Ctrl Failure in Auto	**Booth Instructor:** Event Trigger 10 will be active 1 minute after the mode switch was taken to shutdown in the previous event This will result in a LOOP **Booth Instructor:** After the "B" EDG is started, **Event Trigger 12** will go Active. This will cause the Recirc leak to begin to ramp in on a 4 minute ramp. **Examiner Note:** The Recirc Leak will begin to occur after the "B" EDG is started. **Role Play:** If directed, acknowledge request to close the A DG output breaker locally (you will not be able to close the A SBDG output breaker.)	**LOSS OF POWER EVENT** **Crew** Responds to Loss of Offsite Power Indications **SRO** • Directs Reactor pressure control using SRVs • Enters AOP 304.1 "LOSS OF 4160V NON-ESSENTIAL ELECTRICAL POWER" • Enters AOP 301 "LOSS OF ESSENTIAL ELECTRICAL POWER" **Directs starting the B DG and verifying it loads the Bus (CRITICAL TASK #1)** • Directs RPV level band 170" to 211" using available systems **RO** Provides RPV level and pressure status **BOP** • May report MSIV closure (Group I Isolation) • Diagnoses that the "A" DG started but did not pick up the bus • Diagnoses that the "A" DG is running with no ESW flow and places the "A" DG in P-T-L. • Diagnoses that the B DG failed to start **STARTS B DG and verifies it loads BUS 1A4 (CRITICAL TASK #1)** **RECIRC LEAK EVENT and RPV LEVEL RECOVERY** **CREW:** Responds to annunciator 1C05B-B1 – Primary Containment Pressure Hi/Lo **SRO:**

SCENARIO TIMELINE

		• Enters AOP 573 – Primary Containment Control
		• Directs operators to monitor containment parameters
		• Enters EOP-1 – RPV Control due to RPV low level (was entered earlier when the scram occurred).
		• IF EOP-1 Alternate Level Control Leg is entered may direct:
		  • Lockout of ADS
		  • Start of CRD pump
		  • Start of SBLC pump
		
		Directs Reactor Water level band of 170" to 211" using available systems – (HPCI) (CRITICAL TASK #2)
		
		• Directs Defeat 4 - This results DW Cooling Fans in FAST
		• Enters EOP-2 - Primary Containment Control when containment pressure reaches 2 psig.
		• Directs initiation of Torus Spray prior to Torus Pressure exceeding 11 psig
		• IF Torus Pressure exceeds 11 psig, directs initiation of Drywell Spray.
		
		RO:
		• Assists BOP in controlling RPV level and monitoring other critical primary containment plant parameters
		
		BOP:
		• If directed, performs Defeat 4 to maximize drywell cooling
		• Places Torus Spray in service as follows:
		  1. Place keylock HS-2005[HS-1932] Outboard Torus Cooling/Spray Valve handswitch in OPEN and verify valve opening
		  2. Throttle open MO-2006[MO-1933], Torus Spray Valve
		
		• Recognizes RCIC Failure and reports status to CRS
		
		• As directed starts CRD pump

SCENARIO TIMELINE

		• Places Drywell Spray inservice when directed as follows: 1. Ensures Recirc Pumps are tripped 2. Repositions HS-1903C – Enable Containment Spray Valves to Manual 3. Depending on RPV level may take HS-1903B to 2/3 Core Coverage/LPCI INIT Interlock Override to MANUAL OVERRD 4. Open MO-2000[1902] , Inboard Drywell Spray Valve 5. Throttle open MO-2001[1903], Outboard Drywell Spray Valve. **Diagnoses HPCI controller failure and takes manual control of HPCI to restore RPV level to >170" (CRITICAL TASK #2)**
	Scenario Termination Criteria	**RPV level recovered to >170″**
		Alert - FA1 – Drywell pressure 2.0 psig, SA5.1 – single AC Power Source

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

SEG Validation Checklist

- ☐ Correct IC or plant status identified.
- ☐ Shift turnover forms filled out (both CRS/OSM and NSOE) if required.
- ☐ Additional documents are prepared (STPs, Work Orders, LCO Paperwork).
- ☐ Tasks and Objectives have been verified to be correct.
- ☐ Plant PRA initiating events, important equipment and important tasks are identified.
- ☐ SOMS tags identified and included in setup instructions.
- ☐ Special setup instructions identified; handswitch manipulations, procedure markups, alarm borders, 3D case available, computer points substituted, etc.
- ☐ Setup files correctly called out.
- ☐ Malfunction list is accurate.
- ☐ Override list is accurate.
- ☐ Remote function list is accurate.
- ☐ Event triggers are accurate.
- ☐ Time/Notes section is accurate and includes all reasonable cues that may be given to initiate an action. Cues are unambiguous and provide a definitive moment to take action.

Instructor Activity section is accurate and complete:

- ☐ Actions are clearly defined for Booth or Floor instructor.
- ☐ Role-playing is clearly noted.
- ☐ The sequence of events is completely and concisely narrated even if it takes no instructor action.
- ☐ Automatic actions that require verification are noted.
- ☐ Reasonable alternate paths are considered and included.
- ☐ Event trigger activation is distinguished from narrative text (**Bold font**)
- ☐ Noun descriptions of actions that occur on event trigger initiation are complete, for example "…set **ET 3** to **TRUE** which activates malfunction **SW21C** resulting in a loss of the C Well Water Pump."
- ☐ Other simulator control actions are clearly distinguished from narrative text, for example "…after drywell temperature reaches 280 deg. F **SNAP** the simulator to **IC 0**."
- ☐ Student and Instructor copies of worksheets or other training activities are verified correct and electronically attached to the file if appropriate.

SEG Validation Checklist

Expected Student Response Section is accurate and complete:

- ☐ Critical tasks are accurate and clearly identified. Probable critical tasks are also listed with logical connection to the scenario; for example "If the crew fails to get all the rods inserted before ED the critical task becomes…" (N/A as appropriate)
- ☐ Tasks are clearly noted and properly numbered as appropriate.
- ☐ Knowledge objectives are clearly noted and properly numbered as appropriate.
- ☐ Expected as well as probable student responses are listed with logical connection to the scenario. (N/A as appropriate)
- ☐ Actions are appropriately delineated by position(s); OSM, CRS, STA, RO, NSOE, Fire Brigade Leader, At the Controls Operator, etcetera. (N/A as appropriate)
- ☐ Success paths are procedurally driven unless specific training not requiring procedures is desired and delineated. Procedural discrepancies are identified and corrected before training is given.
- ☐ Responses for all communications to simulated personnel outside the Control Room are included, based on procedural guidance and standard operating practices.
- ☐ Actions are listed using a logical order; by position and chronology. (N/A as appropriate)
- ☐ Operating Experience, Human Performance Tools and Operator Fundamentals topics are included when appropriate.
- ☐ Crew Performance Criteria follow the same chronology as the student responses, are complete and accurate. (For ESGs only)
- ☐ For Walkthrough and Training Mode Scenarios with pre-planned pauses, sufficient information is presented to allow the instructor to meet the goal of the training.

Turnover information (as required) is correct:

- ☐ Day and shift are appropriate.
- ☐ Weather conditions do not conflict with malfunctions.
- ☐ Power levels are correct.
- ☐ Thermal limit problems and power evolutions are realistic and include a reason for any downpower.
- ☐ Existing LCOs include start date, remaining time and actions.
- ☐ Plant Risk Assessment (CDF and Color).
- ☐ STPs are appropriate for day and shift.
- ☐ Core Damage Frequency has been properly calculated and listed to 3 decimal places.
- ☐ Maintenance is realistic for plant conditions.
- ☐ Comments, evolutions, problems, etc, includes extra personnel (licensed/non-licensed if necessary), any condition that affects the flow of the scenario and any condition that does not fit in another category.

SME/Instructor	Date
SME/Instructor	Date

SEG Validation Checklist

Crew:		Instructors:	
OSM	_____	Booth	_____
CRS	_____	Floor	_____
STA	_____	Extra	_____
1C05	_____		
1C03	_____		
BOP	_____		

Crew Comment:

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Resolution:

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Crew Comment:

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Resolution:

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NOTE: Following approval of SEGs, this page may be discarded.

SEG Validation Checklist

Crew Comment:

Resolution:

Crew Comment:

Resolution:

Crew Comment:

Resolution:

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